



May Kokkidou

From kindergarten to early adulthood
Findings from a longitudinal study:

*What factors most influence student
academic trajectory?*



FROM KINDERGARTEN TO EARLY ADULTHOOD.

FINDINGS FROM A LONGITUDINAL STUDY:

WHAT FACTORS MOST INFLUENCE STUDENTS' ACADEMIC TRAJECTORY?

In Shakespearian terms,

Is Something Rotten in the State of Schooling?



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What factors most influence students' academic trajectory?**
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Greek Society for Music Education

Greek Society for Music Education
www.eeme.gr
info@eeme.gr

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Thessaloniki 2017

*To Vassilis and Christine,
who have been there for me
in many different ways during this journey*

The first step

Constantine P. Cavafy, 1899

Complaining one day to Theocritus
the young poet Eumenes spoke thus:

“Two years have passed since I began to write,
and I have created just one idyll.
This is my only completed work.

Alas, the ladder of Poetry
is tall, extremely tall;
and from this very first step where I now stand on,
I will never move any higher, unhappy me.”

Theocritus replied: “Words like that
are improper, they are blasphemous.
Even though you are on the first step only,
it should make you proud and happy.
So far as you have come, it is not an unimportant achievement;
so much that you have done, glorious thing.
[..]”

CONTENTS

Foreword by Ifigeneia Vamvakidou	11
Foreword by Lelouda Stamou	13
Foreword by the Greek Society for Music Education	14
Preface	15
Introduction	17
About the research	24
Statement of the problem – Aims and methodological tools	24
Sample – Participants	27
Students’ Observation	29
Discussions with Students	36
Interviews with parents	39
Findings and Discussion	43
Do students maintain their initial interest in school subjects across the school years?	45
Are high achievers more engaged in school?	51
Does family play an active role in shaping children’s attitudes towards school, affecting their performance?	60
To what extent do school experiences unlock the untapped potential and the talents of students?	80
Does school offer students a clear picture of the studies or the career they could pursue? (The ongoing debate on general versus vocational schools)	90
Do teachers support their students academically and emotionally?	100
Personality-based concept of school achievement	113
Does personality impact outcomes that are important within the context of education? Has school a large effect on the individual's personality?	113
Is it possible to talk about a kind of ‘heritability’ in academic performance? Educational progress through the lens of Genetics	145
Is children’s early achievement at the kindergarten level related to later school achievement? Is the academic identity of a student definitely shaped at the kindergarten level?	159
Are there any missing pieces in students’ education and if so, is it possible to define them?	168
Case A: School Readiness: a missing piece in education?	168

Are there any missing pieces in the students' education and if so, is it possible to define them?	181
Case B: Non-cognitive factors: a missing piece in education? (The crucial role of self-regulation)	181
What factors result in disparate educational outcomes for children?	197
Summary of the results of the present study	207
Education? Yes! But what kind of School and Schooling?	214
A few further thoughts	231
School and Society (and the debate over the ever-widening social demands on schools)	231
Issues of equality and equity in educational opportunities	241
Are there ways for school to help students make the turnaround from a trajectory of failure to the one of success?	255
Individualization and personalized learning	267
Is technology the answer to the question about the "how" of personalized learning?	277
From Behaviorism to Brain-based teaching-learning	283
"Hole-in-the-wall Learning Stations": a pioneering work, an inspired idea (and the example of "Unschooling movement")	299
Epilogue 1 – Research-based Education	304
Epilogue 2 – Critical Recommendations	308
References	314
Appendix	
Students' profiles (in alphabetic order)	365

FOREWORD

by Ifigeneia Vamvakidou

Shakespeare would theorize that everyone is taking advantage of any opportunities that life offered. He would likely support anyone with the wit to grasp knowledge to accumulate as much knowledge as possible. He, however, would also be very clear that education is not the same as “schooling”. Shakespeare often belittles the idea of “schools” and the pedagogues that ran them, finding them highly suspect and untrustworthy. It is important, though, to remember that there is a good chance that all that marvelous talent might have gone to waste, had little William Shakespeare not ever learned to read or write. An aware Shakespeare would have to admit that, just as everyone should have the chance to seek knowledge, everyone should have a chance to be schooled. This is different than saying everyone should be schooled.

Dr May Kokkidou is a music education specialist and researcher. She teaches as an adjunct lecturer in the Postgraduate Program of Sciences of Education, Direction of Cultural Studies: Semiotics and Communication (University of Western Macedonia) where I met her. I know well and admire her research and teaching work since 2008. Thus it's an honor for me to introduce to you all this new postmodern research and educational proposal of hers. It's all about the nature and the structure of education.

I do support that the scientist's laboratory and the artist's studio are two of the last places reserved for open-ended inquiry, for failure to be a welcome part of the process, for learning to occur by a continuous feedback loop between thinking and doing. Artists serve as great partners in the communication of scientific research; moreover, they can serve as great partners in the navigation of the scientific unknown. Artists and scientists tend to approach problems with a similar open-mindedness and inquisitiveness. Dr. Kokkidou participates in both “personas” by herself.

Multiple lines of research persuasively show that non-cognitive skills predict and influence success in academics, careers, and life. Educators believe in the importance of social-emotional learning and the new proposal is about “transforming Students' Lives with Social and Emotional Learning”.

The results of this scientific research they also construct an educational proposal about modern ways for school to help students make the turnaround from a trajectory of failure to the one of success using methods such as “Individualization and personalized learning, technology for personalized learning”. Dr May Kokkidou also proposes a critical new thinking about the transference “from Behaviorism to Brain-based teaching-learning, to the Unschooling movement, the debate over the ever-widening social demands on schools” and she especially claims about the issues of equality and equity in educational opportunities.

I greatly suggest this book to researchers and educators, to parents and guardians in order they could comprehend this “new terrain around flexible pedagogies” which connects several strands of education thinking and practice, revealing the need for further scholarship and pedagogical guidance, to bring together the conceptual, theoretical and empirical dimensions, as well as the implications for academic practice.

*"What we want to see is the child in pursuit of knowledge,
not knowledge in pursuit of the child"*
George Bernard Shaw

Ifigeneia Vamvakidou
Professor in Modern Greek History and Culture
Head of the Department of Early Childhood Education
Pedagogic Faculty University of Western Macedonia
<https://uowm.academia.edu/IfigeneiaVamvakidou>

FOREWORD

by Lelouda Stamou

It is definitely rare to find readings in the educational bibliography which are simultaneously research reports, significant sources of related literature, catalysts for new knowledge, and the distillation of many years of experience working with children, while at the same time appearing strikingly to be deeply humanistic, driven by heartfelt love for children and young people. This work of May Kokkidou is the product of a longitudinal research study with children from the age of kindergarten to adulthood, investigating possible factors which may affect students' trajectory. Rising from the epistemological paradigm of qualitative research, this book offers an excellent example of qualitative research, of this kind which is a challenge to conduct and then to report. The writer makes an admirable job in reporting and discussing her data, while interweaving it with a great plethora of research literature from a wide range of fields.

This book of May Kokkidou could not but be the product of a lifework of research, continuous reading and studying the literature, and working with students. In its write-up, it definitely reflects the multiple levels of work, and can function at multiple levels for the reader, researcher, academic, teacher, or university student; as a huge source of literature, as an example of the –hard to conduct– longitudinal research studies, and finally as a research-driven text of wisdom for what really seems to matter in the life of the growing person.

This is a book that cannot be read just once. Every time it is studied, it reveals its layers of thought, the sagacity of its author, and the magic complexity of the human being and growth.

Lelouda Stamou
Associate Professor of Music Education
University of Macedonia, Greece

FOREWORD

by the Greek Society for Music Education

It is our pleasure and honor to host in our editions this lifework of research of May Kokkidou, a longitudinal research study with children from the age of kindergarten to adulthood.

May Kokkidou has been a very valuable member of the Greek Society for the Music Education (GSME), since its constitution, in 1997. She served as president of the GSME (2007-2012) and, in collaboration with Costas Tsougras and Zoe Dionyssiou, she was co-editor of the scientific journal of GSME, *Musical Pedagogics*, the last six years (2012-2017). Additionally, she has been member of the Scientific Committee of GSME's Conferences, and co-president, with Zoe Dionyssiou, of the Scientific Committee of the 6th Conference (Athens, 2009) and 7th Conference (Thessaloniki, 2015) of the GSME.

May Kokkidou was born in Thessaloniki. She is a music education specialist and researcher and she has published numerous essays both in national and international journals and conference proceedings. She is author of three books and of the monograph "European Music Curricula: Philosophical Orientations, Trends, and Comparative Validation" (GSME editions, 2009), and co-author of four book on Aesthetic Education. She taught as adjunct lecturer in the Post-Graduate Programs "Semiotics and Communication" (University of Western Macedonia) and "Didactics of Music" (University of Macedonia). Today she teaches as adjunct lecturer in the Post-Graduate Program in "Music Pedagogy" (European University Cyprus). Her recent work focuses on the areas of the semiotics of music, the musical identities, the philosophy of music education, and the multi-modal music perception.

We are confident that this work will be a most rewarding and valuable text for all kind of readers, researchers in education, educators, students and parents!

For the GSME board (2016-2018)
Sophia Aggelidou (President)
and Dimitra Koniari (Secretary)

PREFACE

What is the aim of school? Is it the whole child development? Is it to help children become independent learners? Is it to facilitate children to find their own path and achieve their own potential; to realize who they are and who they can become? Is it to help students transfer what they have learned in school to everyday settings (home, community and workplace)? Is it to serve culturally diverse students with varied abilities and motivations for learning? Why do some children fare better academically than others? Can we identify the factors, both inside and outside the school environment, which influence a student's either academic failure or success?

To address the above and other relevant questions I designed and conducted a 15years' intensive case study research (from September 1998 to June 2013). The participants were a group of seven kindergarten children. The qualitative design employed participants' observation, informal discussions with the participants across all school years, and in depth interview with their parents. The present work documents the interdependent influences of multiple endogenous and exogenous factors on participants' life trajectories, such as personal characteristics, home environment, school environment, and preschool life experiences.

In this work, I report on the results and discuss the findings of this study. The results indicate that there is a variety of factors which operate symbiotically and determine one's school progress. One of the most significant findings is that children as young as 5 years old reveal traits that influence later academic progress. Children's individual characteristics and prior experiences are dominant factors that influence mostly their academic gains. The results suggest that we need much more knowledge than is presently available with respect to the role of individual characteristics in one student's academic achievement and life progress. Major efforts must be undertaken in order to find causal relations between early attainment /capacities and later achievement.

The ideological and philosophical concept which underlies this work is that posing questions is more crucial than seeking easy answers.

May Kokkidou

Acknowledgments

The author is grateful to the students and parents who participated in this research project. My sincere thanks to Ifigeneia Vamvakidou and Anastasia Christodoulou for their thoughtful remarks. Thanks go especially to Helen Tsakiridou, for her invaluable encouragement and helpful comments and to Lelouda Stamou. I would also like to thank Dimitra Koniari and Sophia Aggelidou for their constant support during the process of publication. Many thanks to Regina Saltari for her detailed and careful proof reading.

INTRODUCTION

In the last two decades there has been much talk of '21st century education'. The context of the widespread social, political, economical, and cultural crisis has made it imperative to rethink the aims of education and the quality of schooling. The major issue that has arisen is the kind of knowledge and skills that will be most important for humans to succeed in life in the 21st century. We can learn from the past examining the factors that have changed the demands of life, in order to appreciate and weigh up the changes that occur in our era. However, it is difficult to peer into the future and predict what skills will be important in 20, and even 10, years from now.

From a historical perspective, the two great goals of school are: facilitating people's learning –in many cases in order to be productive for work– and supporting them to become good people persons. Over and above that, many scholars stress the danger of instilling knowledge without ethical values and emphasize the development of human strengths, resilience, and other characteristics associated with human functioning and harmony in life (Seligman & Csikszentmihalyi, 2000; Goleman, 1995; Myers, 1992). Daniel Goleman (1995), argues that a high IQ is not longer a major predictor of success in life; rather, he argues, emotional intelligence (self-awareness, managing emotions, self-motivation, impulse control, empathy, and social skills) is more important and can lead to at happy and successful life. This type of intelligence is often overlooked. As Elliot Eisner (2004) argues the most significant lessons of schooling manifest themselves outside schools because “the primary aim of education is not to enable students to do well in school, but to help them do well in the lives they lead outside of school” (p. 10). For Prensky (2014) learning is nothing but a means of accomplishing the goal of becoming a good person, and it is dangerous to confuse the ends with the means. Gardner (2007) describes the five minds needed for the future as follows: 1) respectful 2) ethical 3) disciplined 4) synthesizing, and 5) creative. Two of them –the respectful and ethical minds– emphasize character and the other three are related to intellect. Consequently, apart from academic performance, developing students' social-emotional skills and morals is a worthy goal of education from a number of perspectives.

This is not a new dilemma; it is an old one. Aristotle, in *Politics*, had reflected on this remarking that there are different opinions and stating that people do not agree as to what the young ought to learn, either with a view to virtue or with a view to the best life possible; nor is it clear whether their studies should be regulated with regard to intellect or character.

The common-sense expectation might be that school has to nurture children, give them both the tools to both build a good moral character –in the context of ethics and values of every society– and educate them. Teachers and parents recognize that character is at least as important as intellect (Tough, 2012). Teaching-learning in school ought to do with the whole person. According to a recent UNESCO (2009) report, the purpose of basic education is directed to the full development of the human personality. Basic education

develops the capability for comprehension and critical thinking, and it inculcates the respect for human rights and values, notably, human dignity, solidarity, tolerance, democratic citizenship and a sense of justice and equity. (p. 2).

Nevertheless, the school system is shaped in such a way that it provides only teaching-learning experiences needed for students to succeed academically and to measure learning, and does not invest on the idea of the whole development and emotional well-being. While the debate over the character at school is ongoing, the question for schools is mainly how best to help students learn, how best to create the teaching environments that allows this to happen. Realistically, for Jerry Diakiw (2012), school is not an ideal environment because it does not provide all the necessary opportunities to become an adult. Instead, school is a place where individualism and cognitive development are honored.

The conventional story holds that all learning comes solely from school. Yet today it is well recognized that learning is something much broader than what formal education offers; the issues of human learning go far beyond the school walls. Learning is not limited to a given age range, time, and place; it is dynamic rather than static; it is a physical phenomenon, occurring at so many levels simultaneously. It is inherent in our species, emerging from our desire to take in new information by actively exploring new territories, a complex set of interactive and situated processes which recursively set up the individual's future experiences. Human beings are

born to learn (Ostroff, 2012). There is no limit in learning.¹

A major contrast between school and everyday life is that learning is defined and evaluated in different terms. It is no longer accepted that anything learned in school can be translated into life learning (Parsons & Beauchamp, 2012). Why? Because school sets artificial boundaries between subject matters. School learning conflicts with or is kept separate from everyday learning (Eckert et al., 1997; Dewey, 1938); it is abstract, theoretical, inauthentic, organized by disciplines not linked to real life, and disconnected from the world of nature (I wonder how many of us remember much of molecular biology terms, Roman emperors, geological rock formations, logarithms, or trigonometry?). Materials are presented as abstract processes and ideas, and students are required to master them in the same terms (Grobstein & Lesnick, 2011). As school emphasizes abstract reasoning, we have lost the ability to do anything practical (applied skills and community skills to meet real-world challenges). We have adopted the cartesian notion "I think therefore I am" (*cogito ergo sum*) and disregarded other equal important aspects of human development such as "I do /feel/ share therefore I am" and, more recently, the "I e-communicate therefore I am" approach.

Many thoughtful educational theorists have contended that good education is about the development of the whole child, not merely her/his intellect, and should be a preparation for the future as well for the present life. This argument has been put succinctly by John Dewey (1938) who claimed that education is not solely preparation for life; it is life itself. Thus schools are responsible for disconnecting children and youth from the 'now' and the 'here' of the world they live. Although we know that real-life teaching-learning situations engage students' minds and motivate them, the majority of classroom time is spent on teachers standing and lecturing, students sitting (and daydreaming) or filling out work sheets. Even new technologies are used mainly to process information and to do things we did in the past using paper and pencil. The current school system puts severe limits on how teachers teach and students learn (Robinson, 2009, p. 36) and

¹ John Dewey, back in the 1938 wrote: "Perhaps the greatest of all pedagogical fallacies is the notion that it person learns only the particular thing he is studying at the time. Collateral learning in the way of formation of enduring attitudes, of likes and dislikes, may be and often is much more important than the spelling lesson or lesson in geography or history that is learned. For these attitudes are fundamentally what count in the future. The most important attitude that can be formed is that of desire to go on learning."

ignores the fact that today's children grow up differently and learn differently.

Various complex and controversial issues emerge in this account. First, how do we justify what students are required to learn? Do school subjects develop students' minds? Do they help youths to effectively navigate a complex realm of real life situations? Today, the academic content traditionally taught in school is under question. Many school subjects were evaluated as useful at the period when formal public educational systems were created. However, today, in the digital era, their usefulness is doubtful: the content of many school subjects is of no use in adult life (Robinson, 2009). It is well accepted now that students who learn how to analyze and transform information, how to apply what they learn and how to deal with real world challenges, students who develop a broader set of skills, such as the ability to think critically, to be creative and innovative, and to effectively communicate and collaborate with others, are at a greater advantage in work and life.

Further questions that arise are: do we subscribe to the view that education diplomas are the endpoint? Are students who are labeled as 'smart' at school more likely to succeed? Are adults who obtain more educational qualifications at an advantage? A strong academic foundation is considered as essential for success in post-secondary education; but is it equally essential for progress in life, especially for marginalized populations? Are high-educated people happier than low-educated people? For Csikszentmihalyi (1990), people, more than anything else, are driven to seek happiness. But when it comes to education, for some reason, the goal of happiness is forgotten. The results of a recent research (Dockery, 2010) suggest that gaining a university degree is not always associated with an increase in happiness; more educated people are no happier than people with lower levels of education. Those who gain a university degree are generally happy in school and university, but their happiness falls upon completing their degree. Conversely, in many cases, people with intermediate vocational qualifications, such as a traineeship or apprenticeship, appear to be happier than either the high or low educated. It seems that university graduates' subjective wellbeing is shaped more strongly by their happiness with their careers and how the economy and the country is run whereas persons who have not completed school seem to place greater importance on happiness with their daily life at home (Dockery, 2010, p. 27). Apart from that, it seems that several students decide to continue their studies at university "just for the

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

sake of a diploma, which someday may serve to gain more prestige or help them to stand out in a crowd of peers” (Sinagatullin, 2009, p. 3).

While there is little doubt that success at school, as measured by test scores and diplomas, does matter, for individuals and society, it is also true that academic under-achievement is not the end of the road (Prasser & Tracey, 2013; Robinson, 2009). There is evidence that despite the substantial expansion in educational attainment that occurred in most developed economies over the last century, income inequality does not seem to have decreased accordingly (Meschi & Scervini, 2012). On the other hand, there are hundreds of so-called ‘middle skill jobs’ that are well-paid and do not require a university diploma while white-collar jobs nowadays pay less and offer less security than they did a generation ago (see Snellman et al., 2015).

Thousands refuse to view their education in the narrow terms of schooling or colleges. ‘University for All’ is not identical to ‘Education for All’ or ‘Chances for All’. Above all, what is the case of many high-achievers in life and work, many world-renowned women and men –writers, musicians, painters, dancers, photographers, filmmakers, journalists and even scientists– who accomplished great things despite the fact that they did not do well at school or lacked traditional education? This might be the picture for Dewey (1938) to remark:

We often see persons who have had little schooling and in whose case the absence of set schooling proves to be a positive asset. They have at least retained their native common sense and power of judgment, and its exercise in the actual conditions of living has given them the precious gift of ability to learn from the experiences they have.

Moreover, do we focus on the needs of the individual student? Do schools play a vital role in overcoming economic and social inequalities? Do we choose to implement open-ended curricula that allow children to participate at their own pace? Children come to formal education with a range of prior knowledge and cultural beliefs that significantly influence how they make sense of the world and how they organize and interpret it. This, in turn, affects their abilities to remember, reason, solve problems, and acquire new knowledge (Bransford et al., 2000, p.10). Machin (2006) underlines the fact that education is inherently connected to social disadvantage. Sadly, school uses a strict metric for students' assessment and defines their abilities on the

basis of terms such as ‘better’ or ‘worse’, ‘brighter’ or ‘not-gifted’, ‘faster’ or ‘slower’. But focusing only on test scores we misunderstand the true mission of education.

Finally, do school experiences across school years add to students’ holistic development? Does school view learning only as a tool for economic growth, productivity and competitiveness in workplace? Does school ignore the notion, which runs through most Eastern and Western systems of thinking, from ancient to modern times, that the ultimate goal of human beings is self-consciousness, personal balance and fulfillment?

The aim of the holistic development of the children and pursuits such as dignity, happiness, autonomy, trust, respect, and so on, are not cliché ideals. Individuals experiencing psychological well-being, feel competent, accepted, and have purpose (Weller-Clarke, 2006). This involves an enquiry into educational values. Jerome Bruner (1960), more than a half-century ago, concluded: “We might ask, as a criterion for any subject taught in primary school, whether, when fully developed, it is worth an adult’s knowing, and whether having known it as a child makes a person a better adult” (p. 52). Dewey (1938) posed the most intriguing question: “What avail is it to win prescribed amounts of information about geography and history, to win the ability to read and write, if in the process the individual loses his own soul: loses his appreciation of things worth while, of the values to which these things are relative; if he loses desire to apply what he has learned and, above all, loses the ability to extract meaning from his future experiences as they occur?” (p. 49).

So, the question becomes, what is the *raison d’être* of school? The role of the school is a hotly contested issue (Machin, 2006), its mission is hard and complex. It is true that we have high expectations from school. We are expected school to developmentally support students (safety, positive relationships with adults and peers, engagement, positive expectations); address the social inequalities and to increase life chances to all children from disadvantaged backgrounds; transform experience to knowledge; lay a foundation for lifelong learning; recognize student differences and respect their different paces of learning; provide students with abundant opportunities to think critically; provide them with skills and knowledge they need to make sense of the world; prepare them for the next level of their education and as well for life; help them to be healthy, happy, and well-balanced, and lead productive and prosperous lives as adults; and help them become responsible people with good character.

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

On the other hand, is it fair to incriminate school for not achieving the goal of equal education outcomes? Is it wise to ignore the fact that there are children who get off to a promising start in life while others get off to a worrisome one? Is it fair to expect from school to prepare students for a world that looks increasingly problematic, for jobs that have not yet been created, for technologies that have not yet been invented? Is it realistic to expect from school to break the intergenerational cycles of social disadvantage? Expecting and demanding too much from school may be somehow not honest, not equitable because school outcomes reflect larger and deeper problems and inequalities in society as well as individual differences. The plausible conclusion, born out by a great deal of evidence from different contexts, is that school cannot fulfill its mission because much of the above is beyond of its control. In any case, we must pay greater attention to such questions and try to develop thoughtful responses.

Apart from these dilemmas, it is widely accepted that the present school system is out of date. Indeed, one might claim that the European school models of the 19th century continue to hold sway (Weigel et al., 2009). It is obvious, in shakespearean terms, that something is rotten in the state of School.

After all, what is school for? Is tomorrow a new day for school? If we agree that it is imperative to change schooling, where do we begin from?

ABOUT THE RESEARCH

Statement of the problem - Aims and methodological tools

School powerfully affects the quality of people's lives. Schools help students to progress academically progress and also impact their lives in many meaningful ways. As children and youths spend more time in schools than they do anywhere else outside their homes, school has to provide them with powerful experiences to fully develop their own potential. It may well be impossible to have the 'ideal' school but it is interesting to explore issues and factors that might contribute to its 'excellency'.

The main aim of the present study was the investigation of the factors that influence student development and academic progress –their academic choices and the formulation of their goals towards life– focusing on the role of school. Another aim was to correlate certain factors with the academic gains students have made from kindergarten through 12th Grade –taking also into account their transition to the workforce and their post-secondary academic progress at age 19²–, and to identify the factors that function as possible indicators, predictors or inhibitors of their academic success and personal development. The basic research questions were as follows:

- *Do students maintain their initial interest in school subjects across the school years?*
- *Are high achievers more engaged in school?*
- *Does family play an active role in shaping children's attitudes toward school?*
- *To what extent do school experiences unlock the untapped potential and the talents of students?*

² Greece uses a meritocracy system as an entry requirement into tertiary level. Students must obtain good scores in specific school subjects. Those subjects are defined in accordance with the field each student wants to continue their studies on. In Greece, all children are expected to complete high school and it is desirable to continue into tertiary educational level. The belief that university studies are indispensable to success, like high school graduation used to be four decades ago, is widespread among the public. University certificates have a strong bearing on individuals' social status, though has a rather poor bearing on their earning potential.

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

- *Does school offer students a clear picture of the studies or the career they could pursue?*
- *Do teachers support academically and emotionally their students?*
- *Is children's early achievement at the kindergarten level related to later school achievement?*
- *Does personality impact outcomes that are important within the context of education?*
- *Has school a large effect on the individual's personality?*
- *Are there any missing pieces in students' education and if so, is it possible to define them?*
- *What factors result in disparate educational outcomes for children?*

The present longitudinal and cross-sectional research is based on the case study approach (see Stake, 1995) and spanned from September 1998 to November 2013. In particular, the research began at the very first day children entered kindergarten school (September 11, 1998). When children left kindergarten, I followed them for 12 plus 1 years, that is over the course of their elementary and secondary schooling. The final phase of the study was conducted in fall 2013, which was 6 months after their graduation from secondary schools.

Longitudinal studies are complicated and much slower yet their value is that they allow the researchers to collect data over time and overcome the limit of before-and-after perspective. Moreover, they enable them to view the breadth and depth of people's life experiences and to document change (Saldaña, 2003). As Singer and Willett (2003) note, the main objective that is addressed by longitudinal data analysis is to describe, explore, and explain individual differences within and between students over time –'withinindividual' and 'interindividual' changes, in their words (p. 8)– and to determine the relation between predictors and each student's academic trajectory.

Case studies design provides opportunities to researchers to develop a deeper understanding of the way individuals operate in given contexts (Berg, 2007). The measurement of individual differences, beyond the sole use of questionnaires, is considered invaluable in the field of child development (Caspi et al., 2005, p. 460). Baker and Soden (1997) note the difficulty to fully capture the dynamic transactional nature of the triptych student-teacher-family. The issues in this area, they suggest, could better be explored through open-ended and observational techniques which would produce rich data, shed light on complex processes, and generate new

hypotheses (p. 15). Within this view, the research tools which have been selected and used in conjunction in this study included students' observation in classroom, informal discussions with students, and semi-structured interviews with parents, with the ultimate goal being the data correlation. Mixed methods offer complementary strengths, address both confirmatory and exploratory questions, minimize the weaknesses associated with reliance on only one paradigm, and provide triangulation (see Sammons et al., 2005). Lincoln and Guba (1985) stated that triangulation is an ideal technique to provide credibility. Besides, there are studies (McClelland et al., 2013; Ladd & Dinella, 2009; McClelland et al., 2006) which provide evidence that ratings by parents and by teachers have strong longitudinal predictive value.

At this point I would like to note that in my analysis I was not based on self-report data (self-report questionnaires). Since I gathered relevant data from the students (self-evaluation judgments at a particular time and condition) I never interpreted it in isolation but only in correspondence to parents' reports and to my field notes as a teacher-researcher. The reason for this was that young children are not considered to be able yet to answer self-report questionnaires while teacher and parent reports are widely used for describing younger children behaviors and dispositions.

Observation was the initial baseline tool: the data I gathered by observing children, across their two years of kindergarten, was finally and definitively formulated at the end of the second year of their attendance. The following stages included informal discussions with the students and in-depth semi-structured interviews with their parents. Case studies were developed for each student and themes were explored across cases.

I would like also to note that I initially attempted to gather data from students' teachers as well. Indeed, teachers from Grades 1-3 responded positively to my request. Yet, during the following years most of them were negative. Hence the teachers' remarks were excluded from my analysis. The students' scores in school subjects were given to me by the students' mothers and by students themselves as well. This data were collected yearly.

In this study –and given the difficulty in defining education, school, and schooling– the term 'school' is used in its broadest sense and as an umbrella-term encompassing all school years, namely kindergarten, elementary, and secondary (lower and upper) school years. By 'school' I also mean the learning organization system of formal public education which covers the institutional context, the policies, the community

(students, teachers, principals, parents), the curriculum (activities that lead to prescribed learning outcomes, the teaching-learning processes, and so on), and the culture. The post-secondary education and the out-of-school educative activities are not included in this conception. Finally, I have chosen to use the term 'school' to 'education' attempting to approach and designate the world of teaching-learning in a realistic and pragmatic manner and context.

The names of all people reported in this paper are pseudonyms, to maintain confidentiality.

Sample - Participants

Study participants were a group of seven kindergarten children (5 boys and 2 girls). At first, the group was consisted of 11 children, the total number of children who entered kindergarten in the academic year 1998-99. But as 4 of those families changed location during the following 5 years, the number of kids in the final group was reduced to 7. All of them were Caucasians, students of a public kindergarten school located in a suburban territory in Northern Greece. They entered kindergarten in the 4.2 to 4.9 age range. All of them came from a two-parent home (two-biological-parent family).

The children were in good physical condition, had no mental damages which might be limiting their learning, no chronic ill health problems, and no emotional or neurological disturbances (with the exception of a child who had a stuttering problem in early years, yet not a serious one). None of them experienced serious family problems (i.e., parental divorce, death or serious illness of a core-family member or of a close relative) during the research years. In their adolescence, none of them made drug use, to my knowledge and from what I was informed by their mothers.

All students shared similar background and educational contextual characteristics: they attended the same half-day kindergarten, the same elementary and low secondary public school (*Gymnasium*, Grades 1-6 and 7-9 respectively) and were taught the same curriculum by the same teachers in classes with same student-to-teacher ratios. In high school years (Grades 10-12) three students (Jason, Lucas, and Theo) changed school: they were enrolled in a vocational public school and in different classrooms. The other four (Charlie, Maria, Helen, and John) continued in general public schools

but in different classrooms.³

All families held a middle class status, were high-income, with all fathers working full-time and all mothers not employed outside home. The average age of fathers and mothers, at the beginning of the research was 29.5 and 24.7 years old respectively. The fathers were employed as well-paid technicians in power industry. Both mothers and fathers were Greek. Greek was the only spoken language at home. None of the families were in cultural minority or immigrant status. All parents had completed high school and 2 of them had a degree from technical schools. All mothers had completed high school. Charlie's and John's mothers had graduated from high school with the highest grade. Indeed, they had the ability to continue their education but they had chosen not to, in order to make family.

Children and parents were all residents of a small town in Northern Greece, just few kilometers from the capital city of the region. The district is considered as rural with urban characteristics because the vast majority of the population are industrial employees, occupied ancillary with agriculture.

This group of children was selected for two reasons: a) having previously been employed as a kindergarten teacher at a public K-school within the area, I had maintained relationships and kept contacts with both parents and children. As a result, recruitment provided no obstacles for me, enabling data gathering to occur over a twelve-year period within various settings b) from the very beginning of the research, parents were thoroughly offered a full description of the study including its expected duration. They also were informed that participation in the study was completely voluntary. After I discussed with the mothers, explained the aim of my research, and outlined all provisions made to ensure confidentiality, I secured their consent and willingness to participate.

³ The current Greek Education system is divided into four main levels: Compulsory Preschool Education (1 year, begins at the age of 5), Compulsory School Education (Elementary and Low Secondary Education, 9 years, compulsory for all children 6 to 15 years old), Post-Compulsory-Upper Secondary Education (3 years), and Tertiary Education (Post-Secondary Higher Education). Upper Secondary Education includes two types of schools in which schooling lasts three years: the Unified Upper Secondary School and the Technical-Vocational School. Public and private sectors operate at all levels of the system, except the university level, which consists exclusively of state institutions. Special-orientation Secondary Schools (i.e., Athletic, Music and Ecclesiastical Schools) and Special Schools (for students with special needs) exist in parallel with mainstream secondary schools. There are also Experimental Schools and Exemplar Schools functioning under the supervision of Universities applying innovating methods of teaching-learning.

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

I followed this group of children closely for 15 years, from their childhood (from their first year in kindergarten) into their early adulthood (age 19) –from kindergarten to elementary school, from elementary to low secondary school, from low secondary (*Gymnasium*) to upper secondary school (*Lyceum*), and from secondary school (end of formal schooling) to post-secondary education or work.

The sample was demographically homogeneous: the demographic characteristics of the families, that is ethnicity/race, parents' income, social status, educational background, and family structure, did not differ. Consequently, family sociodemographic does not consist a variable in the present research.

Students' Observation

Observation is a valuable instrument in educational research. The aim of observation is to capture behaviors that might not be typically elicited via tests, interviews or questionnaires. Persistent observation is considered as the key to the data being credible (Lincoln & Guba, 1985). In the present study, the context of the observation was multi-faceted and with no time limits. In fact, I had the opportunity to directly observe my pupils in various situations in class and on multiple occasions over time (free-choice activities, routine activities, curricular activities) which gave me a more accurate picture of their behaviors. A great advantage was that children performed naturally because they were unaware that someone was observing. I would also like to add that I had the opportunity to observe them while playing in their neighborhoods and in other various settings. This way, I was able to capture a well-rounded picture of their skills and behaviors.

I started gathering the children's observation data in January of the first year of their attendance in kindergarten (1998). As an observer, I tried to remain at the stage of the mere description for many months and avoid drawing immediate conclusions. I attempted to make sense of and condense the data collected once in May of the first academic year and again in May of the second academic year (final phase). By the end of the first year, I asked mothers to freely describe their children's personalities, in their own words (in one or more words). Their descriptions were similar –in many cases almost identical– to my own. Children's individual differences were already considerable and noticeable.

At the end of the second year I invited the parents to school, who had already been informed about the research, and I asked them to review the results of the observation. During these meeting with mothers, they were given the opportunity to make remarks, to confirm their children's profiles or to add anything that they felt was noteworthy (detailed information about their child). In doing so, I tried, to avoid projecting my own preconceptions about student behaviors and competencies. Moreover, as there is evidence that many behaviors vary according to settings (Tsukayama et al., 2013) the confirmation of my remarks by the mothers was necessary to ensure the validity of data. Any misconception in coding was eventually resolved through discussion. Mothers' comments were added to my notes and were taken into account in the stage of informal conversations with their children.

In the present research, I did not use a structured protocol for observation as most of them focus on the traditionally 'measurable' aspects of student behavior (e.g., time-on-task, attendance) than on student characteristics and areas of engagement /disengagement. Although I studied many protocols, observation checklists, and assessment tools (e.g., CLASS, ECHOS, COP, GOLD, WaKIDS) I concluded that they did not serve the aims of my research because they limited the context of observation (time, situations, conditions). Moreover, I had the advantage to collect data from the observation of the students for several weeks, and to check often any rate (sufficient frequency) before I could take it for granted. For instance, comparing children's kindergarten-entry skills and behaviors to their end-of-kindergarten achievement I noticed substantial differences to several children such as higher concentration, less difficulty in controlling impulse, increased capability to be more tenacious in school tasks, and greater self-esteem. Students felt self-confident and motivated by the fact that they did well in several curricular areas. However, many individual differences remained fixed: there were children that could learn more quickly than their classmates, children who possessed leadership skills, children who had the capability to be outstanding in music or mathematics or physical activities, children who faced difficulty in understanding the conventions of print, and children who were not ready to meet new content.

The observation focused on children's competencies in the physical, cognitive and social-emotional domains (e.g., motor development, creativity, critical thinking, curiosity, social abilities, self-regulation), on language (e.g., vocabulary, oral communication, phonological awareness, emergent literacy, print conventions, reading, writing) on their interests and

competencies regarding school subjects (e.g., math concepts, physical activities, science, music, drama, art), on domains where children demonstrated giftedness, on their abilities in applying procedures (metacognition), and on executive function behaviors and skills (e.g., work habits, impulse control, adaptability, attentive behavior, ability to follow directions and to respond to instructions, level of concentration) that they exhibit as kindergartners. I also kept notes regarding the interactions among children and the interactions between children and me.

The most challenging part of the observation was the assessment of children's personality traits. Personality⁴ is one of the most popular areas of research in Psychology and Humanities. Personality assessment has a long history as it is not an easy task. For instance, many problems trail the questionnaires when they are used as the only basis for inferring personality categories (Kagan & Snidman, 2004, p. 57). A score on a single administration of a personality test does not imply that one is expected to always behave in a certain way; it rather suggests that one has a higher probability of behaving that way across many types of situations and contexts (overall dispositional tendencies) (Cervone & Pervin, 2008, p. 8; Maltby et al., 2007). The relation between academic success and individual differences among children has only recently attracted serious attention from researchers (Duckworth & Carlson, 2013, p. 208).

Personality represents something more than behavior; it refers to the way one thinks, perceives the world, acts and feels; it is a result of an interaction between biological variables and environmental variables (e.g., socio-economic class, culture, education) (McAdams, 2015; Cervone & Pervin, 2008) and it can be conceived as consisting of several complex behavioral repertoires. These repertoires include instrumental or motor

⁴ In literature, the terms ascribed to personality are various. Teachers tend to use terms like "social-emotional competency" or "non-cognitive factors" whereas educational philosophers embrace the moral connotations of "character", and "virtue." Shiner and DeYoung (2013, pp. 114-116) argue that temperament and personality are different ways of describing the same basic traits. While, historically, temperament and personality have been studied as distinct sets of individual differences, it may be helpful to view temperament and personality not as truly distinct forms of individual differences, but rather as different ways of describing the same basic traits, with "temperament" typically referring to earlier forms of these traits and "personality" to later forms. Shiner and DeYoung (2013) conclude as follows: "If we restrict our consideration of personality to traits rather than characteristic adaptations or narratives, then temperament and personality traits have much in common" (p. 116).

behaviors, emotional-motivational behaviors, and language-cognitive behaviors (Staats, 2003) and they are reported as traits. According to Shiner and DeYoung (2013) these traits describe “relatively stable patterns of behavior, motivation, emotion, and cognition that are not bound to a particular sociocultural context but could be observed in any such context” (p. 115). Kagan and Snidman (2004) claim that “a personality type is a pattern of traits, each determined by a combination of temperament, personal experience, and the context of life” (p. 218). According to McAdams (2015), personality traits are the recurrent and recognizable styles we display as we perform emotion and enact social scripts (p. 225). All in all, psychologists define personality as “psychological qualities that contribute to an individual’s enduring and distinctive patterns of feeling, thinking, and behaving” (Cervone & Pervin, 2008, p. 8), pointing out that it is “relatively stable, enduring and important aspects of the self” (Maltby et al., 2007, p. 9). One widely cited definition is provided by Brent Roberts (2009) who designates personality traits as the relatively enduring patterns of thoughts, feelings, and behaviors that reflect the tendency to respond in certain ways under certain circumstances, differentiate individuals one from another, and are elicited in trait affording situations.

Within the fields of child development and personality, there is an ongoing debate about the nature of personality development, with some researchers suggesting that personality development is largely characterized by randomness and other researchers arguing that there is evidence which attests to both substantial continuity and change (see Shiner et al., 2003, p. 1146). Personality is considered to have a substantial genetic basis yet it is influenced by environment; it demonstrates both stability and change over time; it develops; it unfolds in the “dynamic transaction between dispositional tendencies and context” (Lapsley & Hill, 2009, p. 195). Personality traits are complex and not static; they are constructs subject to a variety of environmental influences (experiences, education, interventions) (Shiner & Caspi, 2012; Almlund et al., 2011; McAdams & Olson, 2010; Caspi & Shiner, 2006; Srivastava et al., 2003; Loehlin et al., 1998; McGue et al., 1993). In short, while there are that seem to be stable, for example, one individual as more affable or suspicious than another, it is also true that people change across their life course.

Within the field of Education and Pedagogy children came into view primarily as learners whereas the evaluation of their personality was assigned exclusively to developmental psychologists. Yet, recently, it is increasingly

recognized that personality and brain provide an untapped resource for teachers trying to identify characteristics that can promote learning. For my research, given that issues about personality do not fall directly and clearly in the field of Education, I felt the need for specification in order to avoid stereotypical descriptions. After literature review and discussions with specialists in the field, I adopted the *Big Five Model (Five-Factor Model, FFM)* as a guide in order to describe specific traits of participants' personality. The *Big Five Model* –with basic categories: Openness-to-Experience, Extraversion, Neuroticism, Agreeableness, Conscientiousness– is considered valid among personality researchers. As there is a consensus that this model “may adequately describe the structure of personality” (Maltby et al., 2007, p. 170), constitutes an empirically verified taxonomy of traits providing a reasonably comprehensive overview of human personality (Rimfeld et al., 2016), it has been used as the basis for many studies linking personality to education (see Briley et al., 2014a). It has the additional advantage that it uses terms contained in the everyday language. For John and Srivastava (1999), “[t]he Big Five structure has the advantage that everybody can understand the words that define the factors and disagreements about their meanings can be reconciled by establishing their most common usage.” (p. 130). Rebecca Shiner (2010, p. 1089) also states that “[t]he vast majority of the phrases parents used to characterize their children could be easily classified as fitting into one of the Big Five trait domains”.

Personality researchers have generally converged on the *Big Five Model* for describing trait structure in adults. Recently, there is increasing and convincing evidence that this model captures the structure of personality traits in children as well (Spengler et al. 2012; Shiner & DeYoung, 2013; Komarraju et al., 2011; John & Srivastava, 1999). Today, there is an agreement that the *Big Five model* offers a taxonomy of children's personality traits and points to aspects of individuality that have long-term implications for children's lives (Shiner, 2010, p. 1089).

Certainly, there are other views as well. There is a lack of consensus among researchers about identifying and organizing lower-order facets of the *Big Five* factors. For example, some psychologists argue that impulsivity is a facet of Neuroticism, others claim that it is a facet of Conscientiousness, and others suggest that it is a blend of Conscientiousness, Extraversion, and perhaps Neuroticism (see Borghans et al., 2008). At the same time, some theorists explicitly note that the *Big Five Model* is primarily a descriptive account and does not hold explanatory status. McCrae and Costa (1995, p.

235) claim that *FFM* traits are explanatory constructs but they do not provide complete explanations of behavior, since other factors (e.g., upbringing, culture, prior experiences) also need consideration. The authors suggest: “Unlike physical characteristics, personality traits are abstractions that cannot be directly measured and must instead be inferred from complex patterns of overt and covert behavior” (p. 510).

Considering the explanatory status of traits, Simon Boag (2011) poses the question whether trait accounts can coherently explain why people do the things they do. He goes on writing: “Given that McCrae and Costa’s defense of traits as explanatory constructs is flawed, the question arises as to whether traits can ever provide satisfactory explanations of human activity. [...] Here biological constructs may be helpful, and if to have a trait means to have certain nervous system properties (as one example), then these biological properties could potentially explain trait-behaviors. [...] Consequently, the trait itself is not causing the behavioral constellation, but rather the biological factors described.” (pp. 236-237).

Notwithstanding the above objections, the vast majority of personality researchers agree that the *Big Five* model has a strong scientific foundation. John and Srivastava (1999) introduced a basic descriptive framework for the organization of personality traits as follows: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness-to-Experience. Briefly, Extraversion (*vs* Introversion) implies an energetic approach towards the social and material world and includes traits such as sociability, activity, assertiveness, and positive emotionality. Agreeableness (*vs* Antagonism) contrasts a prosocial and communal orientation towards others with antagonism and includes traits such as altruism, tender-mindedness, trust, and modesty. Conscientiousness (*vs* Lack of direction) describes socially prescribed impulse control that facilitates task- and goal-directed behavior, such as thinking before acting, delaying gratification, following norms and rules, being responsible, and planning, organizing, and prioritizing tasks. Neuroticism (*vs* Emotional Stability) contrasts emotional stability and even-temperedness with negative emotionality, such as feeling anxious, nervous, sad, and tense. Finally, Openness to Experience (*vs* Closed-mindedness / closedness to experience) describes the breadth, depth, originality, and complexity of an individual’s mental and experiential life (p. 121). John and Srivastava’s seminal work constituted the basis for numerous studies on personality assessment and development. The authors also point out that “the Big Five structure does

not imply that personality differences can be reduced to only five traits. Rather, these five dimensions represent personality at the broadest level of abstraction, and each dimension summarizes a large number of distinct, more specific personality characteristics” (p. 105).

With regard to the present study, the description of the participants' profiles was based on the *Big-Five* taxonomy of personality traits, as recreated from John and Srivastava (1999). Luckily, once I started to organize the data of my observation, I was informed by a colleague about the *Handbook of Personality* (Pervin & John, 1999) which came to be very helpful for my study. Of course, the following years, I continued to look for and read scientific journal articles on personality development in order to make sense and to better interpret my data. I had also the opportunity to discuss the progress and the results of my study with experts from the fields of psychology, educational psychology, and pediatrics.

I chose to use the *Big Five* as an organizing structure because it encompasses the essential aspects of the personality traits and additional information, and it can be used as an overarching taxonomy for both children's and adults' personality trait. While this model was initially established in research on adult personality traits, it is now used also in studies on younger children's and adolescents' personality as well. Further, the description of *Big Five* personality structure is based on data derived from observation in natural settings, questionnaires, home observation and parent ratings, self-reports, and teacher reports (Shiner & DeYoung, 2013; Shiner & Caspi, 2003). Likewise, my research relayed on multiple methods: observation (school settings, home, and natural settings in the case of informal discussion with the students), teacher report (my personal notes), self-judgements (students' beliefs about themselves). Therefore, the methodological instruments of my research are valid means to describe the students' personality traits.

The participants' profiles constituted a key component in the interviews with their parents. They were defined and described –in brief– upon the *Big Five* personality traits of their personality (Openness-to Experience, Conscientiousness, Extraversion, Agreeableness, Emotional Stability/ Neuroticism) and their school skills and behaviors. I tried to provide a holistic account for each student, based on the assumption that a “balanced portrait of childhood requires positive measures as well as negative measures” (Moore & Lippman, 2005, as cited in Moore et al., 2015, p. 4). Detailed information on students' profiles is presented in the Appendix.

Discussions with Students

In order to define and discuss the impact of school on children's lives we need to take their personal views into account. In this vein, Chambers and colleagues (2010, p. 6) point out that when the vast majority of research data comes from teacher or parent ratings of children's behavior, rather than on unbiased observations of children's actual behavior, is problematic because teacher and parent ratings can be influenced by their awareness of participating in a study. Besides, in adolescence years, children are able to articulate certain goals they are trying to accomplish in particular domains of life (Shiner, 2010, p. 1091). For Kristin Anderson Moore, Laura Lippman, and Renee Ryberg (2015)

Information about a child's behavior, knowledge, attitudes, and values is more accurate if it comes directly from the child or adolescent, if possible. Nevertheless, the perspective of the parent, a teacher, or other observer is also useful. For example, a child might be the best informant about his or her subjective emotional well-being and risky behaviors; however, a teacher could report on how frequently the child fights or disrupts the classroom, and a parent can report on a child's behavior and activities in the home. The child can be a primary informant from about age 8 or 9 going forward. (p. 6)

Informal discussions with students were used as the means of collecting qualitative data about their experiences, views, and perceptions across their school years (K-12). They were discussions with a former teacher, without their parents' presence. Within this context, students felt comfortable with me; they were never reluctant to speak and none of them gave 'embellished' answers trying to please me; the discussion flowed effortlessly, as a natural flowing conversation between me and them. The discussions with students began by the fall of the first elementary year and lasted 12 years, through age 18 (12th Grade). I met with the children once or twice a year, both individually and collectively. I never took notes during our conversations but right after I updated the diary I kept for my descriptive remarks. During these discussions, I gathered data about students' school scores. These data was confirmed by the mothers in the interviews.

In order to assure credibility and to describe the participants' thoughts, feeling, and ideas as accurately as possible, I often paraphrased their answers and then asked them if I understood correctly what they meant. In several cases, I used to go back over some of previous comments

made by the students in order to detect inconsistencies and contradictions (this practice was also implemented in the interviews with the mothers in the study).

I also kept reflective diary in which I wrote down my observations, thoughts, concerns and feelings, following the recommendations of Robert Burgess (1982). My thoughts and reflections were written consistently each time and as quickly as possible after the conversations with the students.

The non-structured questions gave respondents the freedom to express their views and provided me 'rich data', as to gain in-depth insights into their lived experiences within a particular context. Students were given the opportunity to expand on their own beliefs in response to my questions, through a personal manner. The content of the discussions varied as children grew older yet there were 'persistent themes' that I was discreetly trying to bring to light (spiraling questions). Core elements in these informal discussions were: their current news, their problems at school, their feelings regarding their schooling, their attitudes towards studying, their relationships with peers and adults, the influential people in their life, their academic aspirations, their future plans and dreams. Apart from that, other elements were those of self-esteem, life-concept, their level of confidence in their academic abilities, and their expectations by themselves and by others.⁵ The vast majority of the issues and situations that arose during the discussions were highly interconnected.

In particular, in several occasions in my meetings with the students, I asked them to describe their character in a few words. That is, the conversations with the students were used as a tool to look for their perceptions about themselves (self-ratings) and upon their personality traits. The students, in adolescence years, seemed to be aware of most of their personality traits and were capable to admit their strengths and weaknesses. In their descriptions, I found further support for the validity of the *Big Five* personality traits.

A distinct core element in the discussions with the students was that of their engagement with school. After a critical literature review (Meece et al., 1988; Marks, 2000; Ainley, 1993; Jimerson et al., 2003) I built a four-

⁵ *Big Five* taxonomy originally discovered to organize traits in adults but more recently it is found to be as relevant in school-age children (Shiner & DeYoung, 2013). A recent study of youths ages 10 to 20 (Soto et al., 2008) demonstrated that youths' personality self-reports increasingly conform to a *Big Five* structure with age (Shiner & DeYoung, 2013, p. 122).

component engagement model: (a) behaviors: participation in classroom procedures, paying attention, concentration, time devoted on homework, effort, persistence, compliance with school rules and classroom norms, and non-disruptive behaviors (such as absences, skipping school, and bullying) (b) emotional engagement: positive affective reactions in the classroom, interest, satisfaction/ dissatisfaction from daily school routines, inner motivation, sense of safety, feeling of belonging to school, teachers support, family support, relations with the peers, learning-teaching climate (c) academic and cognitive engagement: autonomy in learning, motivation to learn, personal investment, self-regulatory strategies, use of cognitive strategies, metacognitive skills, memorization skills, level of understanding the content of school subjects, perseverance in completing tasks (d) personal variables: demographic characteristics, self-efficacy, self-concept, self-esteem, and self-regulated learning strategies. This categorization is also supported by more recent studies (see Christenson et al., 2012; Wang & Eccles, 2012; Fredricks et al., 2011). The above factors became part of a discussion in a non-direct way.

In general, none of the participants answered that they felt unsafe in school –for instance, bullying– and none answered clearly that she/he went to school because they wanted to learn. Only one of the students (Jason) showed behavior problems out of school (he was arrested once for inappropriate behavior); none of them demonstrated bullying or other inappropriate behavior in school (they tended to follow school rules; only Jason demonstrated occasionally inappropriate behavior in class). All of them reported school as a source of stress, more or less. All of them demonstrated a sense of confusion when seeking their identity as learners.

What were students' comments about school in their adolescence years? A family-type school; fewer lectures, fewer tests and less homework, and more meaningful learning; more face-to-face interaction in class; human-centered, rather than managerial, procedures in school; a kind of school where they can all be individually visible and supported both emotionally and academically; no need for compliance, less control and conformity; more opportunities to share their ideas with their peers and teachers; more chances in order to determine their goals and the ways to achieve them. In general, the participants believed that school serves one dominant function: inculcating conformity based on submission at every domain (thinking, behavior, performance, assessment), following the rule 'the weaker the control, the more likely there is to be trouble'.

All in all, the participants had valuable insights about school. Students' own attitudes and perceptions of their learning environment, though often overlooked, are vital for understanding student performance, particularly regarding their feelings of self-efficacy and competence ("I can do it"), their motivation ("I want to do it"), and their sense of responsibility for learning ("I will do it") (Anderson, 2002). Their views are sometimes more accurate even than those of an experienced external observer. Listening to and understanding students' voice, and gathering and analyzing data on student experiences and beliefs opens windows into their thinking that can benefit both practice and research.

Interviews with parents

In this study, I use the terms 'parents' and 'family' interchangeably. Although I recognize that these terms are not identical, the later is broadly used in the literature. Also, the term 'parents' is sometimes used in excess as only the mothers responded to my invitation for the interview.

When the children were at kindergarten, the mothers were invited to school in order to review the results of the observation. At this stage, the mothers were not interviewed in a formal way; they were just asked to make remarks, and to add anything that they felt was noteworthy about their child. The interview-type meetings were conducted towards the end of the academic year.

For the interviews with the mothers, I met them at their primary residence, a few months after their children's graduation from high general /vocational school. The interviews focused on their observations and perceptions regarding their children's academic progress, social relationships, and behavior in school years. In addition, the mothers were asked to elaborate their relationship to their children within the family and beyond the school setting. In other words, the interviews examined children's learning and development through the parents' perspectives.

At the end of the interviews, the mothers were asked to evaluate their children's personality traits on a basis of a 3-point Likert-type scale, with three frequency choices: very true, somewhat true, not true. The list of traits included items structured according to the *Big Five* higher-order domains (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism, as they appear in the students' profiles) with special emphasis on academic competence and school behavior and progress.

The interviews were semi-structured and interactive, lasted from sixty to ninety minutes and were audio-taped with the interviewees' consent. The majority of the questions were open-ended aimed to provide as much scope as possible for mothers to bring up issues of concern. Once the interviews were verbatim transcribed, and in order to ensure accuracy and trustworthiness, the transcripts of their interviews were given back to the mothers to review them.

The advantages of semi-structured interviews and open-ended questions of the interviews are several. Semi-structured interviews are valued as a research tool for their ability to identify information about participants' views and to illuminate complex issues, which may otherwise go unnoticed (Mukherji & Albon, 2010). Smith (2003) states that semi-structured interviews provide richer data as they allow "a greater flexibility of coverage" (p. 57). According to Kerlinger (1973) open-ended questions enable the interviewer to clarify misunderstanding (through probing), detect ambiguity, and make better estimates of respondents' true intentions, beliefs, and attitudes (p. 484).

To form the axes of the final interview I took into account the fields of the research program *Social and Character Development Research Consortium* (2010) and the questionnaire that Hunter Gehlbach and his colleagues constructed for the Harvard School of Education (Harvard Family Research Project, 2010). Also, I asked the mothers to look back and reflect on their children's school years, teachers and their practices. The topics were as follows: (1) children's academic achievements (e.g., parents' beliefs for children's academic performance) (2) children's emotional and social development (3) children's behaviors (e.g., parents' beliefs and standards for children's behavior) (4) school climate (e.g., how do they evaluate school climate regarding academic and social standards?) (5) parental support and parent self-efficacy (e.g., how confident were they in supporting their child's schooling?) (6) parental engagement and responsibility (e.g., how engaged were they in their child's schooling, how they tended to view their roles in different aspects of their child's schooling?) (7) school program (e.g., how effective are the curricula? does organizational structure of school program match students' needs? how do they perceive teachers' roles in different aspects of their child's schooling?). Special emphasis was placed on the domains of responsibility for learning and on motivation. The prepared questions served as a guide for discussion, and not as restrictive condition, as to ensure the integration of all emerging issues.

The method used to organize and analyze the data was the *Content Analysis* which was based on the thesis of Patton (2002) about means of distinguishing motifs, themes and categories in a body of data. Miles and Huberman's (1994) position that "coding is analysis" (p. 56) was also taken into account. Prior coding was not employed; all the categories were derived from the frequency of the motifs and themes that emerged from each individual interview. Following the initial coding, and the grouping of themes, the categories stood out. After that, the whole body of material was re-examined through the glass of these categories and some improving amendments were made.

The mothers raised issues beyond what was asked by me and gave broad responses to my questions. They talked a lot about their children but also about their own stress regarding their children's schooling and their efforts to make wise educational choices for their children. In the same time, they identified the need for tools that could help every parent to support her/his children's development. More than 30 thematic categories emerged from the coded data of the interviews with the mothers. The most prominent were: high expectations for their children's behavior and academic progress; encouraging their children to give maximum effort and obtain certificates; discussing further educational and career options with their children; supervising their behaviors and their associations with peers (all mothers said that they knew their child's friends and they used to advise their children to "stay out of trouble and avoid bad friends"); monitoring school attendance (especially truanting from school, inappropriate class behaviors, and cheating); checking if their children had completed their homework; the extend to which they trusted their children in their choices; the way they addressed their children's need for autonomy; discussing relations and problems with peers (support and guidance); discussing children's judgments about their teachers; their children's positive/negative attitudes towards school and teachers; the belief that the teachers did not care enough about their children (their children "could work harder if teachers provided the necessary support" in Charlie's mother words); and the belief that the present school system was responsible for the decrease of their children's interest in learning (criticism of school and concerns about the quality of the educational system). The above categories are consistent with those identified by Catsambis (1998). At this point, I want also to add that, as it is mentioned by Shiner and DeYoung (2013), "parents' reports on their children's traits show structural continuity of the *Big Five* traits by the time children are school-age" (p. 121).

Finally, when the mothers were asked about the role of the father in their children's education they named obstacles that did not allow them be more involved. With respect to this aspect, the mothers made statements similar to the following: “He works too hard and he has no energy or time to be actively involved in our child’s schooling”, “He is very busy; he occasionally checks to see if the homework has been done”, and “the lack of his involvement is a problem but we can’t do anything else”.

FINDINGS AND DISCUSSION

For the purpose of the present longitudinal study I gathered data from various sources across 15 years. As expected, a lot of major issues emerged from this study. The results revealed insights about the participants' school success, attitudes towards schooling, and well-being, and provided at least partial answers to the research questions initially posed. When I began to analyze the data, I realized that there were more than 30 variables. In the present analysis and discussion priority was given to the most prominent factors that have been found to have a strong influence on students' academic trajectories and life progress.

In particular, I focus on the correlations between the students' overall academic and beyond academic achievement, their individual characteristics, the kind of parenting they experienced (and other family variables), and their school experiences. The differences among participants with regard to their personality traits, school entry skills, and non-cognitive characteristics (self-esteem, self-regulation) are discussed in detail. As the study is qualitative, much data is not included and discussed in the present work, such as gender differences, the amount of time that the students spent on homework, being with friends, watching TV or playing video games.

Once all data had been collected I started to study it in detail to see what themes emerged, to analyze them, interpret what was found, and draw conclusions. Initially, the data (from observation, interviews with parents, and discussions with students) was organized separately. The next step was to bring it together for thorough analysis. By this analysis, I was able not only to discern themes and patterns, but also to identify recurring issues across time (such as the role of teachers, relationships between children and parents, and their views upon the current educational system) which appeared to fall under similar categories. In this phase, initial themes were merged and new more cohesive groupings were created.

After that, I reviewed the results and reflected on the data according to each research question, looking for meaning and constructs. The process of meaning making evolved the examination of frequency of patterns, namely of issues and concerns repeatedly reported by the participants. The results that were initially derived were continually reworked through the

subsequent analyses of data, and in consideration to the findings of other researches identified in the literature review. Since my research was not quantitative no statistical analysis was necessary.

The varied methods I used, and as I had assessments on the same individuals at several points in time, have allowed me to explore children's individual differences across their school-years and to code their behaviors and beliefs in a more valid fashion than would be possible with reliance on a single method. It is fair to say that students' observation had yielded valuable information. Qualitative analyses guide the interpretation of the factors that influence participants' attitudes beyond what a survey or questionnaire would allow. According to Brannen (2005), two of the four functions of combining methods are (a) elaboration or expansion ('the use of one type of data analysis adds to the understanding being gained by another') and (b) complementarity ('together the data analyses from the two methods are juxtaposed and generate complementary insights that together create a bigger picture') (pp. 12-14).

It is rather difficult to know how truthful a respondent is being (the simple truth is that people sometimes lie). Trying to overcome this challenge I realized how important was to cross-correlate the data, over and over, as to ensure the reliability of my interpretations. Following Brannen's work (2005), the mixed methods I used gave me the advantage to elaborate, expand, confirm, explain, and interpret the data gathered through the informal conversations with the students and the interviews with the parents as well. Overall, I had the opportunity to confirm and validate the data provided by the respondents (students and parents) as all of them were members of the same community.

The cross-checking of the data helped me to detect some inconsistencies mostly in parents' responses. For example, Jason's mother, commenting on her son low grades, emphasized her son's inability to counter his friends' distracting influence while Jason himself, unashamedly, blamed himself and stated that his low scores were due to his laziness. Jason's close friends added that he used to put off his work and assignments to the last minute. Certainly, the students' comments and the mothers' comments aligned in some instances and varied in others. However in several topics, students' and mothers' views complemented each other and were not diametrically opposed.

Finally, considering personality traits, I realized that it is not enough to simply find out someone's dispositional dimensions such as Extraversion

or Neuroticism. Certainly, the *Big Five* traits provided a rich picture of children's individuality. But it would be risky to reach to conclusions without taking into account students' ideas about themselves and the world (what they want in life, how they make sense of who they are, how they translate their desires into goals). This is valuable information which must not be disregarded. In this context, the conversations with the students helped me to form a more detailed picture of their uniqueness.

Do students maintain their initial interest in school subjects across the school years?

The first finding of my research is that students gradually lost their interest in school. By 'interest' I mean things such as joy, enthusiasm, eagerness, positive attitudes, and active participation in school procedures. Personal interest characterizes students whose pursuit for knowledge continues beyond the classroom walls and is considered to be at the heart of long-term intrinsic motivation (Sinagatullin, 2009; Hidi & Renninger, 2006) and is positively related to greater attention, connection to prior knowledge, memory, comprehension, deeper cognitive engagement, thinking, goal setting, and achievement (Schunk et al., 2008; Hidi & Renninger, 2006). The oppositional term of interest is the one of boredom, an unpleasant emotional state which can affect students' motivation, effort, self-regulation and their academic achievement (Pekrun et al., 2010). Interest and enthusiasm form the bedrock which any educational system ought to be based on.

Personal interest, as it relates to motivation, provides the impetus for a student to seek out learning as a pleasurable experience in a goal oriented manner. There is an agreement among many researchers that interest is a psychological state which is influenced by individual characteristics and environmental and situational factors as well (Tsai et al., 2008; Schunk et al., 2008; Hidi & Renninger, 2006). It is also known that human brain likes interesting activities and is more available for learning when learning is joyful. In contrast, boredom puts the brain in stress, which is likely to shut down learning (Gregory & Kaufeldt, 2016; Willis, 2006; Erlauer, 2003). In short, learning is more effective when it is linked to students' interest. When interest decreases, difficulties increase. The higher the interest and satisfaction –and thus the lower the anxiety and boredom– the greater the engagement (Gregory & Kaufeldt, 2016). For Alfie Kohn (2000), when interest appears, achievement usually follows.

In the present study, all students at first Grades (K-3) were active and involved in the construction of their own knowledge but gradually the love of learning fell away. One participant (Jason) lost his interest in the core school subjects from the 4th Grade and onwards, and maintained his interest only for Arts and Physical Education; for two others (Theo and Lucas) the starting point of this decline was the first year of Secondary School (7th Grade).

More particularly, during elementary years, all children without exception responded with remarkable willingness about their school experiences. Certainly, they expressed their feelings in different ways but they seemed to agree that they enjoyed being in school: they picked several school subjects as favorite, and identified several teachers as “great” and “cool”. When in the 5th Grade of elementary school I asked the students to think about a list of all the things that make them feel good during a regular day, all of them, except Jason, included school experiences among those which “fill them up.” So, the so-called ‘happiness factor’ was confirmed to be related to the interest in school.

However, from the first year of secondary school, their attitudes towards school began to change. Most of them demonstrated lack of willingness to talk about their school experiences. When they were asked “What about school?” they responded with a single word, mostly with “fine”, and they seemed somehow uncomfortable when I posed questions as such “what is your favorite school subject?” or questions about homework, preparation for class, classroom assignments, and anxiety for tests. Two students (Jason and Theo) who continuously failed in school tests used to avoid to discuss the causes of their failure.

As students grew older their comments were more sophisticated. Across high school period (Grades 9-12), they clearly stated that they were “bored in school”, they used to feel “corralled”, and when questioned further they illustrated that they were not “allowed to do anything else”. During those years, their answers were almost cynical as they were far more frustrated by what they experienced at school. The quotations below – the first from Jason, the second from Helen, and the third from Charlie– are illustrative and summarize the negative attitude of the participants:

What do you want us to do? Teachers come to class, talk –nobody listens to them, we let it go in one ear and out the other– and leave. You know, most of them have a monotone voice. [laughing while

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

imitating a teacher's way of lecturing]. *They only ask us to memorize dates and facts.* [when Jason was 16 years old] *Everything in school is useless. Why do we need to learn this stuff? Are we ever going to use this? [...]* *I just want to finish, get a job and do the things I want to do.* [when Jason was 17 years old]

I don't like many courses. I mostly like Modern Greek Language and Literature and Civics. [...] *I just want to get good grades to go to university.* [when Helen was 16 years old] *Most of the things we learn in class are useless [...]* *Most of us just want to finish school so that we can move on. [...]* *Everyone expects from us to show interest in school lessons ... and that makes no sense.* [when Helen was 17 years old]

We don't care about what is taught in class. Almost nobody cares about this stuff. [when Charlie was 15 years old] *Some of my classmates listen to music on their cellphones or surf in class. So, what? [...]* *Textbooks are filled with facts to remember. Why do we need all these? Is there anyone who can help us figure out why what they teach us in school is important to our lives?* [when Charlie was 17 years old]

From the above three quotes arises the issue of the usefulness of school knowledge, plus on further issue of transferring school knowledge into everyday settings. At least, schools need to develop ways to link classroom learning to students' lives within real-world projects (Panksepp & Biven, 2012; Bransford et al., 2000, p. 36). As John Dewey (1916) noted a century ago:

From the standpoint of the child, the great waste in the school comes from his inability to utilize the experiences he gets outside the school in any complete and free way within the school itself; while, on the other hand, he is unable to apply in daily life what he is learning at school. That is the isolation of the school – its isolation from life. When the child gets into the schoolroom he has to put out of his mind a large part of the ideas, interests, and activities that predominate in his home and neighborhood. So the school, being unable to utilize this everyday experience, sets painfully to work, on another tack and by a variety of means, to arouse in the child an interest in school studies. (pp. 89-90)

Another shared attitude that emerged from the conversations with the students is that “There is no fun at school”. A common misconception is that joy in school and learning are mutually exclusive. Goodlad (1984) wondered why schools “are not places of joy” and described boredom in school as “a disease of epidemic proportions” (p. 242). Both the quest of schooling as a pleasant and positive experience and the demand of happiness as a capstone of school practices was posed by theorists of Progressive Education many decades ago. Dewey is often cited as the most influential educational philosopher who wrote about the role of interest in learning and education. According to him, school should create experiences as work and play come together and in order to ensure that students are completely engaged in the moment (Dewey, 1934, pp. 16-17).

The minds of young students are wide open to the wonders of learning and the complexities of life. Children are naturally curious and highly imaginative. However, schools turn their enthusiasm for learning into joyless experiences and children gradually become less innovative (Shernoff & Csikszentmihalyi, 2009; Wolk, 2007). Low scores of enjoyment are reflected on negative attitudes and tendencies where school is reported as a bad period in their lives and an obstacle to do things that are more interesting (Manasia, 2015).

Recent studies suggest that the lack of interest and enjoyment in learning is one of the major facts affecting the achievement of educational goals. Their results indicate that the school environment is usually related to a negative spectrum of emotions: anxiety, anger, frustration and boredom (Manasia, 2015). In Bridgeland, DiIulio and Morison’s (2006) survey of 470 dropouts, over half of them said they left school because their classes were boring and not related to the real world. In a large-scale study –over 350,000 students– showed that 98 per cent of students in the class of 2008-2009 in public high schools (40 States in the USA) felt bored at school at least some of the time, while two-thirds of them felt bored every day (Yazzie-Mintz, 2010). Gaynor Attwood and Paul Croll (2015) gathered data from a large-scale government-funded survey in order to address the long-standing issue of truancy among school pupils. Particular variables were found to be associated with truancy and one of these variables was boredom: students who reported truanting behavior said that they did so because they were bored (20.2%) while about 70% of the sample identified some aspects of school that they disliked or that bored them as a reason for missing school. Notably, the great majority of truants did value school and did think that most teachers were fair.

As emphasized by John Hattie (2012), a widely cited education researcher, many students lose their interest in school because they cannot keep up while others are bored because of the lack of challenge. When students feel that schoolwork is not relevant to their daily lives, that they have little or no choice in what they study, they cannot experience “flow” and there is less probable to do things “for the sheer sake of doing it” (Csikszentmihalyi, 1990, p. 4). By the same token, Bertram and Pascal (2002) link effectiveness in learning to active involvement in teaching-learning processes and to children’s ability to bounce back a frustration and maintain their enthusiasm for learning, among others (pp. 248-249). Mihaly Csikszentmihalyi, Kevin Rathunde and Samuel Whalen (1993) question the view “if the material is well organized and logically presented, students will learn it” and write: “[s]tudents will learn only if they are motivated. [...] Hence we cannot expect our children to become truly educated until we ensure that teachers know not only how to provide information but how to spark the joy of learning” (p. 195). Nalan Aksakal (2015) proposes the “edutainment approach” –a marriage of education and entertainment– which is comprised by a mixture of many items (such as game, stories, visual materials, animation, video) and a place where learners both have fun and learn. Edutainment uses methods and teaching materials that attract learners’ attention and make learning more enjoyable, through experiences based on real-life, in order to increase students’ enthusiasm and excitement for subjects which are difficult to learn.

In a longitudinal study of students who were identified as gifted at the beginning of high school, it is found that only some of them had developed their talents by the end of high school. What was the reason for this? According to the researchers it was primarily enjoyment: those who enjoyed what they were doing over the short term had deployed their talents (see Csikszentmihalyi et al., 1993). Zinn (2008) summarizes the research on the issues of interest, boredom and fun in learning, points out that students – across many nations– report that they are bored in school, and discusses fun as a key component of students’ intrinsic motivation. Although young children enter school with a surprising desire and will to explore the world, and they really like being challenged, they lose their joy for learning across school years because most educational systems are mainly orientated towards class assignments and exams rather than learning itself. Apart from that, the affective dimensions of teaching and learning, namely the non-cognitive skills which include motivation, emotions, self-esteem, conscientiousness, self-control, curiosity, courage, and persistence, among

others, are often overlooked (Opitz & Ford, 2014; Farrington et al., 2012; Panksepp & Biven, 2012; Ravitch, 2010).

There is widespread agreement that one of the major transitions to happen in the lives of young children is the one from family to formal schooling (Rothe et al., 2014). Kindergarten entry, for Allen and Kelly (2015) is “a point of discontinuity for young children that has received increasing attention in recent years” (p. 180). As for the participants of this study, the transition from family to kindergarten became smoothly. They entered elementary school full of enthusiasm to learn new things, fully expecting to succeed in school. During the kindergarten years they found school very enjoyable, were intrinsically motivated, and demonstrated huge interest for the school curricular activities. The joy accompanied children in the first years of primary school (during the first three years the children expressed constantly their interest in learning) and started to fade away by secondary school. In high school years (Grades 9-12) apathy took the place of joy. Is it possible that this was due to the loss of their interest? Even those students who achieved high grades reported that they did not enjoy being at school, completing homework assignments, and studying for tests. Maria, for example, despite her lack of interest in many school tasks, she continued to strongly pursue her academic goals.

On the other hand, all students stated that they enjoyed learning outside school, through entertainment activities like listening to music, watching films and TV programs, surfing in Internet, blogging, creating their personal webpages, and playing video and computer games. Through these activities they could acquire fluency in English, find the information they wanted, learn from their peers or from experts, develop skills in programming, and write down their thoughts and ideas. It is clear that learning outside school was enjoyed for its own sake.

Students' interest varied across school lessons. In the last Grade, two high achievers, Maria and Helen, characterized the content of some school subjects as “rather interesting” while all the other participants said that the school subjects were not interesting because they were “not useful”. Lucas and Theo also said that the lack of their interest was due to the high level of competition in classroom. It is important to note that all students shared the opinion that teachers could considerably increase or decrease their interest. The last view emerges from several studies which indicate that teachers can influence students' interest by proving to students that the material is connected to their goals and the real world (Jang, 2008) and by designing

activities which are attuned to students' interests (Wilson et al., 2011). The participants of this study –children and parents– believed that school does its best to make students aware, once for all, that the purpose of school learning is to pass the exam and that school success is determined by the plethora of facts students have to memorize. Sitting in a desk for hours, listening to teachers who lecture about things with no interest, and completing meaningless worksheets, it is no wonder that students do not like school.

Thus, education policies have to invest on creating stimulating learning environments, by inducing students' curiosity and inspiration. For Gregory and Kaufeldt (2016), a large population of students may become bored and disengaged as the school lessons lack relevance to their real world. Their passive receptivity to learning with a lack of emotional and cognitive engagement is viewed as apathy, when actually instructional mediocrity is at the root of the problem.

To what extend is school responsible for the decline of students' interest? Is it utopian to keep students activated in school? Is it too difficult to offer them the excitement of discovery, to maintain, nurture, and enhance the curiosity that they already have during elementary years? The findings of the present study lay the groundwork for determining the ways in which we can capture students' natural eagerness to learn and increase their interest in school subjects. The necessary changes should mostly do with secondary education, since this is when most students begin to lose their interest in school learning. At the very least, we ought to re-think the conditions under which students can be intrinsically motivated and actively respond to learning opportunities. If anything, we ought to understand that the argument "you must learn it because it will be good for you" is not convincing for students. Above all, we must show concern not only about students' learning but about their well-being as well.

Are high achievers more engaged in school?

The second finding is about school engagement. We all know that in a regular classroom, some students are more engaged whilst others, though *present* in classroom, make little or no effort to participate. We also see students who are not motivated in school, being highly engaged in out-of-school activities (basketball, dance lessons etc). School engagement is an underlying theme in recent educational research.

While different researchers use different terminology, student engagement has been often used to refer to students' general attitudes towards school and their willingness to participate in school activities. It is mostly conceived now as a complex multidimensional construct comprised of multiple interconnected dimensions, which it includes behavioral, emotional, and cognitive components (the interplay between students' emotional states, their behavioral engagement, and the way they learn academically) (Wonglorsaichon et al., 2014; Wang & Eccles, 2013; Wang & Eccles, 2012; Fredricks et al., 2011; Gibbs & Poskitt, 2010; Yonezawa et al., 2009; Fredricks et al., 2004).

Student engagement is not about following the school rules; it is about students who are self-motivated, inspired, find meaning in school learning, and want to learn (purpose and will) in classroom in a thoughtful manner; it is linked to intrinsic motivation, affective learning, intellectual stimulation, and achievement (Froiland & Worrell, 2016; Bolkan, 2015; Meyers et al., 2013). Ming-Te Wang, John Willett, and Jacquelynne Eccles (2011), guided by the theoretical framework proposed by Jennifer Fredricks and her colleagues (2004), developed an instrument that captures all aspects of school engagement. They grouped various indicators used to measure school engagement into six first-order factors (Attentiveness, School Compliance, Valuing of School Education, School Belonging, Self-Regulated Learning, and Cognitive Strategy Use) and found that these six factors can be further grouped into tri-dimensional second-order factors: Behavioral Engagement, which includes school attentiveness and compliance; Emotional Engagement, which includes school belonging and valuing of school education; and Cognitive Engagement, which includes self-regulated learning and cognitive strategy use. Their research supports further the notion of the multi-dimensional nature of school engagement and provides a tool to identify groups of students who are at higher risk for low engagement in school (see also above in the unit "Discussions with students").

Much has been written about how student engagement can promote their school progress. There is evidence that students tend to succeed academically when they feel socially connected, satisfied and at ease at school –though feeling happy, safe and part of the school community should be considered as ends in themselves (see OECD, 2016, pp. 120-123). Engaged students are more likely to enjoy their coursework, to put forth the effort required for them to learn something, and to work harder with the goal

of mastering the material instead of simply working towards a grade. They can evaluate their own potential as learners (self-concept) and manage their learning (Bolkan, 2015; Walker & Greene, 2009; Skinner & Belmont, 1993). Wang and Eccles (2012) write:

The study of engagement as multidimensional and as an interaction between the individual and the social environment helps us to better understand the complexity of adolescents' experiences in school and to identify antecedents of engagement that could be the target of interventions. [...] [R]esearch in the area of school engagement must include attention to the multiple social contexts with which adolescents interact and no single variable will fully or adequately explain the engagement outcomes; by extension, no single intervention will be able to promote adolescents' school engagement (pp. 891-892).

Feeling connected to school involves a sense of belonging and enjoyment, a belief that school is important, high levels of concentration in school classes, and a sense of being accepted. Conversely, disengaged students have feelings of anxiety and incompetence, and believe it is easier not to do something (Gibbs & Poskitt, 2010; Tsai et al., 2008; Thompson et al., 2006; Skinner & Belmont, 1993). In a nutshell, school connectedness is positively related to academic outcomes and desire for lifelong learning. Consequently it is negatively related to poor attendance, school failure and dropout, and problematic behavior and violence among adolescents. It acts generally as a protective buffer against many risks (Kurniawan & Dewi, 2016; Christenson et al., 2012; Fredricks et al., 2011; Monahan et al., 2010; Marks, 2000). Although engagement may sound as a cliché to someone's ears the clear truth is that disengagement and boredom constitute a toxic combination for every learner. Joselowsky (2007) adds a poetic tone to the discussion writing that the path to student engagement "starts where young people are and helps them to chart a course that will take them where they need to go. On the way, the more they can find and use their voices to express who they are and what they want, the greater is the likelihood that they will seek and find what they need. Engagement is a habit of mind and heart. It is what we want young people to cultivate not just to get their diplomas, but as a lifelong way of being" (p. 273).

During adolescence, school connectedness promotes long-term positive youth development, including greater emotional well-being and

better academic outcomes. Yet it seems that during the secondary school period students lack interest in school –some of them become listless– and do not find schoolwork meaningful or engaging (Martz et al., 2016; Christenson et al., 2012; Fredricks et al., 2011; Monahan et al., 2010; Shernoff & Csikszentmihalyi, 2009; Osterman, 2000). When they reach high school, more than 50% of them become gradually disengaged from school, reporting that they feel they are not an essential part of their school (Kurniawan & Dewi, 2016; Klem & Connell, 2004). This lack of connection affects their academic performance, behavior, and health negatively (Blum & Libbey, 2004). So, how could we trigger students’ interest and support them to become intrinsically motivated in order to increase the level of their engagement? What factors cause the decline of school engagement?

From a review and synthesis of the literature, school engagement is causally linked to a series of internal and external factors, such as students’ prior experiences, their attitudes towards learning and school, their intrinsic interest; family status and support; teacher support; personal interaction between students and teachers; acceptance by peers; school environment; teaching methods; classroom management; school size; the amount of time that teacher talk; and the challenge of curricular and extracurricular activities (Martz et al., 2016; Wonglorsaichon et al., 2014; Hattie, 2012; Monahan et al., 2010; Gibbs & Poskitt, 2010; Ravitch, 2010; Sinagatullin, 2009; McNeely et al., 2002; Silins & Mulford, 2002). Specifically, Eccles and colleagues (1993) investigating the causes for diminished student motivation and engagement as children progress from elementary to high school found out that the impersonal educational environments in high school were out of sync with the needs of adolescents.

For Wang and Holcombe (2010), school engagement declines, in part, due to changes in the social context that adolescents experience as they move into and through secondary school (e.g., larger school, less teacher–student interaction, and shifts in social support from teachers, peers, and parents). Grobstein and Lesnick (2011) correlate the issue of engagement to the problem of “preparation-driven” curricula. The authors suggest that this type of curricula requires students to accept that the material and experiences they are asked to engage with will at some point be meaningful in their future lives even if there is no good reason for them to believe so in the present. The result is that many students have difficulty engaging with the material. Even students who are persuaded to take seriously the curriculum as offered, they may display mastery on examinations but the

impact of the learning experiences is transient with little transfer to other classes, much less to other life situations.

Ming-Te Wang and Jacquelynne Eccles (2012) conducted a four year study (family sample N=1,472; teacher sample N=135) in order to explore individual trajectories of school engagement over the secondary school years, attempting to bring a multidimensional and developmental perspective to the study of school engagement. In particular, the researcher examined the trajectories of four indicators of school engagement –school compliance (behavioral engagement), participation in extracurricular activities (behavioral engagement), school identification (emotional engagement), and subjective valuing of learning at school (cognitive engagement)– from 7th through 11th Grades and investigated whether social support from teachers, peers, and parents contributes to changes in school engagement over time. Their main findings can be summarized as follows: the average growth trajectories of school engagement decreased from 7th to 11th Grades; supportive teachers play a particularly important role in reducing the decline of school engagement; peer social support is associated with reduced declines in participation in extracurricular activities, sense of school identification, and subjective valuing of learning at school; parent social support has significant impact on students' school engagement, and it is an even stronger predictor than peer social support.

In a more recent study conducted by Wang and Eccles (2013) it is found that student engagement is malleable and changeable, and can be improved by promoting a positive school environment. The authors conclude that talking about student engagement we ought not to focus only on student behavior (such as class attendance, turning in homework on time, and classroom participation) because emotion and cognition are also very important: when students feel that the subject matter being taught and the activities provided by their teachers are meaningful and related to their goals they become emotionally and cognitively engaged.

As described above, researchers and scholars have used various different terms to refer to the concept of engagement, such as connectedness, involvement, commitment, and sense of belonging. In some literature, engagement, interest and motivation are used interchangeably (Gibbs & Poskitt, 2010). Attempting to separate them, though they are interconnected, I regarded interest as the manifested behavior (in conjunction with other behaviors such as attention, persistence, enthusiasm, curiosity, pride in success, and effort), motivation as the inner drive, and engagement as the desired outcome, the ultimate goal.

In the present study, not surprisingly, it was found that students' engagement to school was rather low to low for all students in pre-adolescence and adolescence years and decreased with age –though none of them was a persistent truant and non of them, except Jason, displayed disruptive behavior. Although they felt connected to their schools across the elementary years, school connectedness began to clearly decline in the first year of secondary school (*Gymnasium*). In Christenson and colleagues (2012) taxonomy (as described in the unit “Discussion with students”), it appears that participants' emotional involvement was in very low levels while their mental engagement and their behaviors were directly related to their abilities. In high school years, three participants (Jason, Charlie, and Lucas) referred to peers at school as influential factors of their engagement but only at a social level: “I don't enjoy being in school but I enjoy breaks” (Jason, at 16); “I am bored in class but I have some friends at school, so it's OK” (Theo, at 16); Only Maria linked her engagement to school to her relationships with two of her teachers.

Undoubtedly, when participants entered secondary school, they faced new demands. Although their answers varied, all of them stated that classes and teaching techniques (like lecture style) were boring and that school just did not inspire them. Their answers / comments have as follows: “School creates parrots”, “I don't see much use of many of the lessons taught in school in my everyday life” (by all participants, in similar wording).

At this point, I would like to note that none of the students reported anxiety regarding her/his transition from elementary to low secondary school (*Gymnasium*). None of them had problems to adjust to the changes in their learning environment. One possible reason for this is that the secondary school building was nearby the elementary one, so the participants were familiar with its environment (facilities, teachers, organizational structure).

The transition to high school (*Lyceum*) was rather stressful for Theo and hard for Jason. They both showed decline in motivation and academic performance. A reason for this may be their increasing feeling of incompetence. Likewise, Gayle Gregory and Martha Kaufeldt (2016) conclude that students' beliefs about their abilities (self-efficacy) can greatly affect their level of motivation and engagement. On the other hand, for the rest of the students the transition was not problematic. However, they reported feeling of low connectedness to their schools. This might be related

to their transition from childhood to adolescence which is said to be a potentially difficult time: as teenagers enter secondary school they experience the onset of puberty (Eccles et al., 1993).

It was during my conversations with students across adolescence years that the multiple hues of de-connectedness stood out. The participants' answers revealed a negative association between school engagement and established school practices such as the emphasis placed on extrinsic rewards, tests, competing with others for good grades, working individually in rows, and being passive recipients of information. Despite the negativity, their comments conveyed a sophisticated understanding of the roles of youths and adults in school settings and of the effectiveness of certain teaching-learning goals (for instance, they highlighted the issue understanding *vs* memorizing). And, remarkably, when students were questioned further, it became clear that engagement for them was not about funny activities but rather about mind, ideas, and emotions, about a sense of adventure and inspiration. It was clear for them that school is not always fun. Regardless of the fact that they were bored in school they did not believe that all school subjects were insignificant and worthless per se. Helen told me that there were some students who were engaged in one class and disruptive in another. To a large extent, the results from the conversations provide further support for the idea that school could enhance connectedness by taking the time to understand what adolescents themselves find engaging, by assuring opportunities to meet their developmental needs, and by helping them to figure out how to make use of school learning.

A least expected finding of this study is that peers were not reported to play a major role in school connectedness. In the literature, peers are often mentioned as an influential factors regarding the issue of school engagement and performance (see Meyers et al., 2013; Christenson et al., 2012; Wang & Eccles, 2012). Building on previous studies, a 2015 report examined, among other things, the roles that social support and relationships with adults and peers play in decisions about staying in, leaving and returning to high school. According to the results, caring adults and peers can be potential sources of the types of support young people need for academic and social success. By analogy, having friends who engage in deviant actions may negatively impact school engagement (Zaff et al., 2015).

In the present study, the participants reported that it is good to make and maintain friendships but none of them said that was encouraged or discouraged by her/his friends to get higher grades. They stated that they

had fun in peer groups and could joke with each another. They were also observed showing trust to their peers: they kept secrets; they rarely turned in their peers, even those who sometimes did not behave in an appropriate way; they tended to align their opinions with those of their peers. But they never linked their school success or failure to their peers while they said that for serious decisions about their lives, they look more to their family. Peers are found to offer companionship, understanding and emotional support, but not academic influence or help. Participants felt connected to peers at school at a social but not at an intellectual level.

Another somewhat surprising finding is the weak association between students' engagement and academic success. This finding provides answer to the respective question. Students who had high grades were not found to be more engaged to school. While all participants were found as disengaged, four of them (Maria, Helen, Charlie, and John) managed to continue their academic studies in University. In particular, John used to put effort in all school tasks despite his clear dissatisfaction about homework. Maria and Helen, who had high grades, told me that they were not engaged but met the school tasks just because that was the only path to continue in something they wanted to study, to pursue their passion. Helen reported being more disengaged from school compared to Maria. Maria believed that learning matters and gave more temperate response than her other 3 peers:

I don't find school fun but I pay attention in class. We are expected to memorize than to understand. I can't just blame the teachers, because they are not responsible for the school subjects. [...] [When Maria was 16 years old] I like Poetry. And Civics. [...] Maths? ... I know that they are not useless but I don't see any usefulness for me [...] Most kids don't like school but there are some that get good grades in order to go to university. [...] No, I don't agree that school doesn't make any difference to us; I just believe that things could be much-much better! [when Maria was 17 years old]

I go to school because ... I just have to do it... it's mandatory. [...] My family wants me to go to university. And when I get good grades, my parents are happier than me [laughing]. I told my mom that there is no need to go to school. If you read the book it's the same. She went crazy [laughing] [...] Yeah, I always do my homework yet I believe that most of it is useless. Why do we need Chemistry or Algebra if we do not wish to become chemists or mathematicians? [When Helen was 17 years old]

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

I like attending school but I don't like homework. [...] No, there are subjects I like and others I don't. I'm fond of Math but not of History. When I have History homework ... I think it's a good idea not to have homework for the subjects we have no interest in. Or to choose to learn only the subject we want to. [When John was 17 years old]

These students perceived school as a mere requirement for entering university. In the last Grade of high school, when Helen was asked further she stated that she did not feel proud of her school accomplishments. The following year, the very same students when asked regarding their impressions and experiences at the university reported enthusiasm due to the academic challenges. Wong and Csikszentmihalyi (1991) emphasized this aspect noting that “students study hard not so much because they are intrinsically motivated or happy in their work, but because they want to achieve certain long-term goals such as getting good grades” (p. 563).

A closer look to Maria's story can shed light on the interlinked nature of connectedness and personal challenges: Maria “couldn't stand children”, in her mother's words, and “hated babysitting her younger sister”. That was the reason that University Departments of Education were excluded from her choices, in spite of her mother's efforts to direct her to this educational domain for her University studies. Surprisingly, during the very first semester at the University Department of Psychology she began to seek ways in order to work voluntarily with children with special needs. The university courses affected her favorably and motivated her to do something with meaning and purpose beyond herself. There are many students who, like Maria, have the desire to learn and do new things but school does not provide them with such opportunities.

Given the relationship between school engagement and academic achievement, one can make the case that it should be at the top of any list of priorities intended to help struggling students to stay on the right side of the line between success and failure. Sadly, and considering the results of the present study, school did not actively engage the participants. School did not help low achievers to take responsibility of their learning; it did not enable them to find ways to make learning a lifelong quest, and failed to develop the students' inner drive. As for the high achievers, school was nothing more than a required process; the mandatory path to take to get something they wanted and aimed for.

The later condition has not been adequately researched. It is in not easy to determine which inner and outer forces may have a bonding effect to

school and boost students' school engagement; it is not easy to understand its antecedents and consequences. Most of the aforementioned studies do not determine if commitment to the school is for its own sake, if it is *per se*, or for the sake of other goals, whether it is authentic or utilitarian. This aspect is highlighted in the study of Jelena Teodorović (2012) who deduces that "it is unclear whether students' motivation leads them to higher achievement, or whether higher achievement generates high motivation" (p. 105).

Certainly, the ideal condition may be students who evaluate and enjoy their daily life at school in terms of both process and outcome, as it happens in plethora of situations in real life: employees who love their job, chess players, mountaineers, musicians, and everybody, in general, who feels attracted to what they do, to the beauty of processes and the celebration of results, as well. Unlike, school processes and tasks were evaluated as non-desirable and, in students' words, as "boring", "useless", "tiresome", "enjoyable only by nerds".

And what do parents do? Most of them try to motivate and engage their children through extrinsic rewards and punishments. However, as the mothers of the study reported, practices like carrot-and-the-stick did not result in keeping up their children's engagement in school, a fact which is also illustrated by Mandel and Marcus (1995) who identified the ineffectiveness of many parental practices to positively affect children's engagement to school.

To conclude, the issue of engagement cuts across academic status as even high performing students exhibited the same degree of negativity and frustration as their less academically capable classmates. Given the importance of school engagement, more research is needed in order to detect and better understand the contextual factors and students' individual characteristics that influence or predict their connectedness to school. The experts in the field prompt us to focus on the forces responsible for school disengagement, on students who withdraw cognitively or emotionally, and on both apparent and hidden signs of the decline of their engagement.

Does family play an active role in shaping children's attitudes towards school, affecting their performance?

The third finding highlights the role that family plays in shaping children's attitudes towards school. In my research, parents were found to be involved in their children's schooling but there were differences in the kind and the

extent of their involvement. Parenting was found to have relatively small effect on students' academic decisions but stronger effect on their school performance. Thus, home environment in a broader view must be regarded as a factor that points to a student's success or failure. John and Charlie, for example, tended to view their siblings as mentors to their life and were intrinsically motivated by them for their educational future. It was also found that for some children the perception of the purpose of school demonstrated considerable inconsistencies between them and their parents.

First of all, I should mention that the mothers discussed openly about their children's behavior at home and school, and were able to acknowledge their child's faults. It is also worth-noting that most mothers' perceptions of their children's academic efforts and abilities were aligned with those of their children's and with my insights as well. That is, the views that students had of their own competence and school behaviors were not different from their parents' views. In all cases except Theo's, students' expectations were more or less aligned to parental expectations.

Through the analysis of the interviews, it became apparent that the mothers had different views about parenting. A common disposition emerged however: all mothers placed extremely high importance on the value of education; all of them expressed a great deal of concern for their children's behavior and progress in school. All of them, and particularly those whose children were academically able, emphasized "how important it is for someone to go to university". All mothers expressed their hope for their child to "find a good job". 5 out of 7 mothers (Lucas', Maria's, John's, Charlie's and Jason's) told me that they did not expect their children to gain high scores so much as and overall to get ahead in their lives and become good people ("good character"). John's mother, speaking about how she and her husband advised their children, said: "We did not demand that they go to university. But we made it clear for both of them that we wanted them to get as much education as possible." All mothers also said that it was important for them to help with their child's homework.

Parental expectations for their children to pursue higher education and grade checking and/or talking about grades did not predict achievement in school for all students. For Theo, his parents' high expectations were negatively related to his achievement (negative parenting is found to be detrimental to his academic attainment). On the other hand, good parents-children relationships and, more importantly, setting realistic and individualized expectations for school performance are found to predict

students' school success (as in John's case) and well-being (as in Lucas's case).

Students, from their perspective, reported a rather good relationship with their parents. In their way of thinking about school, I detected the tendency 'I go to school because of my parents'. At this point, I would like to open a parenthesis. To my question "Who has influenced you the most in your life?" (in the last year of secondary school) Maria answered "my grandma", Helen answered "my mother" Lucas said "my father", and John said "my sister and my father". Theo's answer was "I don't know" and Charlie's was "my brother" (Jason said, in a humorous manner, "Spiderman"). These answers indicate that family must be considered as an influential factor in students' lives.

All students affirmed that their parents talked to them about future academic and work decisions. The data revealed that the participants drew to a degree on family to find their way in the adult world, yet their choices and decisions regarding the next educational or occupational step were rather shaped by their personal experiences and the cultural context of the community. Only Lucas said that the choice of his educational next step had been taken jointly with his parents. For two participants (John and Charlie), their siblings, as 'significant others', appeared to influence their educational decisions and school progress. Students identified qualities such as trust, affirmation and pressure in parental involvement as key aspects in building the level of their commitment to their academic goals. Finally, I found no evidence that peers influenced them negatively or undermined parental efforts to support and promote participants' academic progress.

The parents' contribution to student achievement is considered as a critical one. Parents have the greatest impact on their kids' whole development. In a large number of studies on family involvement which have been carried out in recent years, it is recognized that the earlier that parent 'educational' involvement begins in a child's life, the more powerful the effect. When parents are involved in their children's education, students do better in school, regardless of family income, status, educational level, or cultural background. So, it is crucial to understand the extent to which parents create a home environment that encourages learning and engage their children in literacy activities at home.

Family involvement is conceived as a multidimensional construct; it can mean different things to different people (Froiland, 2015; Jeynes,

2005).⁶ It is an umbrella-term that includes a variety of parental behaviors and practices, directly or indirectly related to the education of their children and it is seen as a malleable factor of the student's home situation, which makes it a relevant subject for schools, educational policies, and research (Punter et al., 2015, p. 6). Many researchers argue that parents' involvement is one of the most important contributors to school completion and is indicative of a child's success in school than any other factor. Family is considered to have great impact on an individual's self-esteem, behavior, and social skills, on students' success in school achievement and attendance, and on attitudes towards school and academic success, at every developmental stage. Parents' attitudes and practices regarding school are associated with their children's engagement to school (Wang & Eccles 2012; Bodovski & Youn, 2010; Simons-Morton & Chen, 2009; Harris & Goodall, 2008; Mapp, 2004; Henderson & Mapp, 2002; Epstein et al. 2002). Children who trust their parents, who want to please them, and feel more obligated towards them tend to do better academically (Pomerantz et al., 2011).

Nevertheless, there is mixed evidence about the type and the amount of parental involvement and their impact on students' achievement at school. Different forms of involvement (e.g., support for autonomy) are found to be associated with higher test scores, whereas others (e.g., direct involvement) are associated with lower test scores (Sharp et al., 2001). Specifically, the relation between parental involvement helping with homework and student achievement is positive in some studies, but non-existent or negative in others. Some scholars argue that parental frustration about their child not performing as expected and parental unrealistic high expectations may lead to tensions between parents and children. Children with parents who tend to be overly involved perceive them as too controlling. These tensions may affect negatively a child's self-confidence and her/his performance at school (see Punter et al., 2015). In addition, there is an empirical body of evidence that parent involvement alone cannot make a significant contribution to student achievement. Students must also feel

⁶ The results from a research project carried out in the UK, aimed to explore the relations between parental engagement and student achievement, showed that although parental engagement was generally viewed as a 'good thing' by teachers, parents and pupils, there was no strong consensus about the benefits of parental engagement as it meant different things to the different respondents. Parents tended to view parental engagement as offering 'support to students' while teachers viewed it as a means to improve 'behavior and support for the school' (Harris & Goodall, 2008).

that their teachers support them and that they belong to school (Gutman & Midgley, 2000).

So, what kind of parent involvement are highly correlated with children's outcomes? And to what extent is parental involvement related to school performance? The most effective ways to promote early literacy development at home and the most important parental practices that were found to be accurate predictors of higher student achievement are: learning activities at home; reading aloud to children on a frequent basis in an interactive style; discussing regularly with their children about school and about their school progress; telling stories to children on a frequent basis; talking to children about books; the number of children's books they have at home; communicating high yet reasonable expectations for their children; organizing and monitoring a child's time such as limiting TV viewing; and helping with and checking homework (Petridou & Karagiorgi, 2016; Westerveld et al., 2015; Froiland et al., 2013; Gustafsson et al., 2013; Myrberg & Rosén, 2009; Henderson & Mapp, 2002; Bennett et al., 2002; Sénéchal & LeFevre, 2002; Whitehurst & Lonigan, 1998; see also Froiland, 2015). Recently, another area that attracts researchers' interest is the investigation of the availability and use of digital resources in home environment and their potential impact on students' progress (see Fraillon et al., 2013).

Research has also shown that children whose parents are more involved in their education have higher rates of attendance, school tasks completion, elevated grades and test scores. In particular, parents who foster new interests to their children, communicate their clear expectations regarding school, such as regular school attendance and homework completion, and parents who are involved by sitting with their children as they do their homework, or by asking their children about their day in school, can increase connectedness to school for their children. Moreover, students are likely to adapt well in school, to have better social skills, to show improved behavior, and to have higher grades (Teodorović, 2012; Albright et al., 2011; Bodovski & Youn, 2010; Simons-Morton & Chen, 2009; Jeynes, 2005; Harris & Goodall, 2008; Mapp, 2004; Barnard, 2004; Henderson & Mapp, 2002; Resnick et al., 1997).

Furthermore, parental discussions with children and youths about schooling are considered as beneficial to a child's success in school and they are associated with lower rates to absenteeism and dropping out and with higher levels regarding their willingness to take ownership of their learning and to persist on and complete their school tasks (Strand, 2014; Teodorović,

2012; Albright et al., 2011; Stewart, 2008; Jeynes, 2005; Barnard, 2004; Resnick et al., 1997). There is also evidence that these practices have lasting value and effects (Flouri & Buchanan, 2004; Trusty, 1999).

Another aspect of parent involvement is the aspirations parents have about their child's educational future. Numerous studies have indicated that parent expectations are positively related to their children's achievement throughout school years. In Froiland and Davison's study (2014), parental expectations were highly correlated with grades than any other variable in their study, including household income and parents' education. John Froiland, Aubrey Peterson, and Mark Davison (2013) examined the extent to which parental expectations (in both kindergarten and 8th Grade) affect both children's expectations in 8th Grade and their achievement. Their results indicate that early parent expectations for children's post-secondary educational attainment help set children on a trajectory for academic success; they have a stronger effect on 8th Grade achievement than home-based parental involvement. According to them, early parent involvement in home literacy is a predictor of later success for children.

My research contradicts, in part at least, the above suggestions. The conventional 'good parenting practices' were not associated directly with success in school. Though parents were reported as a continued source of warmth and support for the students and while the students stated that they felt connected to their families, it was found that family had influenced more their social and moral values and less their academical goals. Parents' expectations for their children's education were high, yet not always reasonable.

Since my data does not provide a direct answer to this issue, I shall discuss this finding in terms of some possible reasons. At first, it is reasonable to ask whether this fact was due to lack of liaison between school and family. Does school invest on family involvement? Does school respond to parents' needs? Do teachers and principles build practices in order to promote and ensure higher levels of parent involvement? How do teachers define parent involvement?

Joyce Epstein has identified six types of activities that schools use to involve families and communities: parent-education activities, communication between schools and families, volunteer opportunities, at-home learning activities, decision-making opportunities, and community collaborations (Epstein et al., 2002). In Greece the issue of parental involvement has only recently gained research interest since educational policy until lately did not support parents' active participation in the school

setting. In fact, parent-school collaboration is managed by the school itself while teachers define collaboration in their own terms without allowing parents any initiatives (Petrogiannis & Penderi, 2013).

Each of the mothers in this study talked about the need to collaborate with teachers to ensure the best for their children. Sadly, all mothers stated that they were seldom invited to school to share opinions and concerns about their children, about issues such as homework, behavior beyond the classroom, and school attendance. The school-family contact was limited to the formal parents' visit to school to get their children's report card grades. The parent-initiated contact was more prevalent than the teacher-initiated one.

There is strong evidence that positive and respectful family-school relations increase student engagement and improve academic performance, while poor family-school relations are linked to absences and misbehavior (Froiland & Davison, 2014; Harris & Goodall, 2008; Henderson & Mapp, 2002; Epstein et al., 2002; Van Voorhis, 2001; Trusty, 1999; Catsambis, 1998). It is obvious that school has to try more in order to find effective ways to build strong family-school partnerships, promote a mutually supportive relation between parents and teachers, and encourage parents to be active within the school life. Clearly, this is a demanding task given that there are 'hard to reach' parents who are reluctant or unable to work with schools (Harris & Goodall, 2008).

Another way to make sense of the quality of parent involvement in participants' education is to take a closer look at the nature and the effectiveness of various parental behaviors. At first, we have a wide range of findings which show that parents' education matters (Petridou & Karagiorgi, 2016; Sylva et al., 2014; Bornstein et al., 2013; Teodorović, 2012; El Nokali et al., 2010; Croll, 2009; see also Kaushal, 2014, p. 67), with mothers' higher education functioning as a more significant moderator of the relationship between students' academic achievement and their well-being than that of fathers' (Petridou & Karagiorgi, 2016; Crede et al., 2015; Fantuzzo et al., 2014).⁷ Parents who are highly educated do a number of additional things, such as supporting learning beyond school, to promote educational success (Froiland & Worrell, 2016).

⁷ The idea that parents' education and income affects students' academic achievement is supported by Bourdieu's (1986) theory of social capital and class distinction. According to Bourdieu, more educated parents are able to provide more cultural-social resources determining their children's success in school.

In the present study, given that parents' education was only up to high school level we might understand why a strong relation between parents' expectations and their children's academic achievement was not found. For example, Theo's mother told me in the interview that when she spoke to her son about school as a chance for a better life, he used to answer: "Neither of you studied at university; dad didn't study but has a good job. He earns a lot of money without a degree".

In several studies children's home environment (parents' educational level, learning activities, educational resources, availability of books, time spent on story telling, shared reading and games with numbers) affects school readiness and literacy skills (Westerveld et al., 2015; Hutton et al., 2015; Froiland et al., 2013; Gustafsson et al., 2013; Rodriguez & Tamis-LeMonda, 2011; Myrberg & Rosén, 2009; Kokkidou et al., 2005; Lara-Cinisomo et al., 2004; Hart & Risley, 1995). Above all, the effects of parents' education on their children's achievement are found to be mediated through the number of books at home (Petridou & Karagiorgi, 2016) and early reading activities with the children during preschool years. In other words, parental education influences the number of books available in the home. In turn, the number of books is related to the frequency of home activities oriented towards both literacy and numeracy, and these activities influence the skills that a child might develop upon beginning primary school (Gustafsson et al., 2013, p. 247; Myrberg & Rosén, 2009). In general, home literacy experiences are considered as protective factors and are found to serve as an important foundation for subsequent school progress (Froiland, 2015; Sylva et al., 2014; Froiland et al., 2013; Entwisle et al., 2005; Sénéchal & LeFevre, 2002; Burgess et al., 2002). This highlights the importance of taking into account a child's prior attainment before they enter formal education.

The present study provides strong evidence on this point as well. In my first interview, mothers were asked to describe what they used to do in the home environment to promote their children's language skills (early literacy practices). Only Maria's mother said that she used to read aloud to her daughter consistently, on a daily basis, in early years and used to provide her with frequent opportunities to interact with books on her own (shared reading, buying books, borrowing books from the local library). Charlie's mother and John's mother, though they said they used to read for pleasure they added that they had never pushed their children to read for fun. The other mothers said, in general, that they had bought many children books but many of them "stayed unread on the shelf".

An important thing to note here is that in the Greek public discourse, education is considered as a powerful vehicle for personal progress and social mobility. Good school grades matter so much as to the point of becoming a battleground at home. However, Greek parents expect and demand high achievement in the core subjects (Language, Math, Science, History) and show less interest in scores of the non-core subjects (Music, Art, Physical Education).

As stated in the unit “Interviews with parents” all mothers considered education to be a critical determinant of their children’s positive life trajectory and expressed clearly their desire to help their children succeed in school. Most mothers emphasized post-school education mostly as a means to find a better job. Regarding school assignments, all mothers embraced the notion that setting expectations around homework was essential to the success in school. But although they –and fathers as well– encouraged learning, conveyed positive messages about school, rewarded good grades, and communicated their expectations to their children, they were not intellectually involved: they demonstrated inability to provide their children with intellectual resources and literacy-rich environments, to expose them to a richer vocabulary, to help them express themselves in grammatically correct sentences, to effectively monitor homework, to help with schoolwork, and to put their children in a self-reinforcing cycle of academic improvement.

When they were asked to identify the level of their involvement in their children’s homework, all of them said that during elementary years, they were able to help their children. In secondary years, their involvement included mostly verbal encouragement, especially for the completion of homework, as well as reminding their children about the importance of getting good grades. During that period, as mothers reported, they were unable to provide their children with cognitive help with school tasks. Three mothers (Charlie’s, Lucas’ and Helen’s) in the sample expressed their frustration for being unable to be more effective in helping their children with their homework.

Another reason that the effects of parenting (parental disciplinary style and patterns of control) appear as rather weak in this study might be that their interventions were far less strong and constant. Although mothers reported that they used imperatives (e.g., “Go to your room and study”) and had high demands, they tended not to insist: absence of consistent rules and control strategies or inability to adhere to rules; almost no limits regarding

the amount of time their child used to watch television and play video games. At the same time, they demonstrated great concern about the opinion of others and they strongly motivated their children to conform with the community cultural standards and norms, and to show socially appropriate behavior (to behave differently when someone else was watching).

I can give two more arguments on this issue. The first is that in kindergarten years, almost all mothers provided their children with TV and video entertainment options. This was convenient for them because it kept their kids quiet. So, how fair is it for these mothers to complain (in the interview) that in high school years their children “instead of doing their homework, they used to watch TV”. Charlie’s mother said:

After school, when he got home, he wanted just to relax and watch TV. [...] Fortunately, he was competitive... and he had faith in his abilities and got rather good grades. I do not know how ... and with the least effort. He studied only a little. So many hours on video and less than an hour on homework ... [...] Yeah, homework caused tension in our home.

The second argument has to do with the reading habits in home. A recent report, using large-scale international data from 50 education systems, attest that parents' positive reading attitudes and behaviors are ‘contagious’: it is more common for children to have a positive attitude towards reading (to enjoy reading and to read frequently) when their parents also have this attitude (Stephens et al., 2015). In the present study, none of mothers (except Maria’s) demonstrated real pleasure in reading, none of them reported genuine interest in books (except Charlie’s). Apart from their direct messages about the importance of reading, they delivered indirect messages when they did not model the value of reading. It was easy for them to encourage their children to read and study but they had not realized that the home routines contradicted their own efforts to motivate their children.

In general, it is clear that mothers had little awareness that their behavior was somehow opposite to the behavior they desired to foster to their children. Most of them used to focus more on exams or good grades, and less on substantial learning. It seemed that they could not realize that parents are the child’s first teacher, right from children’s birth, and home is the first classroom. The consistency between their words and their actions was weak.

Apart from this general picture, there were differences among mothers regarding their role and specific issues such as opinions about the teacher's role. A closer examination of the theme 'parenting' can shed some light on this matter. Without a doubt, parents of different social and cultural backgrounds tend to raise children in different ways. But apart from that, every mother and every father has a very personal vision for their child's future. Parenting is a sensitive, personal subject, and can take many forms. One type can have a positive impact on a child's academic achievement and negative on another's. For instance, trust can bring achievement for a well-organized student but it might be non-beneficial for a student who tends to be lazy.

In spite of studies which indicate that parental involvement is always beneficial for a child's academic achievement, Maria's case breaks this norm. Maria's mother was less involved in her daughter's education because she felt that Maria does not need her help. Her parents trusted Maria and recognized her need to be autonomous. One might say that in adolescence years, Maria preferred to 'be ignored' than to be at the center of interest. Finally, Maria's parents did not share her future educational plans but they trusted her decisions. In short, Maria's intellectual abilities and her genuine interest in learning gave her another advantage: no pressure from her parents. In our conversations, when she was 15 years old, she had stated: "My parents are cool. I don't feel under pressure." This condition is explained in literature as follows: parents of low-performing students become more involved in their child's learning, while parents of students doing well at school, are more likely to support the autonomy of their child (Cooper et al., 2000 as cited in Punter et al., 2015, p. 8).

With regard to the factor of pressure for better grades, we may say that it had a negative effect on achievement in the case of Theo, but positive in the case of John. Why is that? It may be because John was a rather self-confident child and some pressure did not put his self-esteem in danger. Also, pressure in John's case was expressed in a friendly manner without his parents losing their trust in his abilities and efforts. The case of Theo will be discussed in details later in this unit.

Three of the mothers (Lucas's, Helen's, and Jason's) used rather *laissez-faire* practices. But there were differences among them. In Lucas's case, the *laissez-faire* practices had more to do with conveying messages about autonomy and much less with disinterest. In Helen's case, these practices reflected a more general cultural attitude towards life and

school/learning as well. Moreover, her mother told me that Helen had no need for push, just reminders from time to time demonstrating her concern. Helen stated:

Yes, I feel some pressure from my parents to do well in exams. But not very much ... every now and then. It may be that they see me finishing schoolwork very quickly ... OK, it's fine ...

In Jason's case, things were more complicated. Jason's mother spoke about her active role regarding completion of her son's homework but she admitted that she was rather passive when her advice did not seem to bring the expected results. She appeared rather confused regarding her son's school behavior. In the interview, she said that she used to criticize teachers or join her son's negative comments about school. Sometimes she used to take teachers' side while others she Jason's side. She gave plausible excuses for her son's poor academic performance (e.g., "teachers don't teach well", "teachers don't treat all students equally"). On the other hand, she said that Jason failed because he used to avoid his responsibilities and did not try hard. In my opinion, this discrepancy might lie in the fact that Jason's mother knew that her son was a misbehaving child but could not admit that she was not effective in helping her son to see a future for himself. Finally, I must also add that her confusion might stem from situations in the family's life (quarrels between her and her husband).

Conversely, John's mother never put any blame on teachers and reported that the responsibility for school preparation lies in parents as well. She felt secure about her parental practices, had an active role, and tried to encourage her child's educational steps. At the same time, she told me that she wanted her children to demonstrate responsibility, kindness, and perseverance. Comparing to the other mothers, John's mother had taken a higher degree of responsibility and relied heavily on her own practices. The notion of responsibility was central to her interview. For her, parents who are eager to avoid responsibility for their children's educational and behavioral problems are not "good parents".

Well, our role is ... being a good parent. [...] Being there for our children whenever they need us. [...] It's OK if he can't reach high. He knows that by this he would make us happy. But the most important is for him, for his life ... to have a good future. [...] Children need

responsible parents. Otherwise, they don't learn to behave, they won't be good people. [...] If you let children without any guidance they'll make many mistakes ... Kids watch us, they imitate us; how we act is an example for them. [...] We weren't afraid of saying "no" to John.

From this expert, it is obvious that John's mother was aware of the importance of parents' role. Her kind of parenting (i.e., sensitivity, encouragement, slight pressure, support for autonomy, interest in school) was associated with her son's greater motivation in school. It is also important to say that she appealed to him in a calm way (that was her communicative style in general). We can say that she contributed significantly to John's interest in learning and his efforts to succeed academically.

At this point, it is important to discuss in details Theo's case. Theo, in preschool and elementary years liked going to school. In fact, in elementary school he had excellent grades; he was able to acquire knowledge and complete assignments, only with some errors. I must add that in elementary years, Theo took private lessons (tutoring)⁸ in order to gain better understanding in mathematical concepts, skills in creative writing, and to get good grades in competitive tests. But in secondary years he started to experience difficulties and his grades began to deteriorate. This trajectory became resistant to change as he moved to adolescence. What was different for him? If one examines Theo's case, they can easily understand how parenting affected his attitudes towards school –and presumably his achievement. In the interview his mother stated:

He is not enthusiastic about something special. Is there something I could do to help him? I really don't know ... [...] His job was being a good student. The only decision he had to make was to try a bit harder.

⁸ In Greece, there is a number of private tutoring schools (Greek: *frontistirio*, in singular) operating alongside the public education and providing supplementary tuition, not only for weak students but also for students who want to be best prepared for the competitive national examinations (*Panhellenic exams*). Most Greek students attend classes at tutoring schools in the afternoon and evening, in addition to their formal schooling. In elementary years Lucas and Theo took private lessons. Lucas continued with his private lessons in low secondary school years (*Gymnasium*). In high school years, Helen, John, Maria, and Charlie, the students who attended the general high school (*Lyceum*), took private lessons in small groups in order to gain better grades in core school subjects and ensure their entrance in the Tertiary Education.

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

When you try you feel better about it and you can move on. [...] And I don't mean to drop everything else and study all day. But with him it was just the opposite. He dropped ... all school stuff and ... In that period, my days were one long nightmare. [...] Believe it or not, he never asked for a 'helping hand'. He denied to take private lessons in order to improve his grades.

Theo's parents used to provide him with safety and care but they did not trust him. From the interview with Theo's mother, it became clear that his parents were impatient with him, they couldn't make him believe he was worthy. In secondary years Theo's messages for help were silent –he did not asked for help directly as he knew that this could lead to more pressure by his parents– yet loud – as his anxiety was more than obvious. He refused to continue taking private lessons and started to deny putting effort because “he had to”.

During secondary years, Theo's mother constantly reminded him of the fact his behavior affected the family climate and used to appeal to him in a rather unfriendly manner. For her, the type of parenting she had adopted was expected to motivate her son to be more diligent. In fact, she gave him only a few opportunities to behave in an autonomous way. It is possible that her high demands for her son functioned as a reassurance for herself. Under this scenario, it is reasonable to infer that her controlling parenting style tended to backfire as it negatively affected her son's emotional well-being and self-esteem.

These findings imply that parenting may influence a student's performance in school. Children with parents who are less severe and do not scold or punish them for bad grades may score higher than those who experience 'harsh', strict or negative parenting. For Teodorović (2012), parental involvement does contribute to student achievement but it is also quite likely that some parental behaviors can be triggered and/or reinforced by student's success in school. It could be said that negative parenting may be initiated by student's poor grades.

Broadly speaking, the controlling parenting style orients children to do their homework because they will get in trouble if they do not or will gain an extrinsic reward if they do (Froiland, 2015). Alithe Van den Akker and co-authors (2013) speak of coercive parenting as a style of disciplining that entails responding with anger, frustration, and meanness to children's problematic behavior. Examining the potential moderating role of a negative

parenting style termed ‘overreactive’ parenting, the researchers found support to the hypothesis that the experience of overreactive parenting may lead children to develop low self-esteem or symptoms of anxiety (p. 752). They also state: “Due to their personality type, some children may be more difficult to handle for their parents and may therefore evoke more overreactive parenting” (p. 752). Studies show that fearful children tend to experience more protective parenting, which predict their later levels of internalizing problems (see Van den Akker et al., 2013, p. 760).⁹

Apart from the focus on parenting, we can also examine the role that family plays by correlating children’s school performance to family income. Many studies have documented a positive association between family wealth and income and children’s educational attainment as more affluent parents are able to invest on education-related activities for their children (Papageorge & Thom, 2016; Schmidt et al., 2015; Karagiannaki, 2012; Lovenheim, 2011; Loke & Sacco, 2010; Williams Shanks, 2007; see also Rice, 2015). Marion Spengler and her co-researchers (2015) found significant relation between family socioeconomic status and educational attainment. This is in line with the results of the seminal study of Hart and Risley (1995) who indicated a strong correlation between family SES and early language development (vocabulary, early literacy experiences). But low-income parents still have dreams and aspirations for their children that include goals such as attending college (Mohr et al., 2012) and try to do their best in order to help them continue and succeed in school (Compton-Lilly, 2014; Strand, 2014).

As emphasized by Henslin (2004), family income is the best predictor for students’ academic progress: “the more a family earns, the more likely their children are to go to college” (p. 174). However, these associations do not establish causality, and only a few studies have made a persuasive case for it. The main criticism of the causal nature of this relationship is that household income depends on parental characteristics (Kaushal, 2014, p. 67). Thereby, researchers propose to examine whether

⁹ With respect to children’s response to parenting, Spengler and her co-researchers (2015) surprisingly found that rule breaking and defiance of parental authority in adolescence are associated with educational attainment and higher income in adulthood, after accounting for the influence of IQ, and parental SES. A possible explanation is that students who scored high on this scale might be more competitive in the school context. In adult life, they earn higher income because they are more willing and more likely to engage in negotiations about earning and payment and fight more strongly to achieve personal benefits.

family wealth affects children's learning and school performing by providing access to opportunities. On this basis, they measure the socioeconomic status of the family which includes family income, parental education, and parental occupation as well (Punter et al., 2015; Rice, 2015; Willingham, 2012; Karagiannaki, 2012). The economist James Heckman (2011) also argues that the problem is not just about income and family status. It is also about the quality of parenting one child receives:

Good parenting is more important than cash. High-quality parenting can be available to a child even when the family is in adverse financial circumstances. While higher income facilitates good parenting, it doesn't guarantee it. An economically advantaged child exposed to low-quality parenting is more disadvantaged than an economically disadvantaged child exposed to high-quality parenting. (p. 33)

As it is reported in the unit "Sample – Participants" the families in this study were of high-income. All children had their own room, with many toys, plenty of puzzles, and bookshelves crammed with children's books. Parents could provide their children with everything needed for school. In their house they had many tech devices for entertainment. In secondary years, Maria, Helen, Charlie, and Theo had access to a computer which was for all family members and John had his own personal computer in his room. Lucas' and Jason's parents bought a computer when their children were at the end of high school years.

The parents, though they were in a comfortable financial situation, they did not enroll their children in extracurriculars activities (music lessons, chess clubs, art lessons, etc) apart from english lessons which are considered as a rule for Greek families. Moreover, they rarely organized family trips or visits (to other cities, a museum, a planetarium, a concert or theatre play, and so on) –things considered as complementary learning opportunities for every child or youth. All families, however, steadily participated in community cultural activities (local festivals, religion rituals). None of the mothers worked and so they had plenty of time to spend with their children. But most of them had no specific ideas on how to be involved with their children in creative activities (with exception to Maria's and John's mother). At the same time, they put a strong emphasis on material things.

In elementary years, students repeatedly said: "If I get good grades, my parents promised me ... [external material reward]" (from all students with

similar wording). In the interview, three mothers (Charlie's, Jason's, Theo's) told me that wishing to please their children, they used to buy them material gifts, even when their children did not behaved appropriately (surprisingly, in kindergarten years, they complained to me that their kids' rooms were never tidy because they were so crowded with clothes and toys). During adolescence, they used to give their children extra pocket money as a reward for a good grade. In doing so, they could not help their children to realize that it is not good to get everything they want neither did they guide them to appreciate what they had. Families' high income was not beneficial for these children because they could not distinguish between their needs and their wishes.

Charlie's mother, having a huge desire for Charlie to succeed, believed that an extrinsic reward will lead to more diligence. (The same story holds, in general, also for Theo).

Every time he got good grades, we praised him. When he was 16, he asked for a motorcycle. I discussed it with my husband and we decided that if he continued to try and progress he could have the motorcycle. [...] Yeah, he had managed to bring better grades. But he did not get the grade 17 he had promised. We told him "Be honest! No pain, no gain! You didn't keep to our agreement." Can you imagine what he did? He stayed at home, lingered for hours in his room; he didn't come out with his friends, he did nothing. A kind of depression ... Then my husband decided to buy him the motorcycle.... Well, ... I don't say we acted right ... but it is so difficult watching your son being downhearted and melancholic all day.

In my opinion, we need to be more cautious here. The laissez-faire parental practices in conjunction to the provision of material gifts might be the cause of those students' lack of motivation at school. Making things easy for their children, parents did not enable them to realize that everything is earned, to conform to what school requires, and to recognize the value of being educated. The result was that these students responded negatively to school pressure and used to resist studying and completing their homework. Paul Tough (2012) notices the "paradox of contemporary parenting" where parents give children everything they ask for and need, to protect them from dangers yet they forget that children need more than anything "a little hardship: some challenge, some deprivation they can overcome, even if to prove to themselves that they can" (p. 84).

Moreover, it is rather difficult to specify the influence of different parenting practices because parenting does not just affect kids; kids affect parenting practices as well. Different children elicit different parenting strategies from the same parents (see Willingham, 2011); children influence the quality of parenting that they receive (Egberts et al., 2015; Domingue et al., 2015; Tucker-Drob & Harden, 2012). Said in another way, parents may treat differently children in the same family, responding to their individual characteristics. The same parents may leave room for one of their children to make choices while they may not allow their other child to take initiatives.

Likewise, children may perceive their parents differently –depending on other non-shared environmental and genetic effects (Kovas et al., 2015). Daniel Briley, Paige Harden, and Elliot Tucker-Drob (2014), using behavior genetic methods, found that genetically influenced child characteristics predicted later parental educational expectation. These characteristics influence environmental experience, even before children entered formal schooling (including approaches towards learning). In particular, their results establish a complex reciprocal pattern between child academic behaviors, early child cognitive development and parental educational expectations:

Parents are responsive to individual differences of their children, and children actively shape the educationally- relevant parenting they receive. Both of these processes begin before children even enter the educational system. The parent-child relationship and the psychological characteristics of parent and child are dynamic. This finding means that children are transmitters of academic beliefs and can evoke changes in parental expectations. (p. 2626)

However, the researchers note that shared environmental effects (family socioeconomic status, parental education, race/ethnicity, family cultural values, traits of parent) accounted for the majority of the variance in expectations (p. 2626). They also underline that the results implicate parents as strong drivers of academic development.

Trying more to explain what really happens, it came as a surprise to me a book entitled *The Broken Compass: Parental Involvement With Children's Education* by Keith Robinson and Angel Harris. Given the common stereotyped notion that “good” parenting always has a positive impact on children academic achievement, I think that this book is

particularly important because it makes clear that the type of parenting matters significantly.

Robinson and Harris (2014), in their provocative extensive study, challenged the conventional wisdom and some of the most common beliefs about the role of family in educational success. The authors investigated how parents across socioeconomic and ethnic groups contribute to the academic performance of K-12 children and whether parental engagement improved their children's grades. The study's surprising discovery is that there is no clear connection between parental involvement and improved student performance. The authors suggest that most forms of parental involvement (like discussing school experiences with children, helping them with homework, attending school events) do not improve student achievement. Moreover, their analysis showed that there are instances in which children have higher levels of achievement when their parents are less involved and instances in which more frequent involvement is related to lower academic performance.

Therefore, does parental involvement not have any benefit for academic performance? Are parents not important to children's academic success? Robinson and Harris' answer is a loud "no". They clearly state that parents are critical for how well children perform in school. But, to their view, the problem is hidden in the conventional ways that our society promotes the notion of parental involvement. So, what could parents do? Parents must steadily communicate the value of schooling. But this message should be sent early in their children's lives. Once it is delivered it can be reinforced over time. Said in another way, parents must set the conditions as early as possible and act as models for their children (consistency between words and actions).

So, it is wrong to say that any kind of family involvement will result in increasing students' scores. Indeed, family involvement may make a little difference rising scores in an academic year (Epstein et al., 2002). But it may make considerable difference in the long term; it can pay off in other ways in a child's life such as being responsible and taking the right decisions.

In my literature review, I also came across a well-designed longitudinal multi-method study conducted by Nermeen El Nokali and colleagues (2010). Their findings suggest that within-child improvements in parent involvement predict declines in problem behaviors and improvements in social functioning but do not predict gains in any of the

standardized achievement measures (language, math, reading). In fact, increased parent involvement was found to be largely unrelated to individual growth in academic skills. On the other hand, maternal cognitive competence was associated with higher average levels of reading, math and vocabulary. Early childhood scores were also positively related to average level scores in elementary school. The authors claim that “past findings of positive associations of parent involvement and achievement may be artifacts of selection bias, whereby involved parents differed from less involved parents in a variety of ways such as in their motivation and beliefs about parenting, education, and their children’s development.”

The mixed findings of my study with regard to parental involvement and students’ academic outcomes, and as well as between parents’ aspirations and students’ educational achievement, may be due to the individual traits of all participants, the variety of parenting styles and the differences in the quality of motivation and support provided to children. These associations are extremely complex and mediated by various variables. In my view, although it is common sense that children benefit from their parents’ involvement in their education, it is far less clear what constitutes effective involvement and what type of involvement is beneficial and matters the most for each child. Too much assistance may cause dependence; not enough assistance may cause detachment. What is the right balance? Clearly, there are still many open questions.

In summary, parental involvement might be thought of as multiply determined, with various negative and protective factors interacting to influence children’s development. The kind and the quality of parenting do matter significantly. Certainly, the factors discussed above –such as parenting style, the socioeconomic status of the family, home literacy, parent-teacher collaboration, and so on– play a role. But beyond all these things, the speciality of each case has to do with the personal characteristics of each individual, of both children and parents. Every child is unique and has her/his personal needs for support by her/his parents. Every mother –and every father accordingly– is unique and can offer different help to her child.

Unquestionably, all parents love their kids and want the best for them. But they are not equally equipped –intellectually, emotionally, financially, and so on– to help their kids understand why school matters. On the other hand, there are parents who translate the idea of ‘helping children at home’ as ‘teaching at home’, sometimes even in an intensive way. Viewed in this light, it appears that school has another critical role to play: to help

parents to be aware that certain skills and habits are important for their children's well-being and academic achievement as well. This is a promising avenue to investigate. Data regarding the differences in parent educational involvement might help as to identify subgroups of children who are more (or less) likely to benefit from specific parental practices and home routines. Effective school-family-community programs should work on building relationships with all parents, engaging those who, for various reasons, are less involved, and balancing up the practices of those who are overly involved.

To what extent do school experiences unlock the untapped potential and the talents of students?

The fourth finding I evaluated as important to be discussed is the inability of school to focus on and further develop students' strengths and dispositions. Recently, there has been a renaissance of interest in the role of natural abilities and 'talents' in determining success in and beyond school. In a UN document is declared that children are "to develop their personalities, talents and abilities and to live a full and satisfying life within society" (UN, 2001, "Appendix," p. 2). Moreover, growing evidence from neuroscientists has established that what the child does with her/his potential contribute to the child's success as a learner (Tokuhama-Espinosa, 2010). Meanwhile, recent theories suggest that intelligence itself is comprised of a series of capabilities and can be affected by environment and education; it is not a single, fixed entity, but rather a plurality of talents and gifts, profiled differently in each person (see Zhao, 2009).

The concept of 'giftedness' embraces many dimensions and has many definitions. More definitions accepted today are qualitative in nature, including only a quantitative element, the I.Q. (Shaham, 2013, p. 388). But, according to Howard Gardner (1999), the question that schools should ask is not "how intelligent this child is" but rather "how this child is intelligent." He also adds that "[e]ducation works most effectively if these differences are taken into account rather than denied or ignored" (p. 91).

Bearing in mind that there is a significant gap between what students produce in school and what they are actually capable to produce and achieve, and given that people are good at different things and psychological well-being involves personal growth and living up to one's potential, we can

understand why students, of every age, need awareness of their own strengths. This developmentally appropriate approach should be delivered in a format, which celebrates their talents and emphasizes their strengths, choices, and responsibilities across a wide variety of arena (Parsons & Beauchamp, 2012, p. 231; Robinson, 2009; Weller-Clarke, 2006). However, recognizing one's gifts and potential does not mean to implement gifted programs for top students neither to label some students as 'smarter'.

Through the focus on the concept of 'potentially gifted' people, Joseph Renzulli (1998) has forwarded a theoretically and empirically rich body of work indicating that giftedness can be developed in people if an appropriate interaction takes place between her/him, the environment, and a particular area of human endeavor. He describes the gifted child as a curious one, who has exceptional ideas and original thinking in problem solving, takes initiatives, is not afraid of being different, has a refined sense of humor and criticism, and is emotionally sensitive. Although he advocates for special programs for gifted children, he clarifies that we must not equate giftedness with intelligence. Keeping in mind that almost all human abilities can be developed and that giftedness is not a condition that is magically bestowed on a person (i.e., you either have it or not) we ought to wonder about our efforts to improve opportunities and to boost chances for underachievers, for students from disadvantaged backgrounds whose 'gifts' are not identified through traditional testing procedures.

Children are inherently imaginative and they show interest in artistic activities. Small children can think outside the box and many of them are naturally extremely creative in specific domains. Prominent scholars of the fields of education and child development underscore that every child has talent and special abilities, has strengths and value. From the perspective of Eisner (2004, 2005), schools should recognize and promote each student's distinctive talents, aptitudes, and proclivities. They must create environment that actualizes those potentialities, helping children become who they are. According to Herman and his colleagues (2008), children's individual differences will always exist in basic academic skills even if they are given effective instruction and support. Thus, parents and teachers should acknowledge and honor student's skills in other areas –such as interpersonal skills, skills in non-core academic areas, athletics and music– and should explore and emphasize other assets in students (p. 408). The non-academic accomplishments of students must not be kept outside the educational mainstream. Besides, success in one area can lead to success

in other areas as it enhances confidence and contributes to a student's sense of self-worth.

In a similar way of thinking, Howard Gardner (1999) encourages teachers to a deeper investigation of children's talents in order to help them towards a field where they will be satisfied and competent. David Gribble, a teacher (retired) and school ethnographer, had visited and described a number of alternative schools around the world where students have a far greater degree of freedom comparing to those in traditional schools. These schools refuse to train children to become cogs into the machinery of the system. For Gribble (1998), school seems to be designed to destroy students' individuality and curiosity, and suppress their energy. He further states, in an acute tone:

In conventional schools children are literally prisoners: the law keeps them in. Learning according to inclination is not an option; children's inclinations are not considered relevant; adults tell them what they must learn. They make the best of it and enjoy themselves as much as the can, but they are always under someone else's authority, unable to conduct themselves as they would wish, unable to follow up their own interests. [...] [people] will have spent so much time at school struggling to acquire knowledge that does not interest them and skills that are irrelevant to them that they will probably have lost all confidence in the value of their own true interests and talents. (pp. 1-2)

Ken Robinson (2009) speaks insightfully to special talents of every individual, notes that school dislocates people from their natural talents – “Too many students pass through education and have their natural talents marginalized or ignored” (p. 390)– and argues that education should be personalized to every student's talent, abilities, and passion. In his book “The Element”, he writes the stories of very different people. Apart their differences, all hold a common characteristic: each of them found high levels of achievement and personal satisfaction upon discovering the thing that she/he could naturally do well. Many of them did not do well at school or enjoy being there. Yet all of them had discovered their “Element –the place where the things you love to do and the things that you are good at come together” (pp. 26-27). Robinson (2009) writes:

Of course, at least as many people do well in their schools and love what the education system has to offer. But too many graduate or leave early, unsure

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

of their real talents and equally unsure of what direction to take next. Too many feel that what they're good at isn't valued by schools. Too many think they're not good at anything (pp. 32-33). [...] [S]chool systems everywhere inculcate us with a very narrow view of intelligence and capacity and overvalue particular sorts of talent and ability. In doing so, they neglect others that are just as important, and they disregard the relationships between them in sustaining the vitality of our lives and communities. This stratified, one-size-fits-all approach to education marginalizes all of those who do not take naturally to learning this way (p. 36). Education is the system that's supposed to develop our natural abilities and enable us to make our way in the world. Instead, it is stifling the individual talents and abilities of too many students and killing their motivation to learn. There's a huge irony in the middle of all of this. The reason many school systems are going in this direction is that politicians seem to think that it's essential for economic growth and competitiveness and to help students get jobs. [...] Businesses everywhere say they need people who are creative and can think independently. But the argument is not just about business. It's about having lives with purpose and meaning in and beyond whatever work we do. (pp. 39-40)

Robinson's perspective, in short, has as follows: if we really want to help young children reach their full developmental potential and be engaged in lifelong learning we must reward and enhance their dispositions and we must create opportunities for every student to be engaged and connected with passions she/he can pursue and master. It seems apparent that no school that neglects the personal gifts –and as well the problems– of its students can hope for good and effective education. And remember: even Albert Einstein and Thomas Edison, among many others, had been labeled at school as 'slow' and underachievers.

As for the present study, it is worth noting that all mothers said that school, in general, does not provide opportunities to pupils as to be aware of their own talents and to further and fully develop them. All appear to agree that the existing 'one-size-for-all' school model fits well only to students who are prepared for the tasks of school, namely the high achieving students, and does not serve many others. For example, Jason was physically-athletically gifted but this talent was not useful for success in school. He was not intellectually "gifted", made little progress and did not successfully complete his schooling journey. On the other hand, Maria was not good at all at physical activities. But this had no impact on her academic

progress. In a school system which celebrates the academically able students, Maria was at an advantage.

In early years, it was clear that Maria was a student with intellectual capacity needed to reach high levels of academic performance in school. She was not popular in school and she had only two friends (she met one of them only in summer vacation). She was not solitary but her ideas about friendship were different from most children of her age. Her mother reported that Maria in the first year of secondary school stated: “I will read at least two books per month”. She also added that in secondary years, schoolwork and reading books for pleasure used to dominate her day:

She had no social life because she preferred to stay at home and read. Reading books is her hobby. [...] I remember her ... when she was 5 years old ... she tried constantly to read the food labels. I remember her picking up a crayon and trying to write letters... or playing with the magnetic letters on the refrigerator door. [...] Friends? Well, for as long as I can remember, she feels OK with others. But she can only co-exist with few of them ... Indeed, there were some conflicts between us about her making more friends.

Maria’s mother interview excerpt shows how a student who is intellectually gifted fits well in a system which prioritizes academic achievement. Maria never needed an ‘extra boost’ as it was easy for her to be a responsible student. She was the typical overachiever. In my opinion, we can view Maria’s case as the exception rather than the rule.

Jason’s and Lucas’ mothers, somehow understandably, blamed school for incapability to deal with and advance their children’s gifts, emphasize their strengths, provide them with opportunities to excel in non-academic domains, and build on their dispositions and character to keep them engaged. Jason’s mother stated characteristically:

Jason wasn’t able to overcome school difficulties. In secondary years, his attendance was spotty, his success in core school subjects was low. He didn’t even want to finish school. Nevertheless, he was a natural talent in football. Actually, football was an option for him. His coach told us that he was skilled enough to be a professional football player. [...] Well, in secondary years he had placed school learning far down on his list of priorities and spent more time on playing and watching football matches. But his talent was not enough to get him to the

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

Department of Physical Education; it was necessary for him to get good grades. Eventually, he discarded his dreams. For several months he was feeling disappointed, like there was no way out. [...] What do teachers do? Their job is supposed to be giving our children options. If one, just one, teacher had recognized Jason's talent and had encouraged him to do something about it, it is possible that everything today would be totally different for him! And for us!

In my opinion, Jason had also another talent. He could entertain everyone he met with his jokes and his energy. He could easily make others laugh and could successfully impersonate many singers and actors, and several of his teachers as well. This ability made him very popular with his peers. But the coin of his behavior had its other side. He often used to disturb classroom procedures by telling jokes, pulling faces, and making funny noises. That constituted a serious problem. His teachers gave this explanation to his mother: her son's clown behavior in class made him happy because that was the only way to attract attention. Neither teachers nor his parents did they enhance his genuine talent to perform as an *actor on stage*. It might be possible that Jason would become a good comedian if he was encouraged to pursue drama studies and, certainly, if he was not constantly punished for his comic idiosyncratic behavior. Jason's story holds that we should educate students to be winners also in domains which are not clearly academic.

Another issue emerges in this account. It is about the role parents play in recognizing their child's individual abilities. That is, helping children to build on their natural strengths also requires parents who believe that there is something worthwhile in their child. Experts suggest that parents play a crucial role in talent development. In particular, research has uncovered four factors critical to cultivating exceptionally talented individuals: early start, coaching, deliberate practice, and motivation (Witte et al., 2015). If parents have a personal interest in a specific domain, they do not need to motivate their children directly because the children became passionate about their domain by simply watching them being involved in what they love to do.

In the present study, the data revealed that the parents shared a common characteristic: they choose to prioritize schooling more than anything else. In Theo's case this characteristic was salient. Everything in their home revolved around Theo's success in school. Theo's mother told me: "His father and I used to discuss often with him saying that if students work hard they can become a someone".

Admittedly, Theo's parents had the best of intentions for their son, but in a rather narrow context. They failed to give him options to taste success in other areas because they believed that there is no other option than good school grades. Although they had the money needed to provide him with access to and resources for extracurricular activities, they never sat next to him to discuss how and where he could find his way elsewhere beyond academics. In addition, they did not act as a model for him to find hobbies. They were good parents, wholly devoted to the upbringing of their 3 sons, yet not passionate about something special. Theo, albeit he watched his parents working hard to give their children everything they could, he never saw them doing something else than their jobs in and out of house. In adolescent years, when I asked him what he would like to do and be when he left school ("How do you imagine your future?") his answer was "I don't know". In my opinion, he had goals but he was afraid to express them. He was afraid of the competitive nature of the world of work.

What if Theo could make a start in another area? What if his parents or teachers had helped him to find the domain where he was gifted? For instance, in kindergarten years he displayed remarkable interest and care about animals and plants. He was intrinsically motivated when he participated in activities such as planting trees and flowers in the school garden. He cared about other people and pets. He could probably find a job as an animal keeper, a farmer or a gardener. Under the right conditions, he could be a photographer, a job which requires physical action and a good sense of nature; or a para-medical specialist, following his sensitivity and care for others. In his 19, he decided to enlist in the military service.

So, is there any kind of assessment, tailored for each child, that leads to the recognition of her/his individual strengths in a specific field, highlights their talents of students, and, therefore, contributes to increasing their self-esteem? Is there enough time for teachers to realize their students' potential beyond their academic competencies? According to the results of my research, the answer is "no". School does not teach nor evaluates non-academic skills and talents; it does not provide special opportunities to excel in non-academic domains; teachers rarely reward students for their non-academic achievements; school focuses only on giftedness of intellectually gifted individuals.

The idea that curricula are knowledge-centered and neglect individual interests and talents is common ground. In a school system that is inflexible, that fails to cater for individual needs, that has a minimalist

definition of quality, most students end up being disadvantaged (Prasser & Tracey, 2013, p. 44). This system, stifling the individual talents and abilities of students kills their motivation to learn (Robinson, 2009, p. 40). Helping children and youths to be aware about their individual skills and dispositions, to find their “element” in Robinson’s words, we help them to make their way in the world. As Wade Boykin (1996) put it, we need to move away from seeing children as being at risk towards seeing them as being at promise. Conversely, if we adopt practices that undermine the development of positive dispositions we remove significantly away from the goal of lifelong learning (Bertram & Pascal, 2002).

Sandra Seagal and David Horne (2002), in a longitudinal research project (from 1983 to 2001), found that some people function as ‘mentally centered’, some are ‘emotionally centered’ and others are ‘physically centered’. According to them, each type (each individual’s ‘personality dynamics’ in their terminology) can be recognized in infancy period and remain stable as the child grows. Finally, the notion of individual-talent-based education is consistent to Gardner’s theory of *Multiple Intelligences*. Gardner (1993) wrote that “there exists a multitude of intelligences, quite independent of each other” and “each intelligence has its own strengths and constraints” (p. xxiii). As emphasized by Zhao (2007), we are “intelligent” in different domains, more intelligent in some areas while less intelligent in others. Yet, most schools today tend to value only two of the Gardner’s intelligences: linguistic and logical-mathematical. School cultivates certain talents and suppresses other less valued talents. As long as children with high and scores in Math and Language are considered as ‘good’ students, the ‘other’ children, those with less mathematical and linguistic capacities are considered at risk, regardless of their strengths in other areas (p. 6).

Following the distinction proposed by Seagal and Horne (2002), I dare say that Maria and Helen are ‘mentally centered’, John is ‘emotionally-mentally’ centered, Charlie is ‘mentally-physically’ centered, and Theo and Lucas are ‘physically centered’. In Gardner’s taxonomy, I could say that Charlie is Logical-Mathematical /Intra-personal /Spatial intelligent, Helen is Linguistic /Intra-personal /Logical-Mathematical intelligent, Jason is Bodily-Kinesthetic /Interpersonal / Spatial intelligent, John is Logical-Mathematical /Intra-personal intelligent, Lucas in Naturalistic /Bodily-Kinesthetic /Interpersonal intelligent, Maria is Linguistic /Spatial /Existential /Intra-personal intelligent, and Theo is Bodily-Kinesthetic /Naturalistic intelligent. Thus, despite their differences, it is clear that all of

them have a ‘personal area’ where they could feel ‘as being themselves’ and develop their natural talents.

All in all, students have different strengths and needs; they may be more or less intelligent, more or less skilled or gifted in different domains; they can be successful in school in different ways. Besides, the idea of uniformity denotes forms of inequality. As Noddings (1997) had put it: “Must we declare everyone equal in all things in order to cherish each child and nurture his growth? By trying so hard to pretend that all children are equal in all things, we destroy the very possibility of promoting their real, unique talents” (p. 27). That is, a student’s progress –how a student has moved towards a specific goal– ought to be defined more broadly, taking into account non-academic objectives and her/his strengths (Zhao, 2009). The development of personal strengths may have impact on life outcomes and is significant for success in life.

The fact is that many students possess talents and potential that are unrecognized in school (Blankstein & Noguera, 2016). It is also true that teachers, as they have many students in their classes, they have not sufficient time to connect personally with students, to recognize their strengths, gifts and weaknesses as well. A lot of poor performers on typical assessments may have highly creative capabilities that go unnoticed in school. Even worse, several disciplines are evaluated as less worthwhile because they do not prepare students for tertiary studies. Stated differently, the majority of school courses are only for university preparation and do not contribute to students’ whole development in the way that Music, Art, Drama, Sports, Literature, Foreign Language, and Civics could do. Even reading in school is treated more as an academic ‘skill’ and less as a way to be moved by exciting texts and have an aesthetic experience (reading for pleasure). Moreover, no time at all is given to courses that could help students develop practical skills needed in real-life settings (i.e., cooking, tinkering, gardening, car collision repair). Broadening the conceptualization of success in school we could celebrate students’ diverse talents and accomplishments and “resist the temptation of winning the academic horse race in a narrowly defined set of domains” (Zhao, 2007, p. 17).

So, there is a need for small classes, more opportunities for students to learn outside the classroom environment, connect their passions to real-life experiences, and collaborate with others who share similar interests. There is also a need for more space in curriculum implementation in order to provide teachers with time to meet every student’s needs and talents. The focal point for teachers –and parents as well– is to realize that every child

has a distinctive path of development. It is worth remembering that if students' gifts are recognized at school as well as at home, if students are encouraged to show their talents and be proud of their special capacities, it is more likely that they feel valued and unique, and try to transform their passions into life goals. Apart from that, the matter of helping students develop their personal strengths is a matter of democracy. The aim of education, Eisner (1998) argues, is not "to train an army that marches to the same drummer, at the same pace, towards the same destination. Such an aim may be appropriate for totalitarian societies, but it is incompatible with democratic ideals" (p. 184).

Can we imagine a school system which could allow students to show that they are good at something else beyond school subjects? This is a question that invites a critical examination about the societal aims of education and the capacity of the school system to overcome students' unequal background and achieve educational justice. It is, therefore, a question about privileges and social justice in education. Said in another way, a school system which provides students with opportunities that enable them to develop a sense of pride in their learning outcomes could also be seen as a system that addresses issues of injustice and values difference. This can also be seen as a kind of an ideology for democracy needed to confront the fact that children come to the school with different biological starting points for learning and with different knowledge based upon their prior culturally experiences.

Certainly, school is artificial by its definition. While it is difficult to follow the nature, we can, at least, start from what is natural. So, it is crucial to understand each child's inner nature so as to help her/him to learn and develop optimally through their very nature (Seagal & Horne, 2002). For instance, in kindergarten, the free-time play can inform us about where students' gifts lie (Miller & Almon, 2009). Therefore, criteria of effective teaching ought to be deduced from the individual disposition of every student. And therein lies the lesson: we must re-examine the motivational dimension of choice, helping students to identify their natural competencies and gifts. For reaching this purpose, we must put the child at the center of school procedures. More than a century ago John Dewey (1902) stated clearly:

The child is the starting-point, the needs of growth. [...] Literally, we must take our stand with the child and our departure from him. It is he and not the subject-matter which determines both quality and quantity of learning. (p. 9)

[...] The case is of Child. It is his present powers which are to assert themselves; his present capacities which are to be exercised; his present attitudes which are to be realized. (p. 31)

As matters stand, there are two options in front of us: the one in which we sacrifice students' strengths in order to 'catch up' with others in test scores, to sacrifice their individuality in sake of conformity; and the other, in which we build on their strengths, cultivate their innate competencies so they can grow up in a more 'natural' manner and make good decisions to pursue their dreams. Undoubtedly, the second option is far better but it is neither easy nor cheap.

Does school offer students a clear picture of the studies or the career they could pursue? (The ongoing debate on general versus vocational schools)

Another important finding of the present study is that school did not offer students a clear picture of the educational and occupational routes available to them, a clear conception of the studies or the career they could pursue to meet their goals for their future life. In other words, school did not pave the roads for job prospects and failed to help them find their own path. So, who assisted students to develop realistic plans for their future and structure their life opportunities?

The participants' decision regarding their further studies and job/career were driven mostly by their individual characteristics and academic capacities. It is also true that students were influenced –directly or indirectly, and either positively or negatively– by family attitudes and characteristics such as their father's jobs and parents' beliefs regarding success at work. For two participants (Charlie and John), their decisions were shaped by 'significant others', specifically by their older siblings. It seems that the family influence was not equally strong for all of them. Stated differently, the students' decisions were not based on parental recommendations and advice yet they were influenced by the family and the cultural context in a broader way.

None of the participants was forced to take decisions due to family special conditions (parents separation, poverty etc) or personal problems (i.e., health problems). None of them looked upon her/his plans in an idealistic-unrealistic manner. All of them stated that their parents, although they had created expectations and made certain suggestions, eventually let them choose rather freely.

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

The academically able students (Maria, Helen, John) reported clearly and early (at the beginning of the secondary school) their will to continue their academic studies into the tertiary level. The following years they were observed being aware of what it was needed to do in order to go to the university and appeared sure enough for their decisions. At the other extreme, in early secondary years, the students who experienced difficulties in learning stated that they had not decided about their future career or further vocational training.

With regard to this finding, we can examine some interesting questions related with the aim of school: Should school provide only general skills and knowledge or should it supply students with skills relevant for work? Should students acquire at school skills related to real life? Can school integrate academic and vocational education? Are students able to make informed choices for possible career paths, without any guidance from schools? How can we ensure that each student has a plan that takes her/his strengths into account?

For most adolescents, a basic question is whether to pursue post-secondary education after high school, or find a job. Setting the right goal at the right time in life, especially when opportunities are favorable, and then focusing on the chosen goal, can impact to a large extent one's later life outcomes (Heckhausen & Chang, 2009). From a pedagogical perspective, the dilemma is whether to force the low achievers to the post-secondary educational route with the risk to fail, or encourage them to follow other alternative routes (i.e., vocational education, technical courses) that are more likely to lead them to success. From a theoretical perspective, while it is widely accepted that it is mandatory for school to offer students prospects for personal development and work expectations, it is under question if it ought to offer occupational opportunities. From a policy perspective, the question is whether we must try to match school outputs with the demands of work life outside schools and to what degree we could establish direct links between school and labor market (Breen, 2005). From an ethical perspective, the danger is about the students who might be forced to make career choices that serve the interests of the global industries and the big firms –those that are built upon the hard work of ill-educated and low-paid employees– rather than their own dreams and aspirations.

In the Greek educational system, vocational studies are offered to students aged 15+. After finishing elementary school, all students in Greece continue to *Gymnasium* (compulsory lower level secondary school). The

upper secondary education system lasts three years and is offered by the general high schools (*Unified Lyceums*) and the technical-vocational schools (*Technical/ Vocational Lyceums*). A student's choice of a particular high school –general or vocational– is not determined by her/his scores in the low secondary school (*Gymnasium*). Attending a vocational school does not close the door for students to enroll in university courses.

Restricting our terrain to the vocational orientation of school, two important issues emerge: the specificity of skills school should provide to students and the role of school in the transition to work (how effective school is in sending students into the labor market). Considering the first issue, we have evidence that a strong vocational educational sector helps many youngsters with their transition from school to the workplace and that youth unemployment is lower in countries with a strong vocational sector (Van de Werfhorst, 2009; Breen, 2005). As for the second issue, the question for school is how to address the dichotomy ‘vocational versus academic’, and the conflict between students’ occupational aspirations and future on the one hand, and their academic aspirations and future on the other.

Lauren Resnick (1987) highlights the specific differences between school knowledge and the skills learned at work in a number of fields, and points to the possibility that very little can be transferred directly from school to the out-of-school world. Studies have shown that combining academic instruction with career- or work-based learning (technical learning) –helping the students to move towards post-secondary goals and connect their learning with future goals– improves graduation rates and helps the students to boost scores in school subjects and move towards post-secondary goal (Bottoms, 2003). Here let me add that by ‘career-based’ learning I do not mean educating youths ‘how to become a business expert’, ‘how to earn more’, ‘how important the economic success is’, and things alike. The professional-development approaches must go far beyond the utilitarian and give students an overall insight into the real life world; they should address questions students have about themselves and their lives. The ultimate goal is to help every student to move along her/his particular path of growth and interests. Besides, there is a general consensus that people like to do what they are good at.

The transition to adulthood is likely to be the most critical of the human life course, because this is when youths move away from home and pursue their own destiny (Heckhausen & Chang, 2009, p. 242). The career choice works as “a rite of passage to adulthood”, as the first step which puts the young into the situation to project themselves in their future life (Safta,

2015, p. 342). Research suggests that the post-school plans for many young people begin early in secondary school (Dalley-Trim & Alloway, 2010; Croll, 2009; Bridgeland et al., 2006). In particular, when young people reach their late teens they are faced with the following life choices: pursue post-secondary education, work, or combine work with studies. The decision they make at this age will shape, and in some cases limit, the options they have later in life (Ingels et al., 2002, p. 43). When adolescents are aware of the options they have and are able to recognize the value each option bears –why and how these are related to important later life outcomes–, they may make wiser choices, be more dedicated to their goals. For Stephen Hamilton (1994), “adolescents who believe their current efforts will bring them closer to a desirable future are far more likely to work hard in school and avoid self-destructive behavior than those who are either unable to think about the future or who believe their prospects are beyond their control” (pp. 267-268).

At what age are students able to decide what they can do when school ends? At what age can students make the ‘right’ choice about their future? What is the appropriate period for school counselors to help students consider their future options? What factors must we take into account to help young people to realize their potential and make thoughtful plans? In general, the academic or vocational orientation is supported by the idea that we can help young people choose consciously a road that suits them. For this choice to be a good one, schools have to identify many other aspects of young people’s reality (e.g., difficulties during teenage years, interests, aspirations and desires, but also fears, anxieties and doubts) which are likely to influence them and compel their decisions, whether conscious or not (Safta, 2015). Paul Croll (2009) demonstrated the importance of understanding the complexity of young people’s ambitions and examining students’ intentions to stay in or leave education at an early stage of secondary school. Interestingly, he found that for a substantial proportion of children, these early intentions are the beginning of a long-term engagement with the education system and emerge as a good predictor of later behavior and outcomes. Mette Pless, in her PhD thesis, brought to light the variances between different groups of young students regarding the idea of education as a necessary ingredient for a good life. Whereas students who have experienced school well-being and academic success in primary and lower secondary school talk about education as something that creates opportunities and opens doors to life, the situation is somewhat different for young people whose previous school life has been more problematic.

Moreover, students from the ‘success group’ are more likely to have a clear idea of their future educational perspectives than those with lower academic skills or low school well-being. Overall, we might say that school experiences can play a significant role in shaping possible and imagined (educational) futures (Pless, 2014, p. 241). Drawing on young people’s stories about their transition processes through the educational system, Pless (2014), notices also the risk of marginalizing students who, for various reasons, are not able to (or do not want to) study further: “If one is not prepared for or able to meet the demands of further education, then it leaves very few real choices and educational pathways post-compulsory schooling.” (p. 246).

There is data suggesting that the college students opt for their courses more by serendipity and contingent events than by making rational career choices supported by structured careers guidance (Atkins & Flint, 2015, pp. 39-40). On the other hand, many factors contribute to a student’s decision to continue her/his education at post-secondary level such as: gender; parents’ educational and socioeconomic background (parental occupation and income); high school characteristics; students’ attitudes towards school; and performance in school tests. All these factors are interrelated (Atkins & Flint, 2015; Safta, 2015; Iannelli, 2013; Croll, 2009; Hossler & Stage, 1992).

In the present study it is found that school did not help students to explore any job options nor did it offer them resources in order to consider and plan their next step. Charlie told me that school had not prepared them for their future and added that most of his mates would agree to be assessed for career choices. Helen also noticed the lack of connectedness between school and work, between school and real life. Maria said that it is not good to offer the same curriculum to all students because they have different interests and propensities. Jason, Theo, Lucas, and John tended to agree that school ought to offer students guidance in choosing a future direction. This is in line with the results of a recent research where secondary students were found to recognize the weaknesses of school as regards to their orientation, as they were asked to make choices without knowing how (Safta, 2015).

At the end of compulsory schooling (9th Grade), students were asked about whether or not they planned to go to university and about their future ambitions. At this stage, most of them demonstrated considerable awareness of their academic abilities and had a rather clear view of the potential benefits of post-secondary education. They knew, for example, that if they

wanted to go to university they needed to obtain the right grades, and they could see the connection between high school completion and getting a good job. This finding aligns with research confirming links between one student's intentions to stay on or leave education and her/his future attainments. As stated by Croll (2009), even at the beginning of secondary school, many children are able to express intentions about their future educational plans and have consistent intentions with regard to planning to remain in education or leave. The results of his research also suggest that high-performing children are more likely to continue in education, whatever their background, than low-performing children. On the other hand, students with relatively low aspirations are more likely to choose vocational studies, because they have a higher probability of success (Heckhausen & Chang, 2009, p. 244).

When they were in the last year of high school (17-18 years old), in my question "What about when you leave school?" all students agreed that they wanted to find a job to earn enough for a good living. But we can discern some differences between high-achievers and low-achievers regarding their beliefs about their next step in life. Considering their desired futures, Maria and Charlie seemed well-informed, certain and confident about their educational futures. Maria wanted to study Psychology and Charlie wanted to join the Air Force Academy and be an officer –following his brother's steps, a person who admired the most. Maria is now student at the Department of Psychology. Charlie did not achieve his first goal (Air Force Academy) because the required entrance score was high. He entered the Department of Economics (his third choice) sitting for the Panhellenic National Examinations at his second attempt. Helen expressed her desire to leave the place where she lived. She had good grades and was confident for her university success but she did not have definite preferences. She now studies at the Department of Early Childhood Education. John had plans for tertiary studies. He wanted to enter the Air Force Academy following, similarly to Charlie, his older sister's pathway. But his grades were lower than those needed. He entered the Department of Computer Science and Information Technology.

These 4 students made plans not only for further studies but for going away from their communities as well. All of them wanted new life experiences. Maria and Helen wanted to leave the region and open their wings for 'other lands'. They did not want to keep house and raise children, like their mothers did. For Maria, in particular, post-school education

symbolized the prospect of a new life. All of them were aware of their capacities and interests.

Three students (Lucas, Jason, and Theo) pursued vocational studies and obtained a degree from a vocational high school. Lucas had no desire to make further studies. He had definite ideas for his 'non-academic' future. He wanted to 'work with his hands' (in fact he was multi-skilled), to take up apprenticeship within the community he lived. He wanted to stay in the suburban region where he was born because he felt happy there. Jason had rejected academic learning many years before and wanted just to find a well-paid job after school. Finally, Theo was not certain at all of what he wanted to do but he knew that his academic abilities were low. He preferred to do anything else than 'sit at a school bench'.

These three students agreed that most school subjects in general school were useless for their future because they had no intention to continue their education. Jason and Lucas stated that they were rather satisfied by their training and faced no difficulties to transition from school to work.

For Greece, one might say that the value placed on vocational education is generally low. Vocational schools are believed to be 'less good' than general schools in terms of practice-oriented curricula, minimal requirements and students' social characteristics, behavior and attainments; they are for students from lower socio-economic classes who have low grades in core school subjects, or for students who misbehave.¹⁰ Cristina Iannelli (2013) informs us that the lack of parity of esteem between academic and vocational education is also a fact in the United Kingdom. These two types of education are somehow considered as a way of sorting children according to social class. In some extreme cases, students who pursue vocational schools experience social devaluation and stigmatization (Alves et al., 2014).

So, the problem is to realize that vocational schools are not about students with lower IQ but about students with special interests. Vocational education does not mean 'pedagogy for low-achievers' or another way for labeling students. It means differentiated curricula which provide suitable learning experiences for students with no academic focus or those who do

¹⁰ Today, in Greece, due to the current financial crisis, young people face an uncertain tomorrow in a less than satisfying today. Despite mass youth unemployment, vocational education, in general, is still widely perceived as being of low value and lacks societal esteem.

not see education as a realistic option for their future. In Portugal, Education and Training Courses are considered as a positive measure to combat school failure and dropout problems, providing alternative options to youngsters who feel excluded from the mainstream school system. Research shows that students who faced the dilemma to give up once and for all, perceived these vocational courses as a last chance and as an important turning point in their school careers. The Education and Training Courses attendance features a kind of reconciliation with the schooling world: “[t]his reconciliation is the result of a less demanding curriculum, the adoption of active learning teaching methodologies and the establishment of pedagogical relationships that alter the devalued image that students have built about themselves.” (Alves et al., 2014, pp. 4168-4169). The results of a study implemented in the Russian regions show that the high level of secondary vocational education for the graduates of secondary schools not wishing to continue their education is a competitive advantage on the labor market. Thus, vocational education may play an important role in reducing the rate of youth unemployment (Blinova et al., 2015).

Moreover, most of the ‘non-academic’ technical jobs are well-paid and demand special-skilled individuals. For Nel Noddings (2011), we must endorse high-quality vocational education, which can provide students with intellectual as well as practical skills. And we must re-consider the notion of intellectual: the intellectual should not be narrowly defined in terms of traditional subjects such as Algebra or History. Similarly, Norton Grubb and Marvin Lazerson (2004) advocate for a more balanced education, and for strengthened, coherent vocational programs that combine technical and academic instruction in order to build broad human competencies. These programs go beyond the concentration on narrow skill development, requiring “powerful teaching” which “integrate the general and the specific” and “provide higher-order skills” (pp. 261-262).

As emphasized by Linda Graham, Penny Van Bergen and Naomi Sweller (2015), there are students who do not like school and reject academic learning. These disaffected students appear not to fit in at school. They are often positioned as individuals who lack aspiration and who do not value education. But the truth is that most of them still have hopes and aspirations for a good life. They can take responsibility for their own learning under the condition that it is non-academic and they are interested in practical ‘hands-on’ occupations. The future for these students is dark – unless they gain access to further education and training pathways that can

help them to find a job and get a productive life. In a recent study (Creese et al., 2016), which examined the instructional systems and official curricula of six ‘high performing’ countries and two US states, it is found that in all cases there are vocational pathways for students from around Grade 10 onwards; these pathways also include a core element of academic subjects, most usually language of instruction and mathematics. The authors write:

Vocational learning, [...] especially in upper secondary and post-compulsory education, is often seen as a way of augmenting the participation rates of young people in education with direct attempts to retain students who might otherwise have left school early. Real world experiences widen students’ perspectives and provide a foundation for future career success, encouraging the development of practical skills, such as decision-making, problem-solving, teamwork, and written and oral communication. (p. 15)

As it is noted in the unit “Sample”, the participants lived in a suburban region. For Leanne Dalley-Trim and Nola Alloway (2010), regional schools have the responsibility to advise students who vacillate amongst desirable and achievable options, to assist them to widen their life experiences, and to broaden their knowledge of education and training options. In these schools, career advisers and teachers are those who can inform students about post-school options, “about changes in social and economic structures and the value of having higher levels of skills and knowledge that will enhance their lives and allow them to compete successfully for work opportunities in the future” (p. 121). Liz Atkins and Kevin Flint (2015) write: “Only by continuing to develop our understandings of the implications of the way in which school-to-work transitions are structured, can we begin to move towards a more socially-just system in which all young people are able to make less constrained and more informed decisions about their future careers.” (p. 46).

So, can we imagine schools who can offer students pathways linked to real-world challenges? Can we bridge the gap between what students need to succeed in life and the skills and knowledge the current education system provides? Maybe “Yes”. In the UK, in 2010, we witnessed the innovative movement of *Studio Schools*, a new kind of school for 13-19 year olds, very different from many mainstream schools. *Studio Schools* are small schools, with an average of 300 students at full capacity, which foster close-knit learning communities. They offer an environment for students and staff where

learning is creative and applicable to the real world: work and learning are integrated. They teach the national curriculum but with a very different style and ethos: the majority of the curriculum is delivered via multi-disciplinary projects complemented by meaningful work experience. Students are given first-hand experience of the working world, and they participate in real work placements. As a result, students not only gain the qualifications that employers value, but also become active learners and engaged citizens.

The designers of *Studio Schools* took the old idea that people learn best when doing real work in teams, and created a new curriculum organized around practical projects. Students learn through applying their knowledge to real-world challenges. They work with employers and gain valuable experience through enterprise projects and work placements (with students aged over 16 earning also a wage). Moreover, each student has a personal coach.¹¹ At present, the *Studio Schools* movement is believed to be a promising idea for the 21st century school system yet under the condition that school is not to be about serving the interests of the business world.

Above all, and taking under account that most 'non-academic able' students began experiencing academic difficulties in the early years, an important question to be answered is whether it could be given options to these students –who prefer 'hands-on' practical subjects– to enroll earlier in vocational courses and thereby switch from a predominantly academic curriculum to one that they may find more relevant to their goals (Graham et al., 2015). Noddings (2011) raises objection to the movement 'prepare for and force all students to college', regardless of interests, which is promoted in the name of democracy. But in a genuine democracy, she writes, "choice is fundamental". Democratic education should provide equal opportunities and freedom to students for intelligent, guided choices: students should be given the freedom to choose courses that interest them and not to be forced into university preparatory programs that do not interest them and depriving them from courses where they might succeed.

All the above suggest that in order to facilitate students' school-to-work transition, and transition from adolescence to adulthood respectively, we need to radically revise the educational policies in vocational education and training pathways. We must stop viewing education in terms of a duality: the academic and the vocational (Grubb & Lazerson, 2004). One

¹¹ Data derived from <<http://www.studioschoolstrust.org/sites/default/files/Guide%20to%20Studio%20Schools%202015.pdf>>.

could say, as Michael Young (1998) had put it, that this division reflects a broader educational ideology which requires ‘specialization’ as early as possible.

Under this scenario, and given that students will enter in an increasingly competitive world, it is imperative for policymakers to re-examine the fixed academic/vocational distinction and the organizational features of schools; to design flexible curricula blending traditional and technical courses; to re-define the ready-for-university and ready-for-work concepts and seek for the golden rule. One important question public schools must address is how to give all students a comprehensive academic background whilst making clear to them how their education is related to the real world of working and living in a society. It is not an either/or situation. We need to do both.

Further education and career options must be an integral part of school life. Thus, it is imperative teachers and counselors to design and implement projects that expand children’s options, emphasize their abilities, and encourage them to make occupational choices. Said another way, it is not enough to simply inform students about career options without showing them how to turn their interests into opportunities in life. One thing is for sure: when the aim of school is to prepare all students for the university, even those who have no interest in doing so, many children will end-up ill-educated.

Do teachers support their students academically and emotionally?

Much has been written about how a teacher can help or harm a student’s academic progress. For many scholars, teachers are considered as the most crucial school-related factor in increasing students’ performance and success. In this basis, teacher effectiveness is discussed in many terms in the relevant literature.

Regarding the role of teachers in the present study, both children and mothers talked a lot about the teacher-student interactions in classroom and the instructional practices in classroom. Both spoke of the importance having good relationships with teachers. All mothers identified the significant role teachers play in students’ learning and development and recognized the value of having a good teacher. In particular, getting a good teacher was considered as “luck” and was deemed critically important for

students' learning. All mothers brought up the lack of communication between parents and teachers and most of them reported feeling unappreciated in school and that their voice was not heard by teachers.

During elementary years, teachers were described by the students as "good" or "very good". According to them, most of the elementary teachers had succeeded in creating environments in which they felt comfortable and wanted to learn (students came to this conclusion in their adolescence) and tried to make them behave appropriately. It is worth-noting that all student expressed the same opinion about their 4th Grade teacher. They described her as "great", "fair", and "warm". Helen said to me: "[teacher name] is demanding but humorous. She makes us laugh a lot". Parents, respectively, referred to her as "supportive", "dedicated", "knowledgeable", and "passionate" and they mentioned that she despised favoritism and could make lessons interesting.

The secondary teachers were reported, in general, as unable to establish a positive learning environment (cooperative and not-competitive), as unfriendly, non-companionable, and as non-supportive. The fact is that only a few secondary teachers had gained students' respect, and parents' respect as well. All students agreed that their secondary teachers did not try enough to add interest to the learning processes, did not care enough about them and their learning, and rarely understood their needs (e.g., whether they were tired, whether they could not understand a new concept). All students appeared to highly appreciate teachers who addressed the issues in classroom with humor (that was the case with one elementary teacher and one low secondary school teacher). Finally, all students said that most teachers rarely addressed the discipline matters in private and used to humiliate the disobedient students in front of their peers. The mothers tended to agree that most teachers emphasize competition, want to teach only the good students, and do not bother with pupils who get low grades. The students' comments and the mothers' views regarding the above factors were, generally, aligned.

In Greece, secondary school teachers acquire knowledge of their specific subject but are not trained to teach at school. They lack a specific foundational knowledge on the pedagogical methods of teaching adolescents. They are taught practically nothing in their university studies about updated instructional methods, giving students feedback, helping students 'learn how to learn', about parent-school relations and so on. Obviously, they think that their purpose is to teach just curriculum content.

They do not know how to act as facilitators, they are not aware of the importance of the positive climate in classroom. This explains why they cannot affect students' willingness to be engaged both emotionally and intellectually in the school curriculum. Conversely, pre-service elementary teachers are more prepared to teach as they have opportunities for practice in university years, to develop an understanding of pedagogy, to learn about children's whole development, and so on.

I would like also to add that in the current cultural reality of Greece, common issues many teachers face include parents' negative opinion about their effectiveness. Many teachers note the lack of support from the parents and the parental manner that excuses students from responsibility when they do not behave appropriately. Namely, many parents tend to defend their kids even when they misbehave. Meanwhile, a widespread idea among teachers is that parents have passed child nurturing duties on to school and make less effort at home. Parents, on the other hand, often say that some teachers make them feel they are unsuccessful parents. They look for ways to blame parents for students' poor performance and do not respond to their calls for collaboration.

One might say that teachers and parents play the 'blame-chicken game.' Teachers say: if a pupil fails, it is not our fault, so we blame the parents. Parents, from their side, say: it is not our fault, so we can blame the teachers. On this basis, it seems that teachers-parents relationships are characterized by mutual distrust. And where does the truth lie? Theoretically, in the middle. There is some merit to the arguments on both sides.

In the present study, both children and mothers expressed their objection to the old-fashioned instructional practices that teachers use and to the amount of the content for each school subject; all of them made complaints that teachers assign too much homework and that many of the teachers cannot make the learning transferable. The students in this study blamed most of their secondary teachers because they acted only as distributors of content, concentrated their practices and energy only on students who showed interested in learning, and were unable to give answers to their most critical question: "Why should we learn this?". All of them rejected the 'Obey me because I said it'-type teachers.

Apart from that, two participants (John and Maria) said that several secondary teachers have the will, the potential and the ability to help their students yet there are many students who respond negatively to their teachers' efforts because they just do not want to excel academically. The impact of children's behavior on teachers' behavior were mentioned by 5

students (Charlie, Maria, Lucas, John and Helen) but all of them were of the opinion that their behaviors and misbehaviors impacted teachers who, in turn, adjust their actions accordingly. In other words, students seemed to be aware of the reciprocal nature of teacher-student relationships. In my opinion, this is an important finding.

Jason used to express more intensely his dissatisfaction about the amount of tests and the demanding nature of homework. He enjoyed cheating as a way of 'resistance' to his teachers' demands and authority. Helen and Charlie made reference to the overwhelming amount of homework. Helen also spoke of the value of a good teacher while noticed that "teachers are more worried about tests than true learning". Maria said that she wanted her teachers to provide students with challenging activities and challenging classroom work.

The variety in students' responses may represent and may stem from the fact that they were treated differently by their teachers: high achievers received more encouragement considering their abilities than low achievers. The students with lower grades reported being less satisfied with their relationships with their teachers and told me that their secondary teachers hardly acknowledged their efforts. All students agreed that several teachers used to act in a more offensive manner (such as yelling, humiliating, and being sarcastic) towards students who were inattentive in class and irresponsible regarding homework completion. All of them were observed to be rather sensitive to fairness and were of the same opinion: teachers respond more positively to higher-achieving students; the favor them by allowing more time for their answer and by being more tolerant when they misbehave. They also tended to agree that "Teachers only judge and do not treat students equally" (in my words). When Charlie was 15 years old, he described his thinking saying:

We know when one teacher cares. We know when good teacher is good. [...] Most of our teachers show favoritism to students who get good grades. [...] It's not fair when the whole class is punished because a student or a small group of students misbehave. [...] Some school rules are fair but others aren't.

The mothers' responses to the interview reinforced the students' comments regarding the issue of fairness: several teachers have a purely authoritative style, perpetuating the notion that school is unfair. Helen's mother comment supports the view that teachers do not treat every student in the class equally:

It's wrong to compare all kids against one another ... Helen didn't have any problems with her teachers but she was annoyed with their despotic behaviors. [...] It's hard to find a fair teacher. It may be due to the system which is like this.

Charlie's mother also highlighted the problem of fairness, mostly through the eyes of her son:

Charlie is very sensitive to fairness. I repeatedly said to him: "Don't be a dreamer! School's unfair because life's unfair." Of course he was right to complain. But I tried to make him understand that it's unrealistic to expect every teacher to be fair. [...] And now students have fewer problems. I remember in our time, the punishments were more cruel ... more prejudices, more control.

In high school years, students made complains for teachers who did not give them opportunities to express their opinions and did not listen to their problems, and said that: "Teachers teach us because it's their job", "Most teachers don't listen to what we say", "Just few teachers make the lesson interesting" (by all participants, in similar wording). The following quotes from Helen, Charlie and John provide examples of these views:

Teachers don't let us ask our own questions. They just want us to answer their questions. [...] When they see us tired, they do nothing. They continue the lesson as if everything is fine. That's why many children are extremely bored at school, bored to death. (when Helen was 16 years old)

Most students never ask for help when they have trouble understanding something because they know that the teachers won't bother. So do I. (when John was 17 years old)

*Anyone can read the textbooks. Big deal! We don't need a teacher standing over us, telling to do so. (when Charlie was 15 years old)
Teachers tell us what to do, what to read and write, and reward us for doing only what they say. End of the story! (when Charlie was 17 years old)*

From the above two excerpts, a conclusion that could be drawn is that students want to be more visible and valuable in the classroom procedures.

Another conclusion is that teachers spend much more time lecturing and give much less time to students to express their opinions and discuss their experiences and beliefs. But for school to be a democratic community, teachers should talk less and listen more. Listening will allow them to learn about their students' prior achievement and understanding (Hattie, 2012). Listening is a critical skill for educators –and for students and parents as well. The students had put also forward, once again, the issue of interest for school learning. This is highlighted by Abbott (2009) who argues that students need teachers to inspire them to think in a much more open-minded way than they have done before.

Of great importance is that both high achievers and low achievers in this study came to agreement regarding the characteristics of the ideal teacher and identify in precision what separates a good and caring teacher from a teacher who teaches just because it is her/his job. Overall, students portrayed the “good” teacher as follows: she/he is fair, friendly, and kind; can challenge her/his students; can maintain control in the classroom without using threats and punishments; treats all students equally regardless of their competences; takes the individual differences of her/his students into consideration; makes teaching relevant to students' lives; and explains further a topic when it is needed. John stated: “Only one or two teachers make us feel that they really care about us”.

Another important thing to note is that John, Maria, Lucas, and Helen shared the opinion “I care about what my teachers think about me”. It is also interesting that these students did not blame only the teachers; they also blamed some of their peers because they exhibited no interest to learn and ignored school rules. This aspect is mirrored in John's words:

Some kids create trouble at school. There are students who are rude and make faces, others who talk on cellphones in class or chit chat all the time ... Even some good students don't give a penny ... [...] And many teachers are unable to maintain control in the classroom. (when John was 16 years old)

All mothers admitted that teachers have a lot to do with the student being satisfied or not at school and they are an important part in education. They also mentioned that teachers still have and always will have great impact on nurturing, cultivating, and educating children and youths. Three of them (Charlie's, Helen's and John's mothers) added that as long as teachers feel devalued by the system and are not well-paid there will be no hope for better

schools. Most mothers agreed that while several teachers were willing to provide assistance they were not effective because they were obliged to cover the overloaded curricula. The result is that, in a regular classroom, they had no time and energy to devote to find out who their students were and how each student could be motivated.

Charlie's mother stated that teachers are not effective and not prepared to teach today's adolescents. But she did not blame only the teachers; she also blamed the students who misbehave and the system because it does not recognize teachers' work. In her words:

Those who call themselves teachers must be better prepared to help all students to learn. This is their job. To be responsible ... not to be lazy. They are where they are to understand what every student truly needs. But they are also right to feel frustrated, to speak about their over-exhaustion. [...] The government doesn't pay them well, they are not given prestige. [...] I know that sometimes children don't behave in an appropriate manner ... and Charlie wasn't an easy child in his adolescence. I can imagine how furious could make his high school teachers.

Likewise, Helen's mother admitted:

It's true that when students don't have guidance from their parents then the responsibility falls on teachers. [...] If teachers want to be respected by the kids they have to respect accordingly. And the same holds for the kids: if they want to be valued at school they ought to be well-mannered and follow the rules.

A statement from John's mother –who stressed that she never said to her children that teachers are not good– also highlights the aspect of respect. In a more acute tone, she said:

We used to continuously tell them [John and his sister] how important it was to behave, to pay attention to teachers, to respect them, to get good grades. [...] You must trust the teachers because ... having respect for the teacher and school rules will make someone a good person. I know kids who are completely unwilling to conform to the school's rules. This isn't their fault. They weren't taught how to behave by their parents. If parents don't care, then students don't care and then teachers don't care.

What each of the above excerpts has in common is the recognition that parents and teachers share the responsibility of nurturing pupils. Another conclusion to be drawn is that there is a reciprocal effect of students and teachers behavior on each other's. Some students discourage their teachers, others can make them to work harder. Similarly, some teachers can take many students to the heights of what they are capable of, while others have low expectation from them contributing to their poor performance. This refers to the Pygmalion Effect theory, which associates one's higher expectations to the other's better performance. In any case, engaged teachers equals engaged students and vice versa. For Kathryn Wentzel (1997), students who perceive their teachers as caring and eager to support their efforts are more engaged in school. That is, if a student believes that her/his teacher trusts her/him, she/he is more likely to be motivated in school and more likely to conform to the rules of the classroom. That calls for teachers who know how critical it is to show respect to each student's effort and realize the importance of getting to know and connect with each student.

Yet, this is only a part of the picture. Why? Because, in many cases, the boundaries between the role teachers play and the role school plays are blurred. For example, from the conversations with students and from the interviews with mothers two broad themes were identified: the quality of educational experiences in school and the distance between school courses and real life. However, both mothers and youths seemed confused: who is responsible for the issue of archaic procedures in school? Do teachers align to these procedures because they must prepare their students for the final exams? Who is responsible for the fact that schooling is limited to knowledge? How could the 'knowledge delivery' dimension of schooling be reversed? Who is responsible for the curricula that make students feel incredibly exhausted at the end of every school day? Do teachers act in certain ways because they are trapped in the system? Can teachers by themselves make the difference?

Looking deeper for the reasons underlying their discontent I understood that the main problem was not about the teachers; it was about the school system. Maria's mother remarked: "I don't think that teachers don't care. I think that the system doesn't." Helen's mother, similarly, said that parents' opinions are not respected in the present school system. The students' question "If this is useless, why waste my time?" was addressed

directly to teachers but indirectly to policy makers.¹²

The clear truth is that teachers are not autonomous. They have a weight put on them to motivate and engage all of their students but, also, to cover the curriculum. In addition, they experience distrust from many parents and administrators as well, and have to deal with an assessment system which measures their effectiveness entirely based on students' scores. From the perspective of Apple (2005) “[s]uch a regime of control is based not on trust, but on a deep suspicion of the motives and competence of teachers” (p. 281).

The demands on teachers are enormous. The result is that many teachers feel unsupported and psychologically exhausted; they experience depleted energy and feelings of stress or ‘burnout’. As Becky Francis and Martin Mills (2012) put it “teachers are constrained by ‘the system’ within which they worked”. While they come to teaching with a desire to support students’ development and wellbeing, and a commitment to promoting a democratic society through education, they end up being entrapped into a particular type of teacher that conflicts with the idea of the teacher they would like to be (pp. 260-261). Marzano and Kendall (1998, p. 5) note the pressure teachers experience trying to teach all the content of curricula and they conclude that if teachers were to cover everything we would have to change the educational system from K-12 to K-22.

Moreover, it might be reasonable to consider issues closer to school structure (i.e., small schools, building, class size, teacher-student ratio) and instruction (i.e., obsolete textbooks). The schools’ organizational contexts (e.g., leadership, teacher collaboration, disciplinary codes) can also undermine or enhance teachers’ ability to succeed with students. Teacher effectiveness may be a key factor, but if a school has an ineffective principal or a dysfunctional organizational context, efforts to strengthen individual teacher effectiveness are unlikely to produce desired results (Kraft et al., 2016; Silins & Mulford, 2002). Wiliam (2013) posits that teaching quality is

¹² In the case of Greece, the crisis of educational system is a temporal phenomenon causing the decline of symbolic and essential value of public education. The most crucial problems of the Greek educational system are: low expenditure for education, inadequate infrastructure (lack of libraries, laboratories, and educational material), lack of sufficient resources for educational research, and the fact that certificates do not ensure access to employment. It is worth mentioning, and in spite of any common practice, that the reformations of the Greek educational system never depended on any research findings (see Kyridis et al., 2011).

much more than teacher quality. He further explains that the quality of teaching depends on a number of variables, such as the kinds of resources available, the number of students in a class, the skills of the teacher, the support of leaders and colleagues, and so on. And if we go away from western societies, teachers in many developing countries face even almost insurmountable hurdles when they have to teach 60-100 pupils in a single classroom. These teachers do their best amid difficult environments and lack of educational materials (Perlman Robinson & Winthrop, 2016, p. 72).

Therefore, teachers need more help and support from community: from the community within the school, from the community of parents, and from the local community. For Hattie (2012), teachers must collaborate in small teams in order to examine each student individual progress and to discuss about goals and improving instruction. If they do so, then all could begin to move to the right direction. In any case, teachers' well-being is crucial to their effectiveness in the classroom because teaching is an extremely demanding occupation.

There is a large debate in the literature on the importance of teachers. Several studies argue that teachers can close the achievement gap while others take the position that the quality of teachers in a system is not a critical variable than it is generally said to be. On the one hand, teacher effects are substantial. Teachers are considered as strong predictors and modifiers of students' interest in learning, engagement in the classroom, and achievement (Allen & Kelly, 2015; Wang & Eccles, 2012; Merritt et al., 2012; Konstantopoulous, 2009; Strahan, 2008; Hardré et al., 2007; Rivkin et al., 2005; Nye et al., 2004; Barton, 2003; Borman & Overman, 2004; Shernoff et al., 2003; Sanders et al., 1997; see also OECD, 2016). The researches of the *STAR* project took up the challenge to link the impact of an experienced kindergarten teacher not only to students' scores but also to higher earnings in their adult life (Chetty et al., 2011). In a follow-up analysis that addressed the issue of measuring teacher quality, it is found that a good teacher has substantial long-lasting impacts on a broad range of outcomes such as college attendance and higher earnings (Chetty et al., 2011a).

It is also documented that teacher social support (a sincere interest, a sense of caring, respect, and appreciation for their students) predicts a range of indicators of behavioral, emotional, and cognitive engagement of students (Mills et al., 2016; Wonglorsaichon et al., 2014; Wang & Eccles, 2012; Wang & Holcombe, 2010). As Hattie (2012) infers, synthesizing an enormous number of studies (over 800 meta-analyses of 50,000 research

articles and about 240 million students), while it is documented that the largest source of variance in student learning outcomes can be attributed to students –in particular, what students bring to the classroom (prior achievement, attributes and dispositions)–, teachers can influence student achievement and they can be considered as change agents. That is, teachers clearly do make a difference. They have more influence on student learning than any other school factor. Thus, educators must consider themselves to be change agents, bearing in mind that each child learns at a different pace.¹³

A 2014 report by *Gallup Education* suggests that students who have teachers who make them “feel excited about the future” and who are committed to building their individual strengths are 30 times more likely than other students to show other signs of engagement in the classroom (Blad, 2014). Finally, Wentzel (2012) describes the affective quality of teacher-student relationships as central and critical motivator of student engagement and recognizes that teacher-student interactions influence student outcomes and school performance. She also notes that if we want to understand the nature of these interactions we have to examine deeper the “causal mechanisms and pathways of influence” (p. 31).

On the other hand, the school is not the teachers’ school. Teachers have to implement a given curriculum and follow specific assessment models in a school where time and space are fixed. They are caught in a ‘bureaucratic system trap’ that makes them far less effective than they could be. Thus, their capability to offer ‘windows of opportunities’ to their students is limited. And that is true in many respects. We see that even passionate teachers –those who act as mentors, really care about students and dedicate time and resources to enhance them, and try to catch students’ attention for school subjects– cannot make the difference only on their own. In our competitive times, teachers’ actions are subjected to great scrutiny in terms of outcomes. Berliner (2009) adds that, given the evidence on family and neighborhood may affect a child’s later cognitive and behavior functioning, it is clear that the achievement gap cannot be simply attributed to the performance of teachers. While nobody denies that some teachers are better than others, it is also a fact that no matter how effective and

¹³ Hattie (2003) suggests that we need to discover the excellent teachers –those who succeed in understanding the minds of their students– and study them: “Only when we dependably identify excellence, and study excellence, can we provide the goalposts to aim for. Let us have more studies of excellence.” (pp. 5-6).

supportive some teachers are, most of them cannot eliminate inequalities that have their roots outside school doors (Haertel, 2013). Hanushek and his colleagues (1998) found that the variation in teacher quality explains at least 7,5 percent of the total variation in student achievement.

Certainly, there are teachers who are lazy, incompetent, or unconcerned to find ways to enrich the school experience for all children. There are teachers who disclaim their own responsibility in their students' poor achievements; who do not see purpose in what they do. But there are also caring teachers who know how to act as mentors and can instill the love of learning in their pupils. However, while many of them do a lot to help children overcome certain difficulties, their influence has its limits. As they are low in the hierarchy, their initiatives cannot fix the pervasive school problems. Even worse, the majority of educational policy makers denies the real cause of education inequality and places all responsibilities on teachers, resulting in their increasing disrespect by society.

In general, there is an agreement that teachers do differ in effectiveness in promoting achievement. Yet, for Barbara Nye and her colleagues, the research evidence about teacher effects is mixed. It is difficult to examine the relation between teacher characteristics and achievement, even after controlling for student background, "because they may be confounded with the influences of unobserved individual, family, school, and neighborhood factors" (Nye et al., 2004, p. 238).

Ultimately, one thing is definite. There is no great school, anywhere in the world, that does not have great teachers working in it. Although we should not focus only on teacher quality, if we want to improve the school system, we must invest on teachers; on the improvement of teaching and the status of great teachers (William, 2013; Robinson, 2009, p. 376; Bridgeland et al., 2006). For this, we have the Scandinavian way of thinking about teachers. Research in the Nordic countries shows that people share a fundamental trust in the quality of their teachers. Schools are seen as places run by highly educated and esteemed educators who know best how to do their jobs (Hopmann, 2008). For Sahlberg (2011), the success story of Finland lies a lot in the prestige, responsibility, and decent pay given to all teachers, and in investing on the quality of teachers education. The entire educational system is led by educators, rather than by bureaucratic agents or politicians. Teachers feel respected by the whole community.

In addition, theorists and researchers advocate for policies that expand teacher training and place the highly committed and experienced teachers in

educational settings with the most disadvantaged students (Baran et al., 2013). Improving teacher quality is likely to yield substantial returns for students. But the best way to accomplish that goal is less clear (Chetty et al., 2011a, p. 6). In the meantime, if we want teachers to be facilitators and mentors we must de-cage them from the demands of a system which endorses environments of competition and meaningless learning experiences.

In summary, in this study, elementary teachers were reported by the participants as both emotionally and academically supportive while secondary teachers were in general reported as not-supportive at both levels. By the low secondary school years, students appeared to realize that there were teachers who were more supportive towards some students and less or no supportive toward others. Both mothers and youths were of the opinion that teachers differentiated their behavior with respect to students' scores in school tests. All agreed that teachers affect students' learning experiences at school, how students learn to think, how they interact with each other, and whether students will develop desire for learning and become life-long learners (in my words). Mothers tended to agree that teachers can make a difference but they must be better prepared and trained to meet the needs of disadvantaged students. All agreed that students' and parents' opinions ought to be valued by teachers. Negative posts commented on the lack of communication between students and teachers, and between parents and teachers as well, cliquish attitudes, being not sensitive to their child, and aggressive behavior towards their child. The overall demand for a better school system was common to all participants.

Personality-based concept of school achievement

Does personality impact outcomes that are important within the context of education? Has school a large effect on the individual's personality?

A finding which draws attention in this study is the pivotal role that personality plays in academic and non-academic achievements. Personality traits encompass someone's general tendency to think, take decisions, and act in a specific manner. Examining the differences among students with respect to personality traits appears to offer a glimpse of their future performance. This finding may serve as a response to questions such as "why not all students do have the same desire to learn at school", "why some children learn at school because 'they have to' while others do not", "why some children perform dramatically better than others", "what is the case of students who 'beat the odds' and succeed in school in spite of the difficult conditions they may encounter", and "why capable students fail to achieve to their potential".

The field of personality and individual differences psychology is concerned with all dimensions on which people differ from one another (Borghans et al., 2008, p. 974). Genetic studies consist also an important source of information for a better understanding of the underlying mechanisms and structure of childhood personality (see Spengler et al. 2012). In particular, behavioral genetic research, utilizing the classical twin design, has confirmed genetic influences on human personality traits and personality-related behavior (Hahn et al., 2012). Finally, as methods of scanning the brain continually improve, we have more data in hand to uncover the relationships between individual characteristics and learning achievement.

Research on students' personality has gained increasing attention for several reasons. Marion Spengler and co-researchers (2013), in their detailed literature review, summarize as follows: personality is an important individual resource that is not only associated with important life events and outcomes across various domains (i.e., subjective well-being, health, relationships, work, and career success) but is also supposed to play a prominent role in explaining educational attainment and academic success. The authors state that personality is related to general and domain-specific components of students' achievement, self-concept, interest, and motivation to learn. They also emphasize the contribution of intelligence and

noncognitive predictors to achievement, writing: “The multidimensional construct of personality needs to be embedded into the network of other constructs to evaluate its construct validity and external validity, especially in the educational context. Hence it is important to examine the overlap and uniqueness of personality compared to the other well-established predictors of academic success.” (p. 615)

There is evidence that personality is marked by certain predispositions and functions as a moderator in a variety of domains (Rothbart & Bates, 2006), and many experiences have different impact on students’ lives and major life goals, because their effects vary depending on each student individual characteristics (Briley & Tucker-Drob, 2015; Shiner & Caspi, 2012; Shiner, 2010; Bleidorn et al., 2010). Individuals, as all have different personalities, respond differentially to their environment, and to life experiences and events. For instance, impulsive children may interpret similar environmental events differently from inhibited children (Van den Akker et al., 2013). Furthermore, it seems that individuals with specific constellations of traits follow diverse pathways to adulthood. For example, people may navigate the demands of highly competitive occupations based on their genetically influenced characteristics and proceed along pathways that align with their personality (Briley & Tucker-Drob, 2015; Bleidorn et al., 2010). Predispositions may be presented at birth or may be inculcated early in someone’s life. In the montessorian approach “every child carries within them the man or woman they will become”.

It is therefore reasonable to ask ourselves if the differences in school achievement can be attributed to the differences in individual personality and if personality traits ought to be seen as a non-academic aspect which influences educational outcomes. Almost 60 years ago, Terman (1959) named four personality traits as factors which are “extremely important determiners of achievement”: persistence in the accomplishment of ends, integration towards goals, self-confidence, and freedom from inferiority feelings. (p. 148). In the literature, personality is also associated to learning and to learning styles. According to Hawk and Shah (2007), although there are groups of students who have common or similar learning characteristics, learning style “falls into the categories of dispositional traits and characteristic adaptations where there are differences across individual humans” and is “a component of the wider concept of personality” (p. 2).

The body of research on the relation between students’ personality traits and academic success is growing (for a detailed literature review see

Spengler et al. 2013; Spengler et al. 2016). Several studies assert that personality may be as important as cognitive abilities in predicting long-term success, effective adaptation over time, employment, good relationships, health, and well-being (see Spengler et al., 2016a; Spengler et al., 2015; Blatný et al., 2015; Shiner & Masten, 2012; Heckman, 2011; O'Connor & Paunonen, 2007; Roberts et al., 2007) and suggest that certain traits of personality make great contributions in student's academic motivation and performance, reflect what an individual will achieve, and can predict, to some degree, student's future performance outcomes, upon and beyond IQ (Klimstra et al., 2012; Komarraju et al., 2011; Poropat, 2009; see also Briley et al., 2014a; Duff et al., 2004; Busato et al., 1999; De Raad & Schouwenburg, 1996). It is obvious that IQ, the historically king-predictor of school success, have now strong rivals: personality, individual differences and non-cognitive abilities. And there is strong evidence that the latter have an important role in the prediction of persistence, of self-control, and desire and will for success. Even Alfred Binet, one of the pioneers of the IQ tests (the Stanford-Binet test), had recognized the importance of personality traits noting:

[Success in school] ...admits of other things than intelligence; to succeed in his studies, one must have qualities which depend on attention, will, and character; for example a certain docility, a regularity of habits, and especially continuity of effort. A child, even if intelligent, will learn little in class if he never listens, if he spends his time in playing tricks, in giggling, in playing truant. (Binet and Simon, 1916, p. 254, as cited in Heckman, 2012, p. 10)

So, in terms of academic success, can we detect common characteristics among low-performing students? Are there any common characteristics among high-performing students respectively? The results of my study support the hypothesis that there are personality traits which are strongly correlated with academic performance and outcomes.

With regard to the relationship between Openness-to-Experience and academic performance, the participants (Maria, Charlie, Helen and John) who were high on Openness-to-Experience in preschool years (thirst for new experiences, knowledgeable, perceptive, innovative, curious, artistic and so on) exhibit high levels of creativity, tendency to explore, easiness to manipulate abstract information, intellectual interests, and academic achievement in their adolescence and beyond. For instance, Maria, Helen

and John, during the time of free play in kindergarten, chose to be engaged in academic-type activities (Maria often chose artistic-oriented activities) while others were more likely to pick physical and entertaining-type activities. In short, intellectual curiosity and desire for learning were positively associated with achievement. The abilities of two participants (Maria and Helen) to solve novel problems, direct attention, and maintain information in memory were strongly related to later abilities such as to evaluate various situations and take those costs and benefits into account. Besides, as it is well known, students learn best when they actually are curious to learn.

Openness has been conceptualized as the core trait underlying intellectual curiosity, and enduring need for novelty and new ideas to enlarge knowledge and expertise. It has been also linked to creativity (Kandler et al., 2012). A growing body of studies demonstrated the role of Openness-to-Experience to better school performance. Openness is reported to be positively related to the academic self-concept and to be a significant predictor for the achievement test scores. This may be explained by the fact that open individuals are resourceful and curious. Those capacities may lead to the development of critical thinking skills and higher motivation (see Spengler et al., 2013, p. 614). The findings of a recent brain study support also the idea that curiosity is linked to intrinsic motivation to learn and enhances learning and memory, at least in part (Gruber et al., 2014).

On the other hand, we have also the cases of Jason and Lucas who, in kindergarten, showed interest in new experiences and were curious and creative but they made little academic progress. Both of them could be described as ‘kinesthetic learners’; both of them could not see the relevance of school material to their everyday life. A possible explanation for Jason’s difficulties to make progress in school can be found in his Conscientiousness traits. He was neither self-disciplined nor diligent, rather irresponsible and inattentive. He showed impulsive activity in kindergarten and demonstrated low Conscientiousness at 19-years old.

With this in mind, we can examine the role of Conscientiousness in students’ school progress. The participants (Maria, John, Helen) who were academically tenacious, could set and pursue their personal goals, and had the ability to sustain attention over time, to persist in tasks and endure failure (high Conscientiousness), made remarkable academic progress in elementary as well in secondary school –despite the obstacles they experienced. For example, Helen believed that homework was not always

useful, often redundant, and was time-consuming. But she had never thought of not doing it. Similarly, Maria questioned the amount and the quality of homework, adding that “others don’t do it at all” and she had “no time to relax during the day” but she always went to school well-prepared. Maria had all the typical characteristics of a conscientious student.

These high-performing students were observed to be more likely than their peers to keep working at something until they get it. Moreover, they demonstrated high levels of self-control in adolescence years and used to behave within what was expected. In our conversations, in questions such as “How do you see yourself in ten years from now?” or “What are you plans after you leave high school?” these three students expressed their high hopes for their future and mentioned their plans to attend university studies.

The findings about the relationship of high Conscientiousness with better school performance and low Conscientiousness with academic problems are consistent with findings in the existing literature. In a meta-analysis of studies regarding the effect of personality on attainment it is indicated that of “the Big Five factors, Conscientiousness has been the most consistently linked to post-secondary academic success” (O’Connor & Paunonen, 2007, p. 974). Rebecca Shiner and Ann Masten (2012), examining the significance of childhood *Big Five* personality traits for competence and resilience in early adulthood, document that Conscientiousness is a robust predictor of positive outcomes in academic achievement from childhood to adulthood, even after facing chronic adversity earlier in life, and it is positively related to academic self-concept. Children high on Conscientiousness are usually well-organized, embrace the school agenda, work hard, demonstrate persistence in tasks completion, and show willingness to achieve.

This is also in line with findings documenting that the responsibility traits are significantly and positively related with important real-life outcomes across different areas (occupational success and income, relationships, labor market performance, health) (Spengler et al., 2016a; Spengler et al., 2015; see also Almlund et al., 2011; Borghans et al., 2008; Roberts et al., 2007). The responsible students are more productive in the long-term than those who score lower in such skills and abilities. In general, there is considerable evidence that Conscientiousness predicts school grades and educational attainment above and beyond cognitive variables, or other facets of intelligence, in elementary and secondary school, and in university (see Rimfeld et al., 2016; Briley et al., 2014a; Almlund et al., 2011; Roberts

et al., 2011; Poropat, 2009; Borghans et al., 2008; Chamorro-Premuzic & Furnham, 2008; O'Connor & Paunonen, 2007; Duff et al., 2004; Chamorro-Premuzic & Furnham, 2003; Busato et al., 1999; De Raad & Schouwenburg, 1996).¹⁴ The relation between Conscientiousness and grades might be explained by the fact that more conscientious students work in a more disciplined manner, are more dedicated to work in school, have the ability to persevere, and are more likely to demand challenging tasks from their teachers. These behaviors can be observed by teachers. And as teachers evaluate not only students' cognitive abilities but also their effort when making decisions about grades, Conscientiousness is also reflected on students' grades (see Spengler et al., 2013).

In some studies, Openness-to-Experience, compared to Conscientiousness, is an equally strong predictor of engagement in school – in contrast to other studies which come to the conclusion that traits from the domain of Conscientiousness are the most important non-cognitive predictors of academic achievement, across time into adulthood (Poropat, 2009; Shiner et al., 2003; Shiner, 2000; see also Borghans et al., 2008). Openness-to-Experience, has been found to predict academic outcomes (Spengler et al., 2013) and how long an individual stays in school, to a greater extent than the grades do (Borghans et al., 2008). It is positively related to intelligence and is considered as a factor that plays a more prominent role in later stages of education such as in university (Spengler et al., 2013), and later life events (Spengler et al., 2016a). However, it has more limited support as a trait in childhood than the other *Big Five* traits (Caspi & Shiner, 2006). Here, we can discern a gap in research because in 1999, in the work of John & Srivastava (1999), it was asserted that Conscientiousness and Openness predict school performance (p. 125).

More specifically, only a few studies have revealed the equal predictive value of Conscientiousness and Openness-to-Experience. Marion Spengler and co-researchers (2013) designed and implemented a large-scale study with the main aim to gain a more elaborated understanding of the relation between personality and academic achievement. Drawing data from several thousand adolescent students who participated in a large-scale

¹⁴ However, there are theorists who provide evidence on the importance of cognitive abilities in predicting academic achievement and socioeconomic outcomes. As emphasized by Borghans and co-authors (2008) IQ surpasses any single *Big Five* personality factor in the prediction of the two academic outcomes, college grades and years of education.

educational assessment program, they examined the role of personality in educational outcomes (in terms of grades and achievement tests) over and above intelligence and well-established non-cognitive predictors (i.e., academic self-concept, interest, and anxiety) of academic success. According to their results, Conscientiousness and Openness are the most prominent predictors of academic outcomes even after controlling for IQ and motivation. Conscientiousness is more involved in the prediction of grades while Openness is more closely related to achievement test scores. Both Conscientiousness and Openness showed positive correlations with the self-concept and interest. In a following study, the same researchers found further evidence that out of the five personality traits, Conscientiousness and Openness are positively related to school grades (Spengler et al. 2016).

As for the domain of Agreeableness I found no direct impact on students' school progress. The results of the present study regarding Agreeableness are mixed. The highly agreeable students (Lucas, Maria, and John) had remarkable differences regarding their educational attainments. Notwithstanding, in few studies, Agreeableness is associated with staying focused on learning tasks which may facilitate learning and therefore positively influence academic outcomes. Moreover, agreeable students are more likely to support the class climate with their good conduct and this may lead to more support by their teachers which in turn may also lead to higher achievement (see Spengler et al. 2013, p. 614).

In a more general perspective, agreeable children like Lucas (not-antagonistic, helpful and considerate), had positive interaction with peers and developed good interpersonal skills. But such social skills were also apparent to other children (like Charlie and Helen) who were rather selfish and not forgiving. It is also somehow surprising that Maria who was agreeable and less neurotic had a limited social life while Jason who was agreeable yet more neurotic was perceived as more popular by the others. A possible explanation for this is that Agreeableness appears to be phenotypically associated with traits from other domains: it is associated with multiple biological systems (see Roberts et al., 2011), less heritable and less stable phenotypically than the other personality traits (Briley & Tucker-Drob, 2014). I would like also to add that in the literature review, I discovered evidence that Agreeableness is a trait to which genes and environment contribute to the same extent (Spengler et al. 2012).

Similarly, my results do not support the existence of a relationship between Extraversion and school attainments. Extrovert participants

(Charlie, Jason, Lucas) had different results in their academic progress. This is in line with the results of previous studies which found no significant association between being extrovert and academic outcomes (Spengler et al., 2013; Chamorro-Premuzic & Furnham, 2003). Extraversion is likely to have a positive impact on academic outcomes because extrovert students have an enhanced desire to learn because of their higher energy levels (Spengler et al., 2013, p. 614). At the other extreme, there are studies concluding that introverts perform better than extroverts due to better study habits and their positive attitudes towards studying (see Chamorro-Premuzic & Furnham, 2003).

In the present study, Extraversion appeared to be relevant to the development of social competence. From the longitudinal point of view, Extraversion is found to be the best predictor of aspects of well-being and career stability in adulthood (Blatný et al., 2015). Certainly, extrovert and introvert individuals did not interpret their life experiences in the same way. Theo, an introvert child, displayed negative emotions which were connected to his school behavior. But this dimension is included in the neuroticism scale. In addition, Theo in early adulthood was observed to have a rather rich social life.

Neuroticism appeared to be directly associated with poor academic performance and behavioral problems. The participants (Theo and Jason) with Neuroticism traits, such as fear of failing and concerned about acceptance, had low grades in secondary school years and demonstrated anxiety and irritability in adolescence and beyond. Jason's behavior became extremely challenging in a certain period. Theo displayed a wide variety of negative emotions, such as anxiety, irritability, and feelings of vulnerability. This is highlighted in the study of Spengler and her co-researchers (2015) who associated the high level of sense of inferiority with lower educational attainment. Additionally, the sense of inferiority, as measured in childhood, is found to be significantly and negatively correlated with outcome variables 40 years later (occupational success, individual income).

The negative association of Neuroticism to academic performance and its positive correlation with anxiety are clearly reported in several studies. Neuroticism may impair academic performance as neurotic individuals tend to score lower ability tests, possibly because they are more stressed (Chamorro-Premuzic & Furnham, 2003). In the study of Spengler and co-researchers (2013), Neuroticism was found to be negatively related to achievement test scores but also to intelligence. Drawing data from the

literature, the authors state that neurotic individuals are more anxious and less self-efficient, indicating a decrease in academic outcomes because of reduced concentration on school tasks. However, they note that the link between academic anxiety and Neuroticism is a complex one because it is not clear which one is more directly linked to academic achievement (p. 615).

At this point, it is a great opportunity to introduce you Lucas, a student described in my observation diary as helpful, compassionate, affectionate, forgiving, friendly, cooperative and at ease with almost anyone, good at following instructions, never in hurry regarding school tasks completion, who never got upset or anxious when he was ineffective. Lucas, in kindergarten years, was proactive and responsible in keeping the classroom tidy, and displayed interest in nature and every activity in the schoolyard. He was predisposed to tinkering and devoted endless time fixing damaged toys, whatever the obstacles and however long it could take. He believed himself to be good at this task, and he really was. His classmates admired him for those capacities and talents. Finally, he had the 'practical' ability to adapt to varying contexts, a type of intelligence which Gardner (2002) strongly endorses.

Lucas, in his mother's words, "from the 3rd Grade onwards, he had many problems at school"; he used to "give up easily", that is when experienced learning difficulties. Both Lucas and his parents decided to attend vocational school. Lucas, although he was taught in classroom, he did not learn Greek history neither biology; he is not math literate and he does not love reading literature. He faced school courses alien to his personal goals and to his job ambitions. Yet, he has obtained knowledge about non-academic topics. He enjoys cooking, he grows vegetables, knows many tips about gardening, and he is a skillful carpenter. Lucas was not taught any of those skills at school, he was never rewarded for any of his talents at school. Stated differently, school paid no attention to his dispositions since they were not critical to academic success. Today, 19 years old, he is at the end of the apprenticeship period to be a qualified electrician. He already gets the standard wage, and he is economically independent. After all, we might say that Lucas is blessed. He found his way despite encountering obstacles, he was not labeled as deficient and, as a result, in his 19, feels ready to manage his life. Focusing on Lucas' big picture one might say that he is an achiever in real- life contexts.

Can we explain why Lucas, although he had low grades, never reported to have feelings of inadequacy and inferiority (low self-esteem) when comparing himself to other students in his classes? It is obvious that

Lucas' story contradicts the notion that "If students believe they cannot succeed on specific tasks (low self-efficacy), they will superficially attempt them, give up quickly, or avoid or resist them" (Margolis & McCabe, 2006, p. 219). Lucas, despite the low grades and the negative experiences he had at school, remained confident in himself. Confidence in his own abilities was the base towards his personal balance and success. Fortunately for him, his personality functioned as a protective mechanism: he did not give up, he managed to find options and to succeed. It is therefore reasonable to infer that the impact of personality is great enough to determine well-being.

This finding (about Lucas) is consistent with the results of Shiner and Masten (2012) which indicated that there are personality traits serving as protective factors for children facing adversity while their effects extend to adulthood. The researchers document that "particular personality traits confer benefits for specific adult outcomes both for people who have grown up in adverse conditions and for people who have grown up in more benign conditions" (p. 522). Generally speaking, there is a number of protective factors, "protective mechanisms" in Rutter (1987) words, which are said to be located both externally in the environments of children and internally, as personal attributes of the individual.

The aforementioned findings about the relation between students' personality traits and their educational achievement are consistent to those from a number of studies (see for example, Rimfeld et al., 2016; Briley et al., 2014a; Spengler et al. 2013; Fazeli, 2012; Almlund et al., 2011; Poropat, 2009; MacDonald, 2008; Laidra et al., 2007; Maltby et al., 2007; Bidjerano & Dai, 2007; O'Connor & Paunonen, 2007; Trapmann et al., 2007; Caspi & Shiner, 2006; Duff et al., 2004; Caspi et al., 2003; Shiner et al. 2003; Shiner, 2000; Hart et al., 1997). In these studies, the researchers conclude that children's personalities predict many different life outcomes while some of them attest that certain personality traits can be better predictors of success in school than IQ tests. All of them agree that understanding personality is central to school engagement and progress.

Interestingly, longitudinal short-term and long-term studies point to the conclusion that childhood personality predicts social competence or maladaptation across time (Shiner & Masten, 2012; Shiner et al., 2003, p. 1147). An individual is likely to have similar attributes over time, and in different social contexts (Maltby et al., 2007). Shiner, Masten and Roberts (2003) in a follow-up study to earlier studies (Shiner, 2000; Shiner et al., 2002), addressed developmental questions regarding the predictive links

between childhood personality traits and personality, competence and adaptation in adulthood, in a normative sample of participants tracked from approximately age 10 to age 30. Their central questions had as follows: How stable is personality? Do children's personalities shape their life outcomes? Using data from childhood and adulthood 20 years later, they examined the ways in which childhood personality predicted young adult personality and competence, in five domains (academic attainment, work competence, rule-abiding versus anti-social conduct, romantic relationships, and close friendships). The results of their research indicated that personality demonstrated modest to moderate continuity over those two decades and showed significant predictive validity for success in adult life.

Rebecca Shiner (2010), in her review of studies regarding personality differences that youths exhibit from early childhood through adolescence, notices that children exhibit a dispositional signature, which show some consistency across situations and over time. She also adds that children's personality traits are important to their development (p. 1089) while the early personality differences make a difference for youths' life outcomes (p. 1093). Caspi, Roberts and Shiner (2005), in their review of personality studies, assert that there are predictive associations between personality traits and achievement, apparent early in children's life, at the time that they first enroll in school. The authors infer that this finding is important because school adjustment and academic performance have cumulative effects over time (pp. 473-474).

Behavior and childhood personality characteristics –measured early in life– add to our understanding of which factors in late childhood are important for successful adaptation in middle adulthood. Drawing on a 2-wave longitudinal representative sample spanning 40 years from childhood to middle adulthood (age 52), Marion Spengler and her co-researchers (2015) examined how student characteristics and behaviors in late childhood (age 12) predict career success in adulthood (age 52). In particular, they examined the influence of parental socioeconomic status, childhood intelligence, and student characteristics and behaviors (inattentiveness, school entitlement, responsible student, sense of inferiority, impatience, pessimism, rule breaking and defiance of parental authority, and teacher-rated studiousness) on 2 important real-life outcomes (i.e., occupational success and income).

Their results demonstrated that personality-related student characteristics and behaviors play significant roles in important life

outcomes. Interestingly, non-cognitive childhood personality characteristics were found to predict educational attainment, occupational success, and individual income over and above childhood IQ and parental SES. The researchers infer that the behaviors which are based on the traits of responsibility and studiousness –qualities which are consistent over time– may be rewarded in educational and occupational environments, and such rewards in turn may lead to stability in showing these kinds of behaviors. In a following study (Spengler, 2016a) they found convincing evidence to further support this assumption: personality is an important predictor for later life events across different domains (work, health, relationships). Its effects are mainly independent of IQ, SES, and educational achievement. The coherence of their results strengthens the power of personality and personality-related traits in the context of real-life.

In the present research, I noticed that certain personality traits of the participants were apparent from their kindergarten period through early adulthood. In general, the various components of Extraversion showed stability from preschool-age to adulthood. Similarly, the trait of Agreeableness was remarkably stable in all participants. Sociability, and positive activity level in childhood were indicators of later Extraversion. Highly confident participants exhibited high Extraversion as youths.

I had also the opportunity to ascertain the width and depth of these findings when along with the mothers re-visited the data gathered from the observation of children in kindergarten, namely the children's profiles. What did we notice? Certain children's personality traits, as they were identified in early school-years, showed considerable stability from kindergarten period to early adulthood. For instance, Theo who was sensitive to criticism and felt insecure in preschool years continued to seek external rewards and could not persevere when faced with setbacks; children (Jason and Charlie) with developed social skills became "number one" among their peers; two participants as aged, did not gain increased control over their impulses (Jason and Charlie).

At this point, I would like to briefly discuss the forces behind participants' decisions about their after-school studies or occupation. We can speculate that Maria took her decision according to her individual traits (strong tendency for self-reflexion); John and Charlie were influenced by their siblings (as they admired them a lot). Lucas took his decision based on his personal interest and talent for 'work with hands'; Theo appeared not to be able to choose and this can be linked to the general status of anxiety and low self-confidence he experienced; Helen had a huge desire to teach

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

children, believing that she had high communicative and 'tutoring' skills; and Jason had decided that he would not make any studies and had a desire to be financially autonomous as soon as possible. It is clear that their decisions were influenced by their personal characteristics (personality, aspirations, self-perception, academic attainments, experiences).

All in all, participants' basic behavioral patterns –and, alongside, their attitudes towards school success, and their academic performance–manifested stability over time to a certain degree. Stated differently, there are certain academic and non-academic students' behaviors in preschool years which are predictive of certain other behavior patterns in adolescence and beyond. And this is only one part of the picture. John's mother said:

He enjoyed spending time on video games. And he wasn't always happy studying and doing homework ... but he was concentrated, he knew that it was really important to get good grades ... that school is important for getting a good job. [...] Yeah, sometimes I pushed him to do better, but ... I don't want to be unfair: he was a good student! There was no need to push him hard because he knew what he had to do. He was sensible, caring, and had good manners in his childhood, don't you remember?

Maria's mother told me:

She's aware of the things she's really good at. But she's too much of a perfectionist. She tends to be her own judge, and a rigorous one ... I don't like this, I keep telling her "that's enough!" [...] So to speak, she had no life other than school. She knew that most of school assignments were tedious or a waste of time but she rarely complained about doing this. [...]. In the second year of Lyceum she took private math lessons not because she couldn't grasp the mathematical concepts but because she wanted to have high grades. [...] She believes that she'll succeed, that's her character.

Maria, from her side, said:

Why do I do homework when others don't? I can't answer that. I think that it's a decision that you have to make. [...] It may be easier for me and more difficult for someone else.

The above two quotes from John's mother and Maria's mother provide examples of the role of personality in students' school progress. Maria's words tell us how personality is the hidden variable behind one's decisions.

In any case, it is worth noting that certain traits of participant's personality which are related to academic performance demonstrated stability over time. These traits of their personality and many behaviors, as observed and reflected from kindergarten years and onwards, followed them until the age of 19, and had not been significantly differentiated as students mature into adulthood.

The above findings are echoed in many recent studies (McClelland et al., 2013; Klimstra et al., 2012; Pulkkinen et al., 2012; Komarraju et al., 2011; Trautwein et al., 2009; Poropat, 2009; Bidjerano & Dai, 2007; Trapmann et al., 2007; Caspi & Shiner, 2006; Whiteside & Lynam, 2001) that concluded that specific personality traits –with Openness-to-Experience, Emotional Stability, and Conscientiousness considered as the most prominent– influence the educational identity of individuals, have impact on their emotional balance and are strongly correlated with the concentration on personal and academic goals. In addition to ability, the *Big Five* personality traits of Conscientiousness, Neuroticism, and Openness to experience are thought to provide a fairly comprehensive description of variation in human behavioral tendencies. They had proven to impact trajectories of learning and to be the most consistent associations with achievement-relevant personality measures (see Briley et al., 2014a).

However, Daniel Briley, Matthew Domiteaux, and Elliot Tucker-Drob (2014a) state that researchers interested in the relation between individual differences and academic achievement should not focus exclusively on the *Big Five* model. Individual differences in ability, personality traits, motivation, beliefs, and habits are all jointly associated with achievement. Over and above, a growing body of research has documented that aspects of children's early literacy and math skills, children's cognitive and general knowledge skills, children's early self-regulation (including the ability to pay attention), and children's working memory and the ability to remember instructions significantly predict school readiness, later school success, better school grades, high school completion and later achievement into adulthood (Watts et al., 2014; McClelland et al., 2013; Duckworth & Carlson, 2013; Pingault et al., 2011; Snow, 2011 and 2006; Duckworth et al., 2010; Poropat, 2009; McClelland et al., 2007; Mazzocco & Kover, 2007; Duncan et al., 2007; Duckworth & Seligman,

2005; DiLalla et al., 2004; Shiner et al., 2003; Lee & Burkam, 2002; Shiner, 2000). These studies support the predictive relations between individual characteristics and academic achievement, after controlling for important demographic factors such as, gender, age, ethnicity, child IQ, family income, and parent education level.

Also of interest to researchers is whether personality consists a source of individual differences in creativity. Examining whether genetic variance in intelligence and personality traits account for the genetic component of creativity, Christian Kandler and co-researchers (2012) demonstrated that both environmental and genetic factors contribute to individual differences in creativity. However, genes do not directly influence creative thinking and behavior: core personality traits (Openness-to-Experience and Extraversion) and cognitive abilities primarily mediate the genetic influences on individual differences in creativity. Substantial environmental influences are apparent and reflect facilitators or impediments of creative thinking and behavior.

Given the pivotal role of personality in shaping children's and youths' lives, one might ask "which factors account most for personality development –stability or change?". Certainly, the transition to adulthood involves significant changes in personality traits that are generally in the direction of greater maturity and increased stability (Hopwood et al., 2011).¹⁵ There are behavior genetics studies that have shown that personality traits are genetically influenced, with estimates of heritability ranging from 40% to 60% (see Roberts et al., 2011). In a comprehensive quantitative review of studies on genetic and environmental mechanisms of differential stability of personality across the lifespan, Daniel Briley and Elliot Tucker-Drob (2014) addressed the following question: To what extent does the increasing stability of personality result from the continuity and crystallization of genetically influenced individual differences, and to what

¹⁵ Hopwood and co-researchers (2011) investigated the patterns and origins of personality trait changes from ages 17 to 29. Their results suggest that a) trait changes were more profound in the first half of the transition period to adulthood compared to the second half; b) traits tend to become more stable during the second half of this transition; c) negative affectivity declined over time and constraint increased over time; d) both genetic and non-shared environmental factors accounted for personality changes. Their findings serve both to highlight strong genetic contributions to the differential stability of personality from adolescence through young adulthood and suggest that these influences become particularly stable following emerging adulthood.

extent does the increasing stability of life experiences explain increases in personality trait stability? The two researchers came to the conclusion that individual differences in patterns of thoughts, feelings, and behavior tend to stabilize over development. The longitudinal stability of personality is low in childhood, but increases substantially into adulthood; both the genetic and environmental influences on personality increase in stability with age.¹⁶

In a subsequent meta-analysis the same two researchers documented that both cognition and personality are moderately heritable and exhibit large increases in stability with age. However, the heritability of cognition increases substantially with child age, while the heritability of personality decreases modestly with age: stability of cognition nears its asymptote by the end of the first decade of life, whereas stability of personality takes three decades to near its asymptote. In any case, cognitive ability and personality do not operate in isolation of one another (Briley & Tucker-Drob, 2015).

Many theorists take the position that people become more conscientious, and emotionally stable across the life course, whereas social vitality and openness to experience rise early in life and then fall in old age (Borghans et al., 2008; Maltby et al., 2007). Some studies establish that, on average, Agreeableness and Conscientiousness tend to grow with age (see Roberts & Davis, 2016; Heckman & Kautz 2012). For Shechtman and colleagues (2013), a natural question to ask is to what extent personality traits are fairly stable over time or context, and to what extent they entail skills that can be developed. Based on a synthesis of the relevant literature, the authors assert that for most personality characteristics, evidence suggests

¹⁶ Briley and Tucker-Drob (2014) write: “Along with increases in phenotypic stability, genetic and environmental influences both increase in stability with age. Near age 30, genetic stability approaches unity, and true environmental stability slowly increases across the majority of the lifespan to reach similar levels of stability in old age. The genetic and environmental decomposition of phenotypic stability is likely the most surprising and informative finding of the present study. Genetic influences exert a relatively constant influence on stability across the lifespan and fully explain phenotypic stability at young ages. Environmental contributions to stability, on the other hand, are almost nonexistent in early childhood, but by midlife the environment contributes only slightly less to phenotypic stability than do genetic influences. This result indicates that the trend of increasing phenotypic stability can largely be explained by increasing environmental contributions.” In their analysis of studies on genetic and environmental influences on human intelligence, Spinath & Gottschling (2015) present data supporting the hypothesis that heritability estimates increase across the lifespan: genes become more important with age, drive stability while not being invariant across development.

that there can be powerful influences from both individual temperamental tendencies and situational factors, and that these capacities can be cultivated. Briley and Tucker-Drob (2014) have interesting things to tell us about the stability of personality traits, in *Big-Five* terms, by trait category. They found evidence that Extraversion and Conscientiousness are significantly more heritable than the average personality outcome. Extraversion tends to be influenced more by genes. Conscientiousness displays the most consistent deviations from the average trend; it is more stable phenotypically and environmentally (but not genetically), with both genes and the environment contributing more to its stability. Agreeableness is significantly less heritable; it tends to be more environmental, less stable phenotypically and environmentally. No significant differences were found for Neuroticism or Openness. For them: “[d]espite several statistically significant differences between the *Big Five* traits, the major conclusion is that differences are strikingly trivial”.

Many other personality studies reached to the conclusion that traits exhibit dynamic complementarity (Cunha et al., 2006) and change over the life cycle, though in different ways (see Almlund et al., 2011; Borghans et al., 2008). Nevertheless, Heckman and Kautz (2012) note that in the published literature this evidence does not address whether these changes occur naturally (“ontogenic change”) or whether they are due to changes in the environments commonly experienced over the life cycle (“sociogenic change”) (p. 17). This can also be linked to the difficulty of measuring traits. As traits are not directly observed and they are measured using performance on “tasks”, broadly defined, and given that there are multiple determinants of performance on tasks, it is not safe to “assume a linear relationship between outcomes and traits. This practice is particularly problematic for measuring personality traits, where the effect of a trait on an outcome is not always linear or even monotonic” (p. 21).

It is also worth keeping in mind, as Heckman and Kautz (2012) remark, that measured cognitive ability and measured personality traits depend on a constellation of factors. Traits are depended on other traits and skills, and multiple traits affect performance on cognitive tasks. In particular, different tasks require different traits in different combinations. Performance on most tasks depends on effort, personality traits, cognitive ability, and incentives, although the importance of each differs by task. This dependence creates a fundamental problem in measuring traits. Most studies in personality psychology devise a set of measures to capture a trait but do

not standardize for incentives in the situation in which the trait is being measured, without addressing the question of causality (whether measured traits cause, rather than just predict, the outcomes, and without controlling for other traits that determine performance on certain tasks) (pp. 4-5, p. 20).

Broadening our perspective, new issues emerge: Do personality traits reflect individual differences in biologic systems? Can we identify the ‘bing-bang’ of our individuality? Neuroscientists and geneticists say emphatically “yes”. Firstly, it is widely recognized now that, from the earliest days of life, children vary from one another in their typical emotions and behaviors (Shiner, 2010, p. 1084). We are all born with certain biological capacities for learning. For example, researchers found evidence that infants who demonstrated a strong preference for novelty at just 6 months old had better language and motor skills, and desire for exploration when they grow to be toddlers and children (Thompson, Fagan, & Fulker, 1991 as cited in Ostroff, 2012).

Child development and early learning are affected by prenatal exposures (Allen & Kelly, 2015). But although our brains contain the same basic structures, our brain networks are as unique as our fingerprints (Tokuhama-Espinosa, 2010; Erlauer, 2003). Even identical twins are born with physically distinct brains due to the slightly different experiences they had in the womb-period: the one might had her/his ear pressed closer to the uterus wall and, thus, was bombarded with sounds and light much more than the other (Tokuhama-Espinosa, 2010). According to DeYoung and Gray (2009), personality traits appear to reflect individual differences in biological systems and brain circuits.

In addition, current knowledge in both neuroscience and genomics points towards the conclusion that the experiences and relationships we have as children exert a lasting biological influence on our learning, behavior, and health across the life course (Center on the Developing Child at Harvard University, 2014, p. 3). There is also robust evidence that humans learn the most and the fastest during the first few years of their development. From infancy to childhood, they achieve to adapt to new environments, to master various material, to pick up on all of the complex stimulus surrounding them, to use information to guide their perception, attention, and learning, and to solve complex problems (Ostroff, 2012). In particular, during this sensitive period a child’s brain goes through a dramatic transformation. While the windows of opportunity do not shut on a kid’s fifth birthday, it is clear enough that this critical period is the very beginning of human thought, action, and

higher-level functions (Smotherman & Robinson, 1988). In other words, rich experiences during children's first 5 years –such as strong relationships with caring adults and stimulating environments– drive changes in the brain (new connections that strengthen the brain) and prepare kids for school learning. At the same time, for children born in disadvantage learning environments (less opportunities to learn) it is also the brain that might make them vulnerable and limit their ability for academic progress. The scholars of the Center on the Developing Child at Harvard University (2016) conclude: “The exceptionally strong influence of early experiences on brain architecture makes the early years a period of both great opportunity and great vulnerability for development” (p. 7).

Finally, research from a host of relevant disciplines has demonstrated that neurodevelopment is use-dependent. It has made us keenly aware that the structure and function of the brain are significantly shaped by early experiences and environment, for better or worse. In early childhood, children develop the cognitive, social and emotional building blocks for later development (Shonkoff & Phillips, 2000, p. 5). But the development of learning skills goes hand-in-hand with changes people experience in different orders and time. Namely, since there is an agreement among neuroscientists that the first three years of life are critical to brain development there is increasing evidence that this critical period is not rigid and inflexible ('once for all'). The brain's plasticity (neuroplasticity) allows lifelong learning; people acquire new knowledge and skills over a lifetime; missed opportunities during early brain development can be regained later in life. Most importantly, with regard to higher level cognition and the areas, those that are invariantly addressed in formal education, the brain continues to mature into the adulthood; it continues to develop in response to experience; is capable of functional and structural change (Ansari, 2014, p. 1704; Willis, 2011; Tokuhama-Espinosa, 2010; Doidge, 2007; Wexler, 2006; Pascual-Leone et al., 2005; Bruer, 1999).

The latest developmental neuroscience research has shown that the brain is extraordinarily plastic; it has the ability to grow and change; it is much more malleable throughout life than previously assumed (though within constraints); both the developing and the mature brain are structurally altered during learning. The brain is a complex and integrated system, a dynamic organ, shaped to a great extent by experience and by what a living being does; it is constantly changed by experience, even in daily basis. Learning and experience strengthen and add synapses and

imposes new patterns of organization on the brain; they organize and reorganize the brain. Actually, any new experience, such as learning a language or acquiring a new skill, can produce changes in those neural systems that support acquisition of the new skill, even in old age (Tokuhama-Espinosa, 2010; Hinton et al., 2008 as cited in Ostroff 2012; Wexler, 2006; Doidge, 2007; Pascual-Leone et al., 2005; Bransford et al., 2000; Damasio, 1994). According to Wexler (2006), there are systems in human brain (the “distributed neuron functional systems”) that are not wired at birth and they are not determined by our genetics. These systems are profoundly influenced by the nature of stimulation we receive while growing up. That is why that factors such as family characteristics and parenting are regarded as strongly influential on how a child’s brain develops and establishes important lifelong patterns.

However, it is worth remembering that the brain capacity to adapt and change decreases with age. Early childhood is still a time of great promise because the architecture of the developing brain is most open to the influence of the environment. For example, children are born with the potential to learn to control impulses and focus attention but their experiences as early as the first year of life lay the foundation for how well such executive function skills develop. Although windows of opportunity remain open for many years, trying to change behavior or build new skills on a foundation of brain circuits that were not wired properly from the beginning requires more effort –for both individuals and society. In other words, building more advanced cognitive, social, and emotional skills on a weak foundation is far more difficult than getting things right from the beginning (Center on the Developing Child at Harvard University, 2016, pp. 4-14).

Another important assumption is that we are not passive during our life learning-journey. Genes affect the environment and experiences individuals choose to have. Said in another way, environmental experiences are genetically driven: individuals respond, look for or are placed into environments that match their own personalities and genetic predisposition (see Spengler et al. 2012, p. 415). It seems that even the embryo itself plays somehow a role in its own learning by moving and changing within its cellular environment. Movement patterns of the foetus actually set up brain connections required for learning in early childhood (Ostroff, 2012). Young infants, similarly, are actively involved in their own development, trying to make sense of their environment and gain mastery over it; they are building explanatory systems that organize their knowledge; they possess an active

mental life, namely they are active learners who bring a point of view to the learning setting (Allen & Kelly, 2015; Bornstein et al., 2013; Bransford et al., 2000, p.10; Bronfenbrenner & Morris, 1998). For Roberts (2009), biological factors do not affect the environment directly, but indirectly through the personality trait or state. According to Shiner and Masten (2012), children's traits influence, among others, the reactions and support that they evoke from others, their interpretation of daily experiences; they elicit different reactions from the environment and influence others' reactions, beginning in the first few months of life (p. 510). Thus, development is fueled by reciprocal 'serve and return' processes, in which young children naturally reach out for interaction and adults respond –and vice versa (Center on the Developing Child at Harvard University, 2014). Spengler and her co-researchers (2015) write:

Students choose educational experiences and environments whose qualities match their own personalities. Therefore, they might be more likely to choose challenging tasks and environments, which may then lead to higher qualifications and degrees. In turn, these environments may also reward such industrious behaviors and conscientiousness-related traits, and higher qualifications or educational attainment may open the door for more prestigious and better paying jobs. (p. 1337) [...] These initial individual differences in school-related and nonschool-related student characteristics and behaviors, particularly being an industrious and responsible student, might develop into a cumulative advantage over time over and above individual differences in education, IQ, and parental SES. Students behave in a certain way on the basis of their characteristics, and they experience events across the different phases of their lives. Thereby, those characteristics can be viewed as factors that initiate a cascade of events that will influence behavior and decisions over a long period of time. (p. 1338)

In genetics, this process is studied as genotype-environment interaction and as genotype-environment correlation. In the first case, the effect of an imposed environment differs as a function of individuals' genetic propensities. The second case denotes genetic influence on exposure to environments; that is choice of environments rather than the imposition of an environment: children and adolescents select, modify and create environments in part for genetic reasons; they add value to their own environments and create their own educational experiences within the educational process in part on the basis of their genetic propensities. In this

perspective, it is clear that education is not imposed on a passive organism (Rimfeld et al., 2015; Krapohl et al., 2014; Shakeshaft et al., 2013; Haworth et al., 2011; Kovas et al., 2007).

So, three critical questions to ask are: Can we describe the gene-environment interaction and correlation for personality development? Do genetic influences increase or decrease with age? Can the environment influence the biological mechanism of humans? We have now convincing evidence from genetic studies that genetic factors substantially influence individual differences in personality. Taking a behavioral genetic approach, Elisabeth Hahn and co-researchers (2012) found that, with the exception of Openness –cultural transmission seemed to impact inter-individual differences in Openness–, each trait could be described by additive genetic and non-shared environmental effects. They also note that the etiology of adult personality might be more complex than typically reported in quantitative genetic analyses of twin data alone.

In a developmental perspective, Marion Spengler and her co-researchers (2012) carried out a longitudinal (4 years) behavior genetic study of self-reported personality in childhood based on the *Five Factor* framework, focusing on the transition from early to middle childhood and early adolescence. Their results indicated that genetic influences mainly contribute to stability whereas environmental effects primarily account for change. Their data also provide evidence for the stability of personality in childhood across four years (across the two measurement occasions of the study). The authors state that “[t]his degree of stability across four years is remarkable, given that the children experienced a transition from elementary school to secondary school between the two measurements” (p. 415). They further note that we can conceive childhood personality as an early manifestation of adult personality, concluding that “knowledge about the relative importance of genetic and environmental influences can help provide a deeper insight into the developmental pathways of individual differences in childhood personality” (p. 415).

From the standpoint of psychologists, Brent Roberts (2009) proposes the sociogenomic model of personality traits in which traits and states (how people think, feel, and behave in any given situation) are integrated; they are associated with one another. He also proposes the notion of “personality development” instead of “personality change”. In his model, the environment plays a role in change, although the effect of environments on personality trait change is actually quite small. Environment can affect

biological factors and states directly, and traits indirectly. Environments can have pervasive effects on specific types of behaviors because they act on the states, not the traits. But if these state changes become extended, then they may cause changes in traits in a bottom up fashion. This bottom up quality points to how personality change becomes personality development.

For Daniel Briley and Elliot Tucker-Drob (2013), genes not previously affecting cognitive abilities at one point in time, begin to affect cognition at later points in time. In other words, genetic influences on cognition are amplified over time while innovative genetic influences arose. In early childhood, it appears that genes are “activated,” whereas previous genetic influences decay. Nevertheless, by middle childhood, existing genetic influences stop decaying and begin to amplify. One possible explanation for these changes in heritability may be children’s continual introduction into new environments that activate genes for cognition. Notably, the same authors, in a subsequent meta-analysis, report the genetic and shared environmental stability of cognitive ability and condense that increasing phenotypic stability over child development is almost entirely mediated by genetic factors (Tucker-Drob & Briley, 2014).

All in all, it is a fact that our DNA is unique and the structure and sequence of DNA is the physical basis for inheritance. However, human behavioral traits tend to be plastic (Pigliucci, 2001 p. 260). The gene-environment transactions result in variations in development, behavior, and performance. Likewise, although our brain is not *tabulae rasae* when we are born it is not fully determined genetically (Damasio, 1994, p. 111). The human brain is shaped and adjusted according to its external environment (Boyce & Kobor, 2015; Wexler, 2006). The malleability of the brain in the face of environmental stimuli allows the re-organization of its functional neuronal networks. The kind and the nature of experiences and stimulation we receive during childhood, but even later in life, can accordingly shape and re-organize our brain. From the philosophical perspective of Eisner (2004a) “minds, unlike brains, are not entirely given at birth; minds are also forms of cultural achievement. The kinds of minds we develop are profoundly influenced by the opportunities to learn that the school provides.” (p. 9).

Investigating the relationships between individual differences and life goals, Wiebke Bleidorn and her co-researchers (2010) notice that major life goals, like personality traits, seem to be primarily influenced by genes and specific environmental experiences. However, there is a reciprocal

interplay between traits and goals over time: “Instead of a causal precedence of traits over goals, both might be better conceptualized as complementary units of the personality system. That is, people do not only calibrate their goals in accordance with their personality traits but also adjust their traits to their major life goals to adapt adequately to the demands of their current or anticipated social environment” (p. 377). LaRue Allen and Bridget Kelly (2015) speak directly to the profusion of possible futures and life paths grounded in the character, course, and timing of early brain development which is guided by bidirectional interactions between human biology and social/educational environments:

The capacity for learning is grounded in the development of the brain and brain circuitry. Rather than a structure built from a static “blueprint,” the brain architecture that underlies learning is developed through a continuous, dynamic, adaptive interaction between biology and environment that begins at conception and continues throughout life. This accounts for how early experiences (including supports and stressors) affect gene expression and how the brain develops, and it also accounts for how the effects of environmental factors on a child’s development may vary depending on underlying individual genetic characteristics. The adaptations that occur as a result of the mutual interactions between “nature” and “nurture” mean that early experiences and early learning environments affect all domains of human development. (p. 167)

Personality shows signs of stability as a consequence of genetic factors but it also develops and changes over the life course (Duckworth et al., 2007; Maltby et al., 2007; see also Roberts & Davis, 2016). Although it is rather difficult to measure the extent and the degree to which the change of personality traits occurs, it is safe to say that personality changes. In particular, there is research evidence that approximately 50% of the variance in each of the *Big Five* traits is attributable to genes (Loehlin et al., 1998). The rest can be attributed to environmental experiences, both in childhood and throughout adulthood (McAdams & Olson, 2010).¹⁷

¹⁷ For example, Alithe Van den Akker and her co-authors (2013) carried out a study in order to address the role of children’s personality types in the development of adjustment problems –across the years from childhood through adolescence– and notice the interplay of personality and parenting in the etiology of adjustment problems. The researchers write: “if personality types are thought of as representing a vulnerability for maladjustment, not all children with a vulnerable personality type necessarily exhibit problematic development.

So, are children with certain personalities traits at risk for educational failure? Considering the results of my research and data from the relevant literature, it is safe to say that it is the combination of traits from all of the *Big Five* domains which may predict how students will perform in school. Though presented and described separately, all traits are inextricably linked. Looking at a single trait, in isolation from others, tells us practically nothing. Besides, all human behavior has a thousand causes and all the generalizations collapse when we look at someone's individual traits. Moreover, taking into account that early years are highly influential in forming personality, it is difficult to designate the extent to which personality is determined by genetic factors, compared to the effects of environmental factors.

Drawing from the above statements and discussion one could wonder about the impact of schooling on participants' personality traits, their abilities, behaviors, and attitudes. The plausible assumption is that genes and environmental experiences interact to affect components of personality which, in turn, are correlated to academic achievement. However, it appears that students' personality traits related to their academic progress were not influenced by school experiences. Of course, new traits emerged as children matured, many traits became re-organized, other became especially salient. And, admittedly, their behavior changed during adolescence –a period which is often discussed as a time of stress and taking risks. Besides, one function of adolescence is having and acting on new, and even potentially risky, impulses, making mistakes and learning from experiences before they are expected to act like an adult (Baird et al., 2010). But these behaviors were related to the upheavals of adolescence and represented this particular stage in students' life cycle. They were not fixed in any final sense. John's story is indicative of the changes in behavior of the participants, the problems of adolescence and their temporal nature. John's mother said:

In the last high school year, during his preparation for the national examinations, his behavior changed. He had outbursts of anger, crying, and sometimes he bursted into tears. [...] Returning tired from school,

The reason is that children with a vulnerable personality type may experience protective factors (e.g., supportive parenting, low levels of stress), preventing them from experiencing adjustment problems. Similarly, children without a vulnerable personality type may also exhibit adjustment problems, due to other risk factors they may experience (e.g., harsh parenting, high levels of stress)" (p. 752).

having tutoring for 2-3 hours daily after school, and in the evening, even more tired, trying to complete assignments ... I know that he was worried about disappointing us. But that was a difficult period, for him and for us too. ... Fortunately , he had a good relationship with Stella [his sister] [...] Yes, she had left home, for studies ... But they talked a lot on the phone. And she tried to come home as often as she could. [...] Now he is OK. No stress, no crying. He behaves as he always used to. Thank God! All is well when ends well.

As mentioned earlier, increasing stability of personality with age is mediated by environmental factors (Briley & Tucker-Drob, 2015). Admittedly, although age-related changes driven by experiences in developmental transitions periods may lead to a higher proportion of environmental influences, studies have shown that certain personality traits are quite stable across the life-span (Spengler et al. 2012; Maltby et al., 2007; Caspi et al., 2005). But, what about things that are context-dependent and impervious to change? What about traits from the categories of Conscientiousness and Agreeableness, which are documented to be less heritable (Briley & Tucker-Drob, 2014)? What about traits like responsibility, self-control, self-concept, and self-esteem? What about the ability to act in certain ways depending on the situation? What about practices that could help students build a sense of self? What about qualities such as empathy, patience, compassion, and kindness? What about attention skills? What about traits which refer to curiosity and persistence? What about behaviors and strategies that can be directly taught? What about traits children have and we simply need to protect them? What about dispositions and intelligences (in Gardner's notion)? What about everything that is not inherent or that is amenable to environmental influence and can be cultivated, learnt, and practiced? Is it the case that school attendance makes no difference?

I would dare say "Rather No". The school environment and the school experiences across the school years did not shape students' personality traits to a significant degree. No remarkable differences were observed.¹⁸ Why? Because school focuses solely on academics and ignores

¹⁸ Roberts (2009) points out that personality traits become increasingly consistent with age, as well as increasingly mature. People become more socially dominant, agreeable, conscientious, and emotionally stable, especially in young adulthood. These patterns of development by necessity are the result of both genes and environment, and many of them inevitably reflect gene-environment interactions.

aspects such as individual characteristics, character development, and other non-cognitive skills –such as perseverance, self-discipline, interpersonal skills, and social awareness– which can be cultivated and fostered in classroom. School completely misses students' personality traits (Heckman, 2011). I would like to dwell on it and to summarize the main arguments.

First and foremost, it is clear that personality traits matter. They shape people's emotional and social lives. They may predict children's success in school and beyond; they may predict substantive life outcomes, such as well-being, relationships and occupational success. Success in life depends on personality traits that are not well captured by measures of cognition. Significantly, several personality psychologists provide evidence that personality causally affects life outcomes (Heckman & Kautz, 2012). In many respects, understanding how personality traits develop is critical for conceiving both school and important life outcomes as well as things that work and may benefit children succeeding in life. So, if someone asks why we should care about personality we could answer because personality traits are key components of human nature; they play a role in most aspects of an individual's life and the way we learn and perform in school.

But personality is not necessarily destiny; it is rather a tendency, representing relatively stable, genetically based dispositions. In the majority of the personality definitions (see above; i.e., Shiner & DeYoung, 2013; Roberts, 2009; Lapsley & Hill, 2009; Maltby et al., 2007; Shiner et al., 2003) there are key-terms like “relatively enduring”, “relatively stable”, “stability and change”, and “continuity and change”. Numerous studies have shown that personality traits are dynamic constructs which demonstrate both stability and change. Traits and behaviors change across the life course. Both children and adults change their habitual patterns as they accumulate additional life experience (Duckworth et al., 2007). That is, we have the ability to modify or discard an old belief and gradually embody a new one.

Our experiences, says Damasio (1994), shape our neural design, not only as the outcome of our first experiences, but throughout the whole life span. The connectivity of the adult brain is only partially determined by genetics and early development since “as we develop from infancy to adulthood, the design of brain circuitries [...] seems to depend on the activities in which the organism engages, and on the action of innate bioregulatory circuitries, as the latter react to such activities. This account underscores the inadequacy of conceiving brain, behavior, and mind in terms of nature versus nurture, or genes versus experience” (p. 111). From

the perspective of Gardner (1991) “[W]e are as much creatures of our culture as we are creatures of our brain” (p. 38).

James Heckman and Tim Kautz (2012) argue that “even though traits are relatively stable across situations, they are not set in stone” (p. 17). Analyzing relevant studies, they notice that schooling and increasing education can improve both personality and cognitive traits and that these traits, in turn, boost outcomes (i.e., labor market outcomes, adult health, and social outcomes). Interventions, education, and parenting can affect traits in lasting ways and thereby improve academic achievement and life outcomes. The authors write:

In reality, the extent to which these personal attributes can change lies on a spectrum. Both cognitive and personality traits can change and be changed over the life cycle but through different mechanisms and to different degrees at different ages (p. 4). However, traits are not set in stone. They change over the life cycle and can be enhanced by education, parenting, and environment to different degrees at different ages. (p. 38)

Similarly, Lapsley and Hill (2009), in their study of moral personality, note that dispositional tendencies, although stable and enduring, are not destiny: “Children’s transactions with parents, peers, schools and neighborhoods moderate the influence of personality traits” (p. 195). Robins and Tracy (2003), likewise, write: “it is unlikely that environmental events and contexts ever influence a single trait in isolation. Parents, teachers, and other socializing agents interact with the whole child, not with one trait at a time” (p. 114). Each individual’s personality is unique but she/he can learn to behave contrary to her/his disposition, can make progress (Hattie, 2012), and, to quote Tough (2012, p.48) to “rethink and remake” her/his life.

Brent Roberts and Jordan Davis (2016) assert that personality traits are “developmental phenomenon” and that the key period of the life course for personality trait development is young adulthood. Trying to explain the fact that personality changes so much in young adulthood, they initially took a closer look at previous studies in terms of *Big Five* personality traits and detected a substantial heterogeneity and inconsistency in them. For instance, they found studies which show increases for the trait of Extroversion, other that show decreases, and studies that show no mean-level changes. The same is true for other traits such as Conscientiousness, Agreeableness, Openness, and Neuroticism (p. 3). Moreover, they remark that the findings

of several studies paint a picture of surprising quiescence in adolescence followed by a period of tremendous growth and dramatic change in personality traits in young adulthood. During the period of emerging adulthood, humans move away from the authority of parents and start to focus on their own needs and think about their identity. Moreover, new social roles come with experiences, rewards, and punishments.¹⁹ These roles lead to changes in thoughts, feelings, and behaviors, which translate into personality change over time. The authors state:

While there is substantial change in the aggregate in adolescence, this amount of change is doubled in the subsequent decades. [...] In particular, increases in emotional stability occurred from adolescence to middle age. Conscientiousness appears to begin a systematic increase in young adulthood and then shows increases even into old age. Changes in agreeableness were less clear but tended to show small increases across adulthood. Interestingly, the meta-analysis also showed robust increases in a facet of extroversion, described as social dominance. (pp. 3-4)

The most current studies suggest that both genetic and environmental factors play a part in shaping individual dispositions and individual differences in personality, and are equally important for understanding both personality stability and change; both genetic and environmental mechanisms are necessary to explain personality development. Experts notice that environment can affect biological systems. Indeed, there is nothing in human behavior that is simply biological or environmental (Hahn et al., 2012; Baird et al., 2010). In Brent's Roberts sociogenomic model of traits, environments cause changes in states. But long-term shifts in states would have serious ramifications for personality trait change. Under which situations? Personality trait change is much more likely to come about if the situation stays the same for a long time. That is, if the environment is persistent and provides a constant press to change in a specific direction (Roberts, 2009). Viewed this way, schooling may serve as a route for

¹⁹ For Roberts and Davis (2016), the social investment principle may explain "why people tend to increase on traits like conscientiousness and emotional stability in young adulthood. Specifically, it posits that personality trait change in young adulthood occurs because of investments in conventional social roles, which bring with them experiences and expectations for being nurturing, responsible, and emotionally stable. In other words, the personalities of young adults change as they commit to adult social roles." (p. 4).

maturation and personality development, for the most desirable outcome: a well-balanced life for students.

Moreover, mounting research from neuroscience has proven the brain plasticity. Genes and environments interact to shape the architecture of the brain. Genes provide the ‘basic instructions’, but experiences authorize how and even whether these ‘instructions’ are carried out (Center on the Developing Child at Harvard University, 2014). The brain changes in response to educational experiences of any kind (formal and informal ways of learning). The experience-dependent brain plasticity accounts for most of in-school and daily-life learning and this plasticity is retained throughout our lifetimes (Bruer, 1999). Daniel Ansari (2014) writes:

Plasticity is key to education. [...] The brain is not a static organ, but instead dynamically adapts to the environment. Education is a process of inducing brain plasticity through instruction in a social context. (p. 1704) [...] The study of education is in many ways the study of brain plasticity. If our brains were unable to change in response to experience, education would not be possible. (p. 1716)

Given the growing consensus that personality traits are a product of children’s genetic inheritance and environment, future researchers must focus on stability and change in personality traits over time and on the investigation of the cultural factors and environmental contributors to all domains of personality. By understanding of how stability and change occur, as Shiner (2010, p. 1094) proposes, “it will be possible to find ways to encourage positive development for people with a wide variety of personalities.” Allyson Mackey and co-authors (2015) state: “Neuroimaging studies have shown changes in brain structure after a few weeks of learning [...]. Therefore, educational programs may positively influence neuroanatomical circuits that support cognitive abilities” (p. 932). Eva Krapohl and her co-researchers (2014) write:

It is important to emphasize that finding genetic influence is not a counsel of despair in terms of helping children who find learning difficult –heritability does not imply immutability. Heritability describes the extent to which phenotypic variance can be ascribed to DNA differences, on average, in a particular population at a particular time. In other words, heritability describes what is; it does not predict what could be. (p. 15276)

A substantial body of literature reports the presence of external factors in a number of environments, including the family, peer groups, school, and the community (Weller-Clarke, 2006). There are behaviors, dispositions, and competences that are amenable to environmental influence, including direct intervention (Dodge et al., 2015; Tsukayama et al., 2013; Hattie, 2012; Bransford et al., 2000). This means that it is not easy for schools to make the difference since there are many out-of-school factors that influence someone's traits and behaviors.

In many respects, it is not reasonable to think that the school environment is more important than other environments, in driving changes in the brain, shaping individual differences and behavior patterns. For Grover Whitehurst (2016), there is a relatively low ceiling on the extent to which schools can affect individual differences. But this does not mean that schools cannot affect the set point for perceptions of students about such things as their efficacy and effort (p. 5). Thus, teaching-learning processes at school can play a critical role in the development of personality by providing learning opportunities and situational demands that shape certain traits (see Spengler et al. 2013, p. 613). It is possible to find effective ways for cultivating character traits and assisting children develop a "growth mind-set" about learning; to realize that their abilities are malleable rather than fixed (Duckworth, 2016). If we provide students with support and constructive feedback about their behavioral competencies they can gain control on their learning and become self-motivated (Duckworth et al., 2011; Cleary & Zimmerman, 2004). But we must be careful with respect to the quality of the feedback and the nature of motivation: we must avoid the 'easy path' of external rewards. "While carrots and sticks can bring about short-term changes in behavior", says Angela Duckworth (2016), "they often undermine interest in and responsibility for the behavior itself."

Admittedly, debates exist regarding whether personality traits become more stable or change during the transition from childhood to adolescence –and to adulthood accordingly– and about the kinds of genetic and environmental influences on personality maturation (stability and change). The most dynamic area of disagreement involves the etiology of personality development. Another persistent problem is about the predictive power of personality: personality traits reflect or cause the outcomes that they are alleged to predict? Finally, Lex Borghans and his co-authors (2008) observe some confusion in the literature about the nature of gene-environment interactions. It is not accurate to simply state that genes and

environment jointly influence traits because the effects of the environment depend on the genes and vice versa (see Caspi et al., 2003). Future research is needed to inform or resolve this ongoing debate on gene-environment interplay and the magnitude of their effects on personality.

While there is evidence that personality traits show genetic influences (Spengler et al. 2012; Krueger & Johnson, 2008), the search for personality-genes is a difficult one because, unlike classical single-gene disorders in which a single gene is responsible for the disorder, there is no evidence for such effects of genes for personality. For the complex quantitative personality traits, genetic influence is much more likely to involve multiple genes of varying but small effect sizes (Caspi et al., 2005, p. 463). As matters stand, it remains to be seen whether schools will acknowledge the relationship between personality traits and students' learning behaviors, attitudes, abilities, and performance. There are traits that students 'can learn' when they are properly and systematically cultivated and taught. For instance, they could be trained to improve self-control. And therein lies the real challenge for school: to see the big picture. It is not just about wanting students to stay in their seats, fill out worksheets, write essays, or listen to teacher lecturing. It is about addressing the learner as a whole and promoting and cultivating social and emotional skills in conjunction with cognitive skills. James Heckman (2011) writes that knowing this, it is imperative to change the way we look at education:

Given this fact, it is alarming that our education system primarily values cognitive achievement. Important character traits that promote personal achievement are largely ignored or maligned as "soft" and non-measurable skills. Evidence suggests that efforts that focus mainly on closing disparities in cognitive achievement are not as successful as they could be because they neglect the need to close gaps in character development. (p. 34)

In the same line of thinking, Duckworth (2016) stresses that school is an important arena for the development of character and states:

Does character matter, and can character be developed? Science and experience unequivocally say yes. Can the practice of giving feedback to students on character be improved? Absolutely. Can scientists and educators work together to cultivate students' character? Without question.

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

So, the good news is that children's capacities and personality traits are dependent on catalysts and mediation. Environmental influences are not negligible. Said another way, the fact that personality traits have a biological-genetic basis does not mean that they are fixed. In addition, the more we know about personality, the better able we are to explain what motivates students to learn and succeed. At the very least, personality in the school ought to be considered in terms of "heterogeneity" and "subjectivity", calling for teaching-learning practices which embrace students from diverse cultural backgrounds and a shift of interest from pure statistics to students' individual characteristics.

But above all, we must never forget the fact that each personality is of equal value. No personality is *better* than another. Identifying someone's personality traits is neither to put her/him "in a box" nor to make distinctions for the sake of categorization. Personality traits and environmental factors are woven together in such complex ways that make the effects of each of their dimensions indistinguishable.

Is it possible to talk about a kind of 'heritability' in academic performance? Educational progress through the lens of Genetics

Educational psychologists are probing into students' personality traits trying to understand why some students have, for instance, the ability to pay attention in class and why others do not; why some are more self-disciplined than others; why some persist in finishing homework while others give up; why some show interest in new learning while others are unmotivated and indifferent. In the meantime, neuroscience provides new evidence that unlock the secret of how learning occurs and the causes of learning difficulties.

There are many core questions one might ask with respect to the role genetics play in determining attitudes towards learning and school performance: Is educational attainment influenced by genetic rather than environmental factors? Is genetic predisposition more likely to affect students' scores in school subjects than any other factor? Are there any particular genes strongly linked with IQ? Is it possible to know what drives the heritability of achievement in different academic subjects? Can genes explain why learning is easier and more enjoyable for one child and harder for another? Does gene-environment correlation happen actively or passively? Is it provocative to state that there are children who are less

intelligent than others? Are students who lack the genetic predisposition for academic success unable to get good grades? In short, is it possible to talk about a kind of ‘heritability’ in academic performance?

Such questions are of great interest and not entirely new. Yet it is the first time we have scientific evidence in hand that allow us to make more grounded hypotheses. In particular, since the DNA analysis became possible, a number of researchers have attempted to detect the associations between particular genes and IQ.²⁰ Recent studies have begun to uncover the genetic architecture of educational attainment –showing, for instance, how young brains grow and documenting that different brain regions and networks support distinct kinds of cognitive skills– making the nature of learning a little less mysterious (Domingue et al., 2015; Rimfeld et al., 2015; Noble, 2014).

Studies on intelligence have documented that students with a high level of intelligence perform better in school and are high-achievers. Spengler and her co-researchers (2015) found significant relations for childhood IQ with educational attainment. For Deary and co-researchers (2007), children’s intelligence measured at age 11 accounted for 59% of the variance in their math achievement at age 16. Likewise, Hattie (2003) posits that the correlation “between ability and achievement is high, so it is no surprise that bright students have steeper trajectories of learning than their less bright students” (p. 2).

The results of a recent study (Roth et al., 2015) showed that intelligence has substantial influence on school grades and thus can be regarded as one of the strongest predictor of academic achievement. Nevertheless, the researchers note that intelligence has special importance in specific subjects domains, such as Mathematics and Science, which deal with content that relies heavily on logic (has a clearer logical structure) and can be mastered fully only with an appropriate cognitive ability level. In the large-N, longitudinal, multivariate study of Marc Bornstein, Chun-Shin Hahn, and Dieter Wolke (2013), cognitive ability at 8 years, captured by childhood IQ, was strongly linked with 14-year academic achievement during adolescence. Their study documents a quantitative stability in intelligence, that is a consistency in human mental development. However, the researchers identified the direct and indirect effects of many other

²⁰ Notwithstanding, there is a confusion in the literature regarding the term ‘IQ’. The term is often used synonymously with intelligence but in fact refers specifically to scores on intelligence tests (Borghans et al., 2008, p. 979).

endogenous and exogenous non-cognitive factors (such as habituation efficiency in infancy, behavioral difficulties at age 3, maternal education) which shape toddler and child cognitive development and have unique positive direct effects on IQ. These factors in turn influence adolescent academic achievement. Therefore, infant mental ability “does not fix a child’s psychometric intelligence or an adolescent’s academic achievement separate from his or her personality and experiences.” (p. 159).²¹

In Howard Gardner’s view (2002), “the term ‘intelligence’ has been limited largely to certain kinds of problem-solving involving language and logic [...]. However, human beings are able to deal with numerous kinds of content besides words, numbers and logical relations, for example, space, music, the psyches of other human beings.” Hence “definitions of intelligence need to be expanded to include human skill in dealing with these diverse contents” (p. 190). But Gardner does not end his observations here. He refers to anthropologists’ thinking on the parochialism of the Western view of intelligence and states: “Some cultures do not even have a concept called intelligence, and others define intelligence in terms of traits that we in the West might consider odd –obedience, good listening skills, or moral fibre, for example.” (p. 185).

Humans unquestionably differ from one another in their cognitive abilities. Many genetic twin studies indicate that intelligence and cognitive skills are powerful predictors not only of school performance but also for important individual outcomes later in life (e.g., academic and job success). Intelligence is found to be highly heritable, therefore individual differences in academic achievement may be explained to a large extent (with an average of 50%) by inherited differences in DNA sequence (Spinath & Gottschling, 2015; Rimfeld et al., 2015). This means that intelligence and

²¹ The researchers (Bornstein et al., 2013) conceptualized cognition from infancy (when children were 4 months old) to adolescence in terms of developmental cascades. They evaluated the contributions of an ecologically comprehensive suite of determinants in early life to predict adolescent academic achievement. Their study employed a framework that included endogenous (a child’s information processing, temperament, behavior difficulties) as well as exogenous factors both distal (maternal education) and proximal (parenting, home environment). The main research question was whether these factors influence directly or indirectly or both the cognitive development and academic achievement at 14 years. According to their results, various abilities undergird cognitive attainment across important developmental transformations from the first half of the first year into the second decade of life. No single factor emerged as the sole predictor of academic achievement.

achievement are genetically driven: some children inherit the ability to “get good results at school”. But it does not mean that intelligence is the sole predictor that explains why some children perform better than others in school tasks. Students do not come to succeed just because they are intelligent. They have to put considerable effort to get good grades. From the perspective of neuroscience, all learning experiences result in physical changes in the brain, but major changes require great effort.

In humans, the genome is composed of about three billion base pairs, organized into approximately 30,000 genes. For complex human traits, such as intelligence, it is reasonable to expect that they are influenced by many genes –by thousands of DNA variants– each of which has only a relatively small effect, say Spinath & Gottschling (2015). This aspect is featured in a 2015 study which showed that high heritability of educational achievement is influenced by a range of cognitive and non-cognitive factors, not just intelligence. Using the twin method that compares identical and non-identical twins, Kaili Rimfeld and her co-researchers (2015) found that educational achievement at the end of compulsory education in the UK –across a wide range of academic subjects taught at schools– is highly heritable, with over half of the variance in children’s educational achievement explained by inherited differences in their DNA, rather than by school, family and other environmental influences. The authors conclude that the high heritability of educational achievement extends from primary education to the end of compulsory education. Genes affect both the ability and interest in learning.

Interestingly, their study also showed that many of the same genes affect a wide range of cognitive and learning abilities, independently of intelligence. According to the researchers, it is possible that the genetic mechanisms responsible for these associations are also influenced by many genetically influenced traits, such as personality, motivation, and psychopathology. In addition, the high heritability can be explained in terms of gene-environment correlation. All of these variables are potential influences on school outcomes (Rimfeld et al., 2015).

Over the past decade there has been stunning growth in the number of studies which investigate whether the differences among children in how easy or enjoyable they find learning are due to differences in their genes, rather than differences between schools or teachers, or differences between family related factors. A growing body of studies, significantly, indicates that both genetic and environmental influences contribute to differences among individuals. On the one hand, the strong genetic influence on school

achievement outcomes (high heritability) is highlighted in many studies, most of them based on tests administered to twins siblings. In a recent study (Davies et al., 2015) it is suggested that the portion of the differences in educational attainment among children can be explained by underlying genetic differences. In other words, common genetic variation explains more of the variability in children's educational attainment than is typically attributed to teachers or schools. On the other hand, there are researchers who recognize the significance of schooling in children's development. The impact of school is relatively little considering the individual differences among children but it is not negligible. Eventually, they all reached to a consensus acknowledging the importance of genetics and of schooling as well (Briley et al., 2014; Krapohl et al., 2014; Shakeshaft et al., 2013; Haworth et al., 2011; Kovas et al., 2007) and the environmental control of gene expression (Spinath & Gottschling, 2015).

In particular, Kovas and her colleagues (2007) attest that the gene-environment transactions are important in understanding why some children fail to benefit fully from enriched environments and why others reach high levels of performance despite environmental privation. For instance, the substantial heritability of high ability does not mean that genes simply turn on and cause a child to perform at high levels. Likewise, Nicholas Shakeshaft and his colleagues (2013) recognize the strong genetic contribution to individual differences in educational achievement but they also feature the impact of schools on intelligence and cognitive development as substantial. For them, the reason that genetics emerges as such a strong influence on children's school performance is because the school system gives all children the same education. The authors write:

Paradoxically, individual differences in educational achievement may be highly heritable precisely because these subjects are taught at school. To the extent that children receive the same education, which is the goal of a one-size-fits-all national curriculum, this potential source of environmental differences between children's educational achievement is attenuated. As a result, the individual differences that remain will be due to genetic differences to a greater extent. This line of thinking leads to what may be an uncomfortable realisation: success in achieving widely accepted educational goals such as educational equity, social mobility, and personalised learning will all increase heritability. Indeed, heritability could be viewed as an index of equity in educational opportunities.

In a 2005 study in monozygotic twins,²² the researchers found that while early in life the monozygous twins were virtually indistinguishable epigenetically, they exhibited remarkable epigenetic differences with age. This finding underscores the significant role for environmental factors in shaping a common genotype into a different phenotype (Fraga et al., 2005). A more recent research, which is of great interest, is that of Shakeshaft's and his colleagues (2013) who investigated the degree of the genetic contribution to individual differences in educational achievement. The notable feature of their study is that the sample was twin siblings who were together prenatally in the same womb and grew up together in the same family. Moreover, the children attended the same school, and perhaps even studied together during their education.

The results of this research indicate that much more of the variance of school scores, at the end of compulsory education (*GCSE-General Certificate of Secondary Education*) can be attributed to genetics than to school or family environment. Shared environment (including family, neighborhood, and school) accounts for much less variance than genetics does. In particular, genetics accounts for almost twice as much of the variance of GCSE scores (53%) as does shared environment (30%). According to the authors, a possible reason that educational achievement shows strong genetic influence is that it taps into many genetically influenced traits: aptitudes of cognition, personality and motivation. This interpretation is also supported by other researchers (Rimfeld et al., 2015; Davis et al., 2014; Haworth et al., 2011; Plomin et al., 2008) who indicate cognitive abilities, personality, interests, attitudes, motivation, and even psychopathology and health, as genetically influential factors.

Still, the researchers claim that the findings of their study do not mean that school does not matter: "schools systematically teach children

²² Monozygotic (identical) twins are chosen in many genetic studies because they share a common genotype (sharing nearly their entire DNA), offering researchers the best opportunity to identify in what degree environmental differences impact personality traits. In such studies, the shared environment refers to environmental influences both members of a twin pair experience, which increases the similarity between them (i.e., socio-economic status, home environment, school). The non-shared environment refers to environmental factors that are experienced differently by each twin of a pair, which increases their dissimilarity. Non-shared environmental influences may include individual specific experiences, such as different peers and classmates, differential treatment by their parents and teachers, and differences in twins' perceptions of such experiences (Kovas et al., 2015, p. 53).

basic skills such as reading, writing and arithmetic, and basic cultural knowledge. Although the difference in educational achievement between the best schools and the worst schools might not be great compared to the wide range of individual differences within schools, the difference between going to school and not going to school would be enormous” (Shakeshaft et al., 2013). At this point, I must add that the researchers focused only on the impact of school on cognitive development and did not investigate other domains of children’s development.

Kovas and her colleagues (2007) investigated the genetic and environmental origins of individual differences in performance in academic subjects and the genetic and environmental influences on learning abilities in a large and representative twin sample. One of their goals was to consider the general cognitive ability and the nature–nurture issue in the early school years in relation to individual differences in school performance. The researchers came to the conclusion that nature and nurture are not separate tracks in development: age-to-age stability is primarily mediated genetically, whereas the environment contributes to change from age to age; genes are generalists and environments are specialists.²³

More recently, Eva Krapohl and her co-researchers (2014) designed and implemented a large-scale study (13,306 twins at age 16 in the UK) targeting to describe the general genetic landscape of educational achievement across nine broad domains: intelligence, self-efficacy, personality, well-being, parent-rated behavior problems, child-rated behavior problems, health, perceived school environment, and perceived home environment. Specifically, the study attempted to address the issue of the heritability in educational achievement, focusing on children’s individual characteristics.²⁴

²³ There are substantial differences among individuals in their susceptibility to environmental influence where a subset of individuals appears to be more sensitive to the influences of both negative and positive environmental factors. LaRue Allen and Bridget Kelly (2015) note that “this discovery has reinforced the unique character of each child’s responses to the physical and social worlds [and] has offered perspectives on why some children thrive within environments of great adversity [...]. It also has informed a better understanding of children’s differential responsiveness to interventions (Belsky & van Ijzendoorn, 2015).” (pp. 49-50).

²⁴ The researchers identified the general ingredients of educational achievement using a multivariate design that went beyond intelligence. That allowed them to consider a wide range of predictors, such as self-efficacy, personality, and behavior problems. Moreover, they assessed their independent and joint contributions of those traits to the heritability of educational achievement, taking into account the intercorrelations among the traits.

The researchers concluded that the high heritability of educational achievement reflects many genetically influenced traits, not just intelligence. Their results showed that individual differences among children in educational achievement, especially culminating at the end of compulsory education –when students are assessed nationwide with standard achievement tests (GCSE-*General Certificate of Secondary Education*)– are substantially heritable. Although intelligence was found to account for most GCSE heritability than any other single domain, other domains –in particular, children’s self-efficacy, behavior problems, personality, well-being, and their perceptions of school environment– were also found to contribute significantly to GCSE heritability. These diverse domains of behavior are intercorrelated; considered separately and jointly, they can explain the heritability of educational achievement. That is, to the extent that children’s traits predict educational achievement, they do so largely for genetic reasons.

However, their results are also insightful about environmental influences: family and school environment are both important candidates to explain shared environmental influences on GCSE. The latter is very important because environmentally driven associations may be targets for intervention (Krapohl et al., 2014). In other words, genes are not the full story. High heritability scores do not imply that individual intelligence scores are immutable in terms of interventions (Spinath & Gottschling, 2015). Similarly, Haworth and her colleagues (2011) point out that the genotype-environment correlation offers new ways of thinking about the environmental interface in which genotypes become phenotypes. Moreover, as environments change during development the environmental influences are unique to individuals. While there is strong evidence that school achievement is not free of genetic influence, schooling adds to children’s achievement: school years have the power to reverse the genetically determined development of children. In this basis, Branigan and co-authors (2013) emphasize the importance of considering behavioral genetics in egalitarian policy initiatives.

Haworth and her colleagues (2011), although they remind us that all aspects of achievement are suffused with genetic influence and that students differ in their response to school curricula in large part for genetic reasons, they conclude that we should not follow the nihilistic notion that there is nothing that can be done about it. Heritability does not imply immutability (see also Rimfeld et al., 2016; Plomin et al., 2007). The authors explain further that if we eliminate the environmental influence of schooling the

differences among children in their achievement would be even more heritable. They finally concede that we still know very little about the mechanisms underlying genetic influence or environmental influences, the mechanisms by which genes have their effects on individual differences on cognition (Haworth et al., 2011).

Of particular interest is that both genetic and environmental factors seem to contribute to the differences in the anxiety pupils feel when confronted with school tasks. According to the results of a recent study, even the development of mathematical anxiety may involve not only exposure to negative experiences with mathematics, but also genetic risks related to both anxiety and math cognition (Wang et al., 2014). Overall, experts note that differences in academic performance are evident well before formal schooling begins, and that these differences grow wider as children move through the education system (Baran et al., 2013). In Kanter (2004) words, "failure and success are not episodes, they are trajectories" (p. 9).

At this point, I would like to present a recent study which examined the influence of genes on learning motivation. Yulia Kovas and her co-researchers (2015), in a cross-national study, gathered and analyzed data of nearly 13,000 identical twins (monozygotic) and fraternal (dizygotic) same-sex twins, aged 9-16, from 6 countries –United Kingdom, Canada, Japan, Germany, United States, and Russia– in order to examine why people have different levels of academic motivation. Particularly, they explored the etiology of individual differences in enjoyment of learning (e.g., interest, liking), usually referred to intrinsic motivation; and self-perceived ability, also known as academic self-concept (e.g., children's perception of how good they are at school subjects).

Their results are astonishing. Contrary to common belief, enjoyment of learning and children's perceptions of their competence were no less heritable than cognitive ability. With few exceptions, neither enjoyment nor self-perceived ability were influenced by shared environment. In other words, similarities in enjoyment and self-perceived ability in twins growing up in the same family and attending the same schools were entirely explained by their genetic, rather than their environmental relatedness. Shared environmental factors, such as home or classroom, did not contribute to the twins' similarity in academic motivation.

The study showed also a high consistency across ages, school subjects, and cultures in the etiology of individual differences in enjoyment and self-perceived ability. This consistency is particularly striking given the

vast cross-cultural differences in schooling and the educational systems involved. However, the genetic effects on academic motivation and self-perception of competence varied substantially across the samples. These variances of genetic effects may reflect cultural aspects of the environmental experiences. In addition, it remains unclear to what extent the genetic and non-shared environmental factors, which were found to contribute to variation in enjoyment and self-perceived ability, also contribute to variation in academic achievement and/or overall intelligence.

Finally, the fact that children's educational attainments are influenced by their genes is also highlighted in a recent study conducted by Benjamin Domingue and his co-researchers (2015). The research team posed the following questions: Can one say with confidence that the genetics of educational attainment operate independently of the social circumstances into which a child is born? Do children's social and educational environments function in a way that they magnify differences between children? The authors write:

There are numerous reasons that certain individuals experience educational success. Some individuals have more raw ability in the various cognitive domains required to continue in education. Some individuals have psychological characteristics that contribute, while others have social skills that lead to increased educational attainment. Genes are linked to all of these personal attributes.

According to their results, there are many factors that influence educational outcomes. It is clear that biology plays a role. But the social and educational environments also play an important role in shaping human biology. In particular, family and neighborhoods can be important facilitators of or impediments to children's social attainments. They can offer social advantage for educational attainment. However, the authors stress that these childhood social advantages are correlated with genetic advantages. This complicates the causal models social scientists use when they study socioeconomic gradients in education.

The context-specific differences in educational attainment are also reported in other studies. To assess heterogeneity in the influence of genetic variation on educational attainment across environmental contexts, Amelia Branigan, Kenneth McCallum, and Jeremy Freese (2013) conducted a meta-analysis of heritability estimates in 15 twin samples and 34 subgroups

differing by nationality, sex, and birth cohort. According to their results, genetic endowments count for up to 40% of the variation in educational attainment. Heritability, shared environment, and unshared environment, each explains a substantial percentage of the variance in attainment across all countries. Their results show a far more complicated relations between nature and nurture than a simple dichotomy, suggesting that variables such as nation, sex, and birth cohort influence the extent to which genetic and environmental factors explain variation in educational attainment.

Interestingly, their results document that heritability varies significantly by nation. Systems of government, social conditions, extent of religious and ethnic diversity, educational policies, and structure of public education are but a few examples of such differences, all of which are implicitly held constant in a single-nation study of variation in heritability. The vast number of differences between nations may affect the level of social constraints that individuals experience regarding their educational attainment. The effect of nationality is important to consider when attempting to generalize results from single-nation micro-data studies of heritability to other nations.

Ridley (2003) summarizes as follows: “The discovery of how genes actually influence human behavior, and how human behavior influences genes, is about to recast the debate entirely. No longer is it nature versus nurture, but nature via nurture. Genes are designed to take their cues from nurture” (p. 5). McAdams (2015) contributes to the discussion writing that “genetic determinants, epigenetic effects, and gene x environment interactions of many different kinds are likely to be among the root causes of continuity and change in dispositional traits over the life course” (pp. 225-226). In a recent research paper, Nicholas Papageorge and Kevin Thom (2016), trying to better understand the nature of intergenerational mobility, found that the score which appears to be related to cognition, personality, and facility with learning, has some predictive power for educational attainment. In particular, it explains between 3.2% and 6.6% of the variation across individuals (depending on the specification). Thus, knowing the exact value of an individual's score tells us very little about that person, as over 90% of the variation is explained by other factors.

However, the fundamental issue of the interplay of nature and nurture has only recently begun to be addressed in relation to education (Plomin & Walker, 2003, in Shakeshaft et al., 2013). We are at the very beginning of understanding what and how must be done in school level in

shaping behaviors and traits taking under consideration the heritability and endowed ability evidence. The problem is that the role of genetics and neurobiology looms large compared to the agency of any particular cultural institution, including schools (Whitehurst, 2016, p. 4). Many researchers of the field envisage a future where educational psychology will use genetic research to ask questions that go beyond heritability (Haworth et al., 2011; Kovas et al., 2007). These questions and issues are also placed at the fore by economists. Heritability is important, says James Heckman (2014) but there is mounting evidence that gene expression can be modified, especially by early environments. He goes on explaining that it is much more effective to intervene during the early years –creating policies for supplementing the family– than to later remediate which is costly and often ineffective.

To sum up, the biologically driven maturational process is affected by experiences, context, and environment (Whitman, 2012), which chemically modify certain genes (Center on the Developing Child at Harvard University, 2016, p. 14). Genetic studies have led to the general acceptance of the importance of both genetic and environmental influences on human cognitive abilities. Although DNA sequences do not change (see Davies et al., 2015),²⁵ new genetic influences can come into play across school years (Boyce & Kobor, 2015). The researchers of this field urge us to keep always in mind that genetic influence on behavior and development –which are known to be phenotypically correlated– involves probabilistic propensities rather than predetermined programming. Human development is a highly interactive process, and life outcomes are not determined solely by genes, because environmental factors have the ability to alter family inheritance (Center on the Developing Child at Harvard University, 2016, p. 14):

The old ideas that genes are “set in stone” or that they alone determine developmental outcomes have been fully disproven. It is more accurate to think about genes as packages of biological instructions that require an authorizing signature to be carried out. (p. 8)

Heritability tells us only a little about a single individual. Genetic studies only describe the extent to which differences between children can be put down to

²⁵ For example, we all know now that right or left-handedness is an innate predisposition. Today, no teacher can be excused on the grounds of ignorance considering handedness. But 30-40 years ago, many educators have tried to “help” students use the “right” hand – literally and metaphorically.

DNA differences on average, in a particular population at a particular time (Rimfeld et al., 2016; Krapohl et al., 2014). Frank Spinath and Julian Gottschling (2015) go on to notice that heritability statistics is often misinterpreted: heritability estimate is a descriptive group statistic that is solely applicable to the population being studied and not to the phenotype of one single person. That is, depending on the relative variability of the genetic make-up and the environment in a specific population, heritability can theoretically take any value for any trait (p. 298). This implies that environmental-educational chances can lead to a change in the heritability of a trait.

Papageorge and Thom (2016) clarify that the distinction between “high-ability” and “low-ability” individuals should not be interpreted as a claim that some people are naturally or biologically superior to others. Even if these abilities are linked to heritable biological factors, this does not mean that their impact on life outcomes is immutable or fixed. Appropriate changes in the environment could substantially moderate the consequences of biological differences, that is genetic disparities.

Closing this unit, I would like to present the findings of a recent study conducted in Spain (Colodro-Conde et al., 2015). The researcher tested the hypothesis whether educational policies affect the relative weight of genetic and environmental factors on educational attainment. Using a population-based sample of 1271 pairs of adult twins, they analyzed the effect of the introduction of a specific educational policy in Spain in 1970. The cohorts were delimited in the basis of the exposure to different educational policies. According to their results, more egalitarian educational policies bear an increase in heritability by means of a reduction in shared environmental variance. The shared-environmental variance decreased, leading to an increase in heritability in the post-reform cohort (44 vs 67%) for males. Heritability remained in the same range for women (40 vs 34%). The authors explain that the introduction of equality in educational policies decreases the role of shared environmental factors (e.g., availability of schooling facilities for everyone or parents' education) which influence educational attainment, giving more room for genetic differences between individuals to impact on the variation of school performance (Colodro-Conde et al., 2015).

Searching in the literature, I did not discover other studies with similar orientation and analysis. Interestingly, the researchers by themselves state that their results should be interpreted with caution because the nature and characteristics of the research questions, the sample size, and the methodological boundaries (the impossibility for this kind of studies to

isolate the effects of a specific policy within an evolving society) preclude definitive conclusions. Thus, further studies would be desirable to confirm their findings. Nonetheless, this study offers a starting point to ponder the ways genes affect educational outcomes.

To conclude, education and learning, in a very broad cultural sense, constitutes the main process by which genotypes develop into phenotypes through the genotype-environment correlation. In that regard, genetics do not necessarily doom a child to academic failure. Schools can affect academic outcomes even though the heritability of achievement is highly considerable. The evidence of the genetic influence in performance do not denigrate the role of education; it simply suggests new ways of thinking about effective education, intervention, and educational policies as well (Papageorge & Thom, 2016; Kovas et al., 2015; Spinath & Gottschling, 2015; Krapohl et al., 2014; Shakeshaft et al., 2013; Haworth et al., 2011; Kovas et al., 2007; Pigliucci, 2001). In the meantime, we must be highly suspicious about authors who argue for a genetic determinism reinforcing gender or racial stereotypes. Moreover, as we do not have convincing evidence to show which set of genes influence educational attainment, we must anticipate new studies based on genome-wide data, which may establish associations between a given outcome and genetic variants (Branigan et al., 2013).

It is worth considering the genetic research in education. Certainly, the idea of heritability of educational achievement is not without its critics: many theorists are skeptical and claim that the results of such studies vary in a high degree and are not replicable. Although there are still many unanswered questions, genetics can offer new perspectives and tools to education researchers. But, as Domingue and his co-authors (2015) write, education researchers, from their side, have important expertise to bring to genetic studies. Considering the context in which teaching-learning takes place, it is crucial to identify which aspects of the educational environment matter and whether there are specific children who may be more or less sensitive to these environments. Finally, taking cue from Colodro-Conde's and co-researchers (2015) study, the focus falls on policies that promote the approach of personalized teaching-learning procedures, and urge us to examine in depth the difference between equality and equity in educational opportunities. These matters are discussed in the present work in the units "Issues of equality and equity in educational opportunities" and "Individualization and personalized learning".

Is children's early achievement at the kindergarten level related to later school achievement? Is the academic identity of a student definitely shaped at the kindergarten level?

The domains of child development and early achievement are discussed by scholars in different terms. For Allen and Kelly (2015) the interrelationships among different kinds of skills and abilities contribute to young children's acquisition of content knowledge and competencies, which form a foundation for later academic success. These skills and abilities include the general cognitive development, the general learning competencies that allow children to control their own attention and thinking (e.g., short-term and working memory, attention control and shifting, cognitive flexibility), the emotion regulation and the subject-matter-specific content knowledge and skills, such as competencies needed specifically for learning language and literacy or mathematics.

A growing body of studies indicates that 'early high-achievers' make progress in academics while the 'early poor-achievers' face difficulties to go forward. This aspect is highlighted by researchers (Morgan et al., 2016; Watts et al., 2014; Judge, 2013; Pagani et al., 2010; Lonigan et al., 2008; Duncan et al., 2007) who came to the conclusion that school-entry academic skills are strongly correlated to later school achievement. Young students who have limited early literacy skills at elementary school entry (e.g., vocabulary, print awareness, alphabet knowledge, phonological awareness) represent one of the greatest challenges facing teachers today. These children typically fail to benefit fully from the literacy instruction provided to all children, falling further behind as they progress through their school years (Judge, 2013; Entwisle et al., 2005; Rathbun & West, 2004; Vellutino et al., 2003; Cunningham & Stanovich, 1997; Hart & Risley, 1995). According to Robert Slavin and his co-authors (1994), success in the early Grades does not guarantee success throughout the school years and beyond, but failure in the early Grades does guarantee failure in later schooling (pp. 3-4).

From another viewpoint, still with regard to the issue of early failure, it is suggested that students with poor academic skills often believe they have less influence on important outcomes in their life. The results of a study conducted by Keith Herman and his colleagues (2008) support the hypothesis that students in the 1st Grade who struggle academically with core subjects, later display negative self-perceptions and depressive symptoms as they enter 6th and 7th Grade, after controlling for a host of

correlated constructs (conduct problems, inattention, social problems).

Research recognizes the intimate connection between early literacy and numeracy skills in relation to maximizing students' potential. This is the reason that preschool education, in a variety of forms, plays a significant role in helping children develop essential and requisite literacy skills (see Sylva et al., 2014; Yazejian & Bryant, 2010; Barnett et al., 2007; Barnett, 2001; Neuman & Dickinson 2001).

My research contradicts, in part at least, the above suggestions. In the present study, one particularly interesting finding is that certain students' skills and competences at age 5-6 were directly related to age 19 academic achievement. But in a more general perspective, we can not claim that the educational identities of students were shaped during kindergarten years and remained stable until the end of their secondary education. It seems that we cannot predict the developmental trajectory of every student in the basis of their kindergarten achievement. For once more, we can assert without doubt that school makes slight difference in overcoming the factors that negatively affect student academic success.

First and foremost, I would like to note that none of the students was taught by her/his parents to read or write before kindergarten. Two participants (Maria and Helen) who had developed advanced skills in early reading and math at the end of kindergarten demonstrated remarkable progress in all school years. We can say that these early skills were directly related to their later academic outcomes. Other common characteristics of these students were as follows: they could stay focused, were self-regulated and self-confident, learned faster than their peers did, and could remember easily what they had learned. So, everything was fine for them, regarding their academic attainment at least. Their educational identity had been shaped at a significant level in kindergarten, a fact that allowed them to act productively in the following years in response to school demands.

Another participant (John) went enough well academically (he entered university at his first attempt) although he had not developed early reading and math skills at an advanced level. This student had a rather high level of persistence and concentration in academic tasks, thus we can hypothesize that these traits affected his later academic success. The case of another participant (Charlie) was totally different. In kindergarten, he was fond of math games and could deal with complex math problems presented with symbols. He was an easy-learner (he could learn fast and remember almost everything of what he was taught) but he was not self-regulated. The

following years, he used to make minimal effort into completing schoolwork and spent a lot of time daily watching TV, surfing on the Internet, and playing video games. But his early math skills appeared to impact positively on his later math achievement. Charlie entered university, at his second attempt, but did not achieve his first goal for Air Force Academy.

Finally, we have the case of three students in this study (Lucas, Theo, Jason) who entered kindergarten being less ready than their mates. In kindergarten, they enjoyed school activities and showed interest in several school topics. Their cognitive abilities were not lower than the average and they had advanced skills in non-academic domains (i.e., motor skills, painting). During kindergarten years, they made significant progress in cognitive domains: they learnt to write their own name, could identify several of the alphabet letters, could recognize some cue-words, learnt to count up to 10, and understood many math concepts. Their vocabulary became richer. They became able to complete school tasks, follow instructions, and recognize errors. We might infer that their annual growth was astonishing. But the academic gap between them and the more academically ready/capable classmates was notable in preschool years and it was found to be widening during the following years. Most of their difficulties stemmed from the years before kindergarten.

The two of the less academically capable youths (Jason and Theo), low performing students in secondary school years and without confidence in their own abilities, ended up observing the high performing achievers, either looking up to them or disdaining them. They often made fun of their "smarter" peers, those who worked hard and got good grades, giving them derogatory names as "nerd". It is not that one day they simply stopped studying and decided not to try any more to succeed. This was the end-point of many years during which they had experienced academic failure. For Jason, the warning signs of his disengagement were apparent even in elementary years. In upper secondary school years he demonstrated occasionally inappropriate class behaviors and he admitted to me, with no guilt, that he had resorted to cheating to get through the examinations, trying to avoid failure.

Summing up, there are students who appear to be academically able at kindergarten level and continue to do well during their schooling. But there are also students who appear to be academically gifted at kindergarten level yet, for various reasons, they do not excel in school years and do not

score well on school tests. There are students who are weaker in kindergarten with respect to the academic and cognitive aspects of school, and face difficulties in the following years. In contrast, there are students who do not shine in kindergarten with respect to the academic and cognitive aspects of school, but go ahead in their academic lives.

Beyond all these things, I would like to underscore that in my kindergarten program I gave extra emphasis on advancing students' emotional and social skills, and supporting them to avoid acting impulsively. For a long time, I looked for practices which could promote the whole child development. A long time later, when I became 'braver' as a teacher, such practices ended up to be my 'teaching alter ego', in many ways. I was convinced that it is wrong to separate social, emotional, and cognitive learning in pupils. As a result, my curriculum emphasized non-cognitive skills, alongside to the acquisition of basic knowledge and skills (in Language, Arts, Math, Science and so on) through a varied set of educational settings (e.g., whole-class, small-groups, personalized learning). In short, children were provided with support needed to avoid giving up. The results were the best possible for each child. And the most important was that the children were happy being in school.

Unfortunately, the positive effects of the preschool curriculum were found to clearly diminish over time; they were not maintained in the following years. This suggests that preschool attendance alone is not sufficient to substantially boost long-term outcomes in cognitive and non-cognitive domains. The students of this study entered formal education with varying starting points and needs. The differences at the outset of their formal schooling between the students designated an achievement gap that widened year by year.

So, what could account for the apparent discrepancy between the promising outcomes of preschool education and the later outcomes in students academic trajectories? Why kindergarten experiences were not enough to reverse the ensuing descending academic trajectory of the less academically capable students? Why did I fail to help some of the participants become life-long learners? The answer is likely to be that many factors are interlinked and may plausibly cause different outcomes later, namely students progress across school years.

In my literature review on the issue of the effects of quality preschool education program, I came across with studies which had a remarkable distance in their results. I discovered many studies (see also the

unit “Are there any ways for school to help students make the turnaround from a trajectory of failure to the one of success?”) documenting the positive long-term impact of preschool education. For instance, the findings from the *High/Scope Perry Preschool* study, a well-known longitudinal study (participants were followed through the age of 40), confirm that a quality preschool program can result in permanent and positive change (high school graduation, better job, higher earnings, owning a home, less crime) in the lives of the disadvantaged children: high-quality preschool experiences continue into adulthood (Tooley & Bornfreund, 2014; Schweinhart et al., 2005). According to a 2009 study, after a yearly high-quality preschool program, 72% of children were proficient in important school readiness skills such as self-regulation, self-care and motor skills (Los Angeles Universal Preschool, 2009). A recent study found that disadvantaged children who attend high-quality preschool education are significantly less likely to need special education services in the 3rd Grade (Muschkin et al., 2015). There is also evidence that exposure to academic content in kindergarten (and particularly exposure to advanced math content) can be beneficial for student learning and is the strongest predictor of their later performance on a number of cognitive and noncognitive outcomes (see Bassok et al., 2016).

The results from a recent large-scale study (Sylva et al., 2014) show that preschool quality matters more for students whose parents have low educational levels than for those with better educated parents. Broadly speaking, high quality preschool education provides the foundation for academic learning, and its benefits in shaping longer term outcomes remain across all phases of schooling and young adulthood. But the findings of my research suggest otherwise.

So, searching further the relevant literature, I also discovered studies in which early achievement was not found to have long-lasting effects. Using data from two longitudinal studies of children's math achievement, Drew Bailey and his collaborators (2014) examined the effects of children's earlier math achievement on their later math achievement and the factors that affect their math learning across their development. Their results suggest that children's math achievement is influenced by a combination of both earlier math achievement and the relatively stable factors affecting children's math achievement across development. More importantly, they found that the effects of stable factors –individual differences in children's math achievement, such as intelligence, particular facets of working

memory, socioeconomic status, and reading achievement— are several times larger than the effects of children’s earlier math achievement. These factors accounted for a large amount of the variance in children’s later math achievement (approximately 2/3). The researchers infer that the effects of increasing young children’s early math skills on their later math achievement will fade over time.

The fade-out tendency is also discussed in a paper which analyzes the long-term impacts of Project *STAR*. However, the researchers note that notwithstanding the impacts of early childhood education fade out on test scores in later Grades they surprisingly re-emerge in adulthood. Several adult outcomes —such as college graduation, quality of college attended, higher earnings at age 27, retirement savings, and home ownership— are found to be highly correlated with kindergarten test scores. For them, one potential explanation for the fade-out and re-emergence phenomena is the acquisition of non-cognitive skills. The scenario goes like this: a quality kindergarten classroom —and a good kindergarten teacher as well— might simultaneously increase performance on end-of-year tests and improve untested non-cognitive skills. These non-cognitive skills could have returns on earnings in adult life. Put it differently, the results suggest that high quality early childhood education may build non-cognitive skills that improve later outcomes but do not improve performance in academic test scores. Interestingly, the effects of class quality fade out on test scores in later Grades but gains in non-cognitive measures carry on (Chetty et al., 2011). The pattern of ‘fade out and re-emergence’ is also discussed in another analysis in terms of better teaching (Chetty et al., 2011a).

In brief, existing evidence is conflicting with some researchers documenting that early achievement offers a distinct advantage that continues throughout the school years and beyond, resulting in better performance in school (better grades, greater interest in school, and so on) and in adult life (higher earnings, college attendance and degree, owning a home) (Reynolds et al., 2011) while others establish that the positive effects of preschool education on children’s achievement diminish over time —a situation known as the “fade-out” effect (see Bailey et al., 2014).

A possible reason is that researches which investigate the causal impact of early achievement on later achievement may overestimate the direct effects of one over the other. This may yield upwardly biased estimates of the effect of early achievement on later achievement (see Bailey et al., 2014). It is also possible, that such studies do not take into

account other variables, such as participants' individual characteristics (cognitive abilities, non-cognitive traits), family SES, parents educational level, important aspects of children's lives, and so on. Many of these studies do not provide reliable information as they do not take into consideration the variety of determinants and the nested structure of the data (Sellström & Bremberg, 2006).

In any case, if the correlation between early and later academic skills is fully driven by other variables, such as children's cognitive abilities or persistence for learning, then is teaching preschoolers to read, write, or add numbers not important? Is helping children develop self-regulation skills and learn how to co-operate with others not worthy? If all these do not have a considerable effect on their development, why bother? And, once again, what about the discrepancy between the promising outcomes of preschool education and the later outcomes in students academic trajectories?

I feel safe to say that this might be happening because there are so many factors which interact in complex ways, making it difficult to predict one's academic progress. But, on the other hand, we cannot ignore the apparent fact that all students made significant progress in various domains. All of them went to elementary school so much better prepared than it would have been without having attended preschool.

Examining each case one-by-one, we may speculate on the 'without-preschool-educational-future' of all students: it is possible that John could have made much less progress than he finally achieved; Charlie could have had more serious behavioral problems in his life; Theo could have had serious depression problems; Lucas, whose talents were acknowledged in kindergarten by his peers –and by me, as well– might have never seen his capacities to blossom; Helen might have been less motivated to succeed and less likely to try for high grades; Maria might have not reached the higher levels of her educational attainment; Jason might have abandoned school at the end of compulsory education (*Gymnasium*). For all of them, their achievement levels might have been much lower that those they reached attending a preschool program. This means that preschool education may affect children's abilities and behaviors, some of which may even affect their later academic achievement and life. But it is also true that the yield from preschool instruction on children's later achievement may be less than what is often assumed.

According to a recent OECD report (2016), evidence of the importance of pre-primary education for early child development and for

later education outcomes is convincing, particularly with respect to more disadvantaged students and schools. The lack of pre-primary education is a strong predictor of low performance at age 15 (p. 80). So the matter in question is not about the quality of preschool education. It is rather whether preschool experiences are or are not of importance; it is about the chances students have to attend kindergarten or to stay at home. Beyond any doubt, there is much to gain in providing preschool education and so much to lose in depriving children of it.

Speculating on to the potential long-term benefits for students who received preschool education we must go beyond the immediate effects. The most critical message from the Perry Project is, in my opinion, that we must take the long view with respect to early-childhood education benefits. There are gains which show up much later in a student's life. "Some of the effects that came out, you never would have found them in preschool," says Tomoko Wakabayashi, who directs for Early Education Evaluation at the HighScope Educational Research Foundation. "If Perry hadn't followed students for so long, a lot of the discussion around preschool would have been different; there would have been just a fade out of IQ [benefits], and that would have been it." (as cited in Sparks, 2015, p. 2).

Returning to the results of the present study, there are further crucial questions to ponder: is it risky to support the view that children's academic development is predictable in its whole? Is it fatalistic to support the view that children's academic trajectories begin early in life? Is it fatalistic to accept that individual differences in later school achievement can be predicted as early as the third or fourth year of children's lives? I suggest that these views are rather realistic than fatalistic. A fatalistic viewpoint would deny the value and power of early and systematic prevention; it would ignore the fact that the skills and competences students bring to the class are malleable rather than fixed and that can be improved through intervention. It would be fatalistic to admit that we are unable to reverse a negative trajectory for children with difficulties. As Jan Bryan (2015) puts it "People who empower know that starting points are just a place to begin. Starting points are informative, yet finite. Growth is infinite" (p. 6).

The findings of the present study imply that there is a connection between early achievement and later success in school but this connection is confoundedly complex. It is difficult to figure out and explain why children who are academically able do not reach the level of academic success which they are capable of. It is not easy to define the degree to which kindergarten

performance could be a strong predictor of future academic success. There are many factors that differentiate students who do well in school from those who do less well. Early achievement is essential but personality traits, home environment, cognitive and non-cognitive abilities, and so on, are also essential.

So, if someone asks “When and how children discover their own learning identity?” and “What does it take for a child to develop an identity as a learner?” the most accurate answer is presumably “it depends.” The issue of the learning identity is a complex one with no clear answers, due to the host of factors involved. More research is needed to expound on how the development of educational identities unfolds over time.

All in all, despite the logic underlying the idea that effective preschool education can lead to high achievement in school, academic attainments at kindergarten level were not found to be a powerful predictor of a student academic life. It is the multidimensional evaluation of student individual characteristics, behaviors, academic knowledge and student non-cognitive skills which can predict each student progress in school. Kindergarten academic achievement is just one component of a much broader array of variables which contribute to the academic trajectory of the students and to the formation of their identity as learners. To put it distinctly, diminishing educational gaps in early childhood is not enough. For preschool education to set a positive trajectory, is imperative to be followed by quality educational experiences in all school years. Following this line of thinking, Heckman (2011) maintains that gains made in early childhood should be followed through with quality elementary and secondary education that promote the development of cognition and character. Preschool education, as Edward Zigler (1987) has said, cannot inoculate children in one year against the ravages of a life of deprivation. So, what can we realistically expect from a one-year program? For him the answer is clear: we should expect better school readiness.

Thus, it is not to say that kindergarten is neither an advantage or a disadvantage for students with respect to their future academic success. Attending a quality kindergarten program might be considered as an advantage, yet in a more broad point of view. Ensuring that all children have access to high-quality environments, experiences and services, especially during the earliest years of life (from birth to age 5), both inside and outside of formal school settings, it is possible to reduce disparities in educational outcomes (Baran et al., 2013; Heckman, 2011). But the truth is that much

more ought to be done at school for underachieving learners. And, if we want to be honest, it is far more challenging to explain the fact that some learners grasp the opportunities provided to them in school while others, equally able, do not. Once again, we find ourselves in front of the issue of individual characteristics of children and of the role of school in students' lives. Generally, it appears that preschool education on its own is not a magic formula: those who begin behind often stay behind. Powerful preschool curricula only address part of the problem. Attending a high quality preschool program matters only if it is followed by effective primary and secondary school programs. Beyond all these things, as achievement gaps exist even before the start of kindergarten then clearly efforts to close those gaps and reduce inequalities should also begin in the preschool years.

Are there any missing pieces in students' education and if so, is it possible to define them?

Case A: School Readiness: a missing piece in education?

Kindergarteners start school at very different stages of development depending on preschool experiences, home environments and biology. Thus, some children enter kindergarten with a wealth of literacy experiences and demonstrate advanced 'academic' skills while others are 'academically' less competent; some are socially far behind their peers while others can easily co-exist with them; some are emotionally mature while others have behavioral problems; some come from low-income families while others have affluent parents. Broadly speaking, children might be in the right age for entering kindergarten, but not developmentally ready. John Hattie (2012) posits that what students bring to the classroom (prior achievement, attributes, and dispositions) affects their ability to learn (motivation, strategies, and confidence to learn) and has a powerful impact on their school success; it is a powerful predictor of their achievement.

In the past, child development was believed to follow typical patterns corresponding to age. Now, this assumption has been replaced by the recognition that there are significant variations in how children of the same age respond to environmental stimuli and acquire knowledge and skills. Namely, children are ready to learn and do certain things at different stages of their development. Moreover, one student's attitudes towards learning are complex as they stem from an ongoing interaction between her/his genetic

predisposition and environment (Kovas et al., 2015). From the field of brain studies, there is evidence that the brain networks constructed in early years may either support or hinder future learning. From the field of genetics, research indicates that the dynamic reciprocal processes between the child (abilities and general tendencies of academic behavior) and her/his environment “begin to shape academic trajectories even before the entry into schooling. It is therefore possible that correlations found in older students may largely reflect the accumulated effects of processes that are initiated very early in childhood.” (Briley et al., 2014, p. 2628).

Is there a threshold above which children are deemed developmentally fit, namely ready for school entrance? Does school adopt practices and procedures targeting to address the achievement gap between more advantaged and less advantaged children? Is it easy to develop a description of the types of characteristics and abilities children should have to develop before they start school, and to define each child's needs? Is it realistic to set the very same expectations for students regardless of their backgrounds? These questions are both important and controversial.

In light of recent findings suggesting that early experiences – particularly from the time children are born to the first day of kindergarten–shape whether a child's brain develops a strong foundation for the learning (National Scientific Council on the Developing Child, 2007), we should consider the issue of school readiness. Readiness is a multifaceted concept, encompassing a variety of components, with varying definitions. School readiness is related to the cognitive and emotional development of children before formal education (Linder et al., 2013; Rothstein, 2004; Hart & Risley, 2003; Barton, 2003; Raver & Knitzer, 2002; see also Barbu et al., 2015) and is currently defined by three interlinked dimensions: a) ready children b) ready schools, and c) ready families. The three dimensions of school readiness are influenced by social, cultural, economic, policy and historic factors. The ‘ready children’ dimension refers to what children should know and be able to do in order to enter school ready and eager to learn. School readiness assures equality in educational opportunity for all children (Ravitch, 2013; Britto & Limlingan, 2012).

It is often noted that what happens in the very early childhood years matters for a lifetime. Many educational researchers repeatedly voice concern that the early years are a time for children –and parents alike– to establish values, habits, and attitudes towards learning. As described above, despite the fact that our capacity for learning lasts throughout our lifetime,

and while brain remains malleable, younger brains seem to have an advantage over the older ones as brain circuitry becomes harder to change as individuals get older. All these play a part in school readiness.

One might say that school readiness begins at birth. A substantial number of children enter kindergarten already well behind in their cognitive and social development, due to negative conditions they grow up in: low-income households, maltreatment, lower-resourced schools, disadvantaged neighborhoods (Coulton et al., 2016; Morgan et al., 2016). For James Heckman (2011), there are large gaps in cognitive stimulation and emotional support a child receives at early ages. These gaps across children from various socioeconomic groups open up early. They originate before formal schooling begins, persist throughout childhood and strongly influence adult outcomes. For these reasons, early experiences and family factors (family environment, parents' level of education, family status and income and so on) can make a notable difference in a child's readiness for school. But children have no control in the kind of family, environment, or circumstances they are born and grow up in. And in the absence of policies to address those factors, it is apparent that many children will have diminished chances of school success.

Taking an educational approach, it is well documented that the literacy and numeracy skills a child brings to school influence academic achievement (Gustafsson et al., 2013). But school readiness extends beyond the domain of cognition (literacy, numeracy, early knowledge in subject areas). It also encompasses a child's ability to undertake the learning of specific content (e.g., vocabulary, conceptual skills), her/his approaches to learning, as well as her/his physical, emotional, social, and behavioral preparedness to engage in the kindergarten and early elementary learning environments (Barbu et al., 2015; Allen & Kelly, 2015, p. 181). According to Kagan and her colleagues (1995), school readiness involves five dimensions which are inextricably linked and influence one another: (1) physical well-being and motor development, (2) social and emotional development, (3) approaches towards learning, (4) language development, and (5) cognition and general knowledge. The authors note that these factors must be considered in their wholeness as indicators of school readiness. They emphasize the multi-dimensional nature of early development and support the view that school readiness is not just about children being cognitively prepared for school and must not be measured just by student proficiency on academic or cognitive skills. Finally, they underscore the

transcendent role that families and communities play in children's development as they shape the context in which children grow, framing children's most important early experiences and encounters with their environments (p. 6). Linder and her colleagues (2013) define school readiness as children's preparedness for what they are expected to know and do in academic domains and processes of learning when they enter formal education. Offering an alternative perspective, the authors add that it is still unclear whether the view that students should be ready for school rather than schools being ready for children is developmentally appropriate.

The idea that 'academic readiness matters' is widely accepted. Greg Duncan and his colleagues (2007), examining and assessing early predictors of later academic achievement, found that early academic skills and behaviors, and specifically the entry-level of math, reading, and attention skills (in that order) are strongly correlated to later school achievement.²⁶ The researchers ascertain that "if achievement at older ages is the product of a sequential process of skill acquisition, then strengthening skills prior to school entry might lead children to master more advanced skills at an earlier age and perhaps even increase their ultimate level of achievement." Remarkably, they also note that "although there are strong theoretical reasons to expect that individual differences in children's early academic skills and behavior are linked to subsequent behavior and achievement, surprisingly little rigorous research has been conducted to test this hypothesis" (p. 1429).

Greg Duncan's (2011) work focuses on elucidating the components of a preschool curriculum which –taken individually or in combination– are responsible for the long-run school impacts. Duncan seeks an answer to the following question: For a preschool education choosing between curricula that emphasize cognitive and academic skills and others focused on mental health and emotional development, which one is likely to better able promote a child's future school success? For him, if school readiness is

²⁶ In particular, they found that measures of attention were moderately strong predictors of later achievement while they found no evidence confirming the predictive relationship of early social-emotional functioning (gleaned from parent and teacher reports) to later achievement. Nevertheless, the authors explain that their analysis was focused on behavior "during the years just before and at the point of school entry. If some types of socioemotional skills are well established before the preschool years, and unchanging during these years, then we will not be able to detect their effects" (Duncan et al., 2007, p. 1442).

defined as the skills and behaviors that best predict later academic achievement, concrete numeracy, literacy skills (like knowing letters, word sounds, numbers and ordinality), and attention skills are decidedly more important than social-emotional behaviors –with early math skills being consistently most predictive. In his analysis, which was build upon previous studies, the ability to pay attention and engage in school tasks occupies an intermediate position in predicting future achievement, but not as powerfully as early reading and, especially, math skills. Particularly, in a more recent study (Watts, et al., 2014), it is found that early mathematical knowledge was the most powerful predictor to adolescence mathematics achievement, even after accounting for early reading, cognitive skills, and personal and family background characteristics. The researchers also found other academic and cognitive skills, such as reading and working memory, to be significant predictors of later achievement. According to them, although the association between early and later mathematical skills was not surprising, “the consistency and magnitude of these relationships were striking” (p. 357). These statistically significant connections between school-entry skills and high school mathematics achievement provide evidence to “support interventions designed to boost early mathematical skills, with the implication that such interventions could help narrow gaps between advantaged and disadvantaged children in later mathematics achievement.” (p. 352).

The demand for early intervention is also underscored in many other studies. Paul Morgan and his colleagues (2016) examined the age of onset, over-time dynamics, and mechanisms underlying science achievement gaps in U.S. elementary and middle schools. They used multilevel growth models that included as predictors children’s own general knowledge, reading and mathematics achievement, behavioral self-regulation, demographics, other child- and family-level characteristics (e.g., parenting quality), and school-level characteristics (e.g., racial, ethnic, and economic composition; school academic climate). Analyses of a longitudinal sample of 7,757 children indicated large gaps in general knowledge already evident at kindergarten entry. In particular, kindergarten general knowledge was the strongest predictor of first-grade general knowledge, which in turn was the strongest predictor of children’s science achievement from third to eighth grade.

Their findings suggest that science achievement gaps begin to occur early in the school career and are largely stable as children age. These early-appearing gaps may be exacerbated and largely explained by other

modifiable factors (e.g., lower reading and mathematics achievement, lower behavioral self-regulation, lower-resourced schools, SES, and parenting). Given that science achievement gaps and general knowledge gaps are already present at kindergarten entry, the researchers call for policies designed to address them. Moreover, they assert that such intervention programs need to be multifaceted and implemented very early in children's development (e.g., by or around school entry if not earlier); they must provide the children with greater access to informal preschool learning opportunities and provide their parents with training in how to increase children's readiness for schooling more effectively.

Early gaps constitute a crucial issue within the tradition of education. Longitudinal studies assert that children's early experiences affect school readiness and later school success (Chittleborough et al., 2014; Hart & Risley, 1995; for a review of literature see also Coulton et al., 2016; Barbu et al., 2015; Berliner, 2009; Lee & Burkam, 2002; Neuman & Dickinson, 2001). They confirm that school readiness facilitates child adaptation to challenges and demands of schooling; contributes to self-directed learning; results to the academic engagement; is linked positively to self-esteem; gives child a sense that she/he is a capable learner; contributes to the reduction of drop-out rates; can improve academic performance and outcomes in primary and secondary school as well; and results to positive social and behavioral competencies in adulthood (see Britto & Limlingan, 2012; Reynolds et al., 2011; Rothstein, 2004; Hart & Risley, 2003; Barton, 2003; Reynolds et al., 2001; Farran, 2000; Barnett et al., 1998). School readiness gaps between different groups of children persist in their academic scores years: a good start in school can have lasting and great effects on students's futures. Conversely, children who start behind in kindergarten tend to stay behind in later years (Morgan et al., 2016; Chittleborough et al., 2014; O'Brien, 2008; Applied Survey Research, 2008; Loeb & Bassok, 2007; Rathbun & West, 2004). Besides, is anyone who does not know the old maxim, "If all learning is 0 to 10, then 0 to 1 is the most important"?

Sharon Judge's (2013) study offers further evidence to the above conclusion. Judge investigated the reading trajectories of at-risk children from kindergarten to 3rd Grade, using a nationally representative sample, in order to assess the effects of risk and protective factors regarding the individual characteristics of the child, family, and school contexts. Her study demonstrated the widening reading achievement gap with the passage of time between children with high-versus-low literacy skills at kindergarten

entry. Greg Duncan and Richard Murnane (2014) provide evidence supporting further the hypothesis that “skill begets skill” by noticing that the children who stand to benefit the most from K-12 schooling are the ones who enter kindergarten with a solid set of school readiness skills (literacy and numeracy skills including knowing letters, numbers, shapes and beginning and ending word sounds). But they also highlight the importance of the combination of “executive functioning” skills such as focusing attention, filtering out distractions, and keeping in mind several pieces of information at the same time.

My findings are consistent to the most of the aforementioned studies. The ‘not-ready for school’ children were at a significant disadvantage. These are the cases for Jason, Theo and Lucas who were not proficient in important school readiness academic skills and failed to achieve in core areas of the school curriculum in the following years. The negative impact of their unreadiness went well beyond academic achievement. Let me focus here on the case of Jason. Jason, although he entered kindergarten with a lively imagination and love for school, he was less ready in conversing and counting. He was impulsive and lacked the ability to concentrate. He hardly attempted the school tasks. He seemed to be a kinesthetic learner. For him, problems began in earlier years and were amplified by increased academic demands. In elementary school, he made slow progress in Math and Greek Language. In secondary years, he had a hard time in school and he gave up because he strongly believed that there was no point in “fighting a lost battle”. I would also like to add that Jason’s physical readiness above average did not offer him an avenue to be successful in school.

On the other hand, Helen, Maria and Charlie entered kindergarten more cognitively ready to learn and maintained that advantage across the school-years. But we also have the case of John who was emotionally stable, could manage impulsivity, was cooperative and not-antagonistic towards others. He entered kindergarten less academically ready but he exhibited social-emotional readiness. Although he was less ready in the cognitive domain, he managed to put effort forth and improved his performance.

The finding regarding John’s case conflicts with Duncan and his colleagues (2007) study in which social-emotional development cannot predict later academic achievement. So academic readiness (namely, cognitive skills) matters. But many other factors matter a great deal too: social and emotional maturity. More and more early childhood scholars

view the domain of children's social and emotional development as synergistic with intellectual development. They recognize the importance of cognitive skills but they also stress that cognitive development, including literacy, is totally intertwined with the physical, social, and emotional skills (Zigler & Bishop-Josef, 2006).

Unquestionably, more applied research is needed to establish relations between emotion and academic performance and determine how social-emotional development translates into academic success across school years. By any means, given the complexity of school readiness domain, it is crucial to consider all potential variables of long-term interest and remember that all these variables are highly intercorrelated.

At the same time, we must not forget that forcing some students to perform (e.g., to read, write, solve math problems) before they are developmentally ready could be harmful and lead to unexpected outcomes. For instance, many researchers agree that learning to read is a major educational goal and that young children benefit from exposure to early reading and math concepts. But just when these processes should be started and with what intensity raises many questions among them (Carlsson-Paige et al., 2015). Christine Moran and Karlen Senseny (2016) make a clear distinction between a child's developmental and chronological age. In their research, a child's developmental age was found to be the strongest predictor of early literacy learning. As a significant number of children arrive in kindergarten with a low level of early literacy skills, they support the idea that developmental age should be considered by educators, policy makers, and curriculum designers as well.

And therein lies another problem. It is about parents who are anxious for their children performance at an early age and have unreasonable demands from their kids. Such parents have raised the bar on their expectations assuming that if their child has not learned to read at an early age she/he is already behind; she/he is possibly 'slow' or learning disabled. But if young children are not biologically ready to perform certain tasks, and if are forced to 'grow up faster' and to learn in developmentally inappropriate ways that could make them feel like losers at the age of 4 or 5, developed self-image of incompetence, and could harm them in the long run.²⁷ For Moran and Senseny (2016), it is critical for parents –and

²⁷ Books by David Elkind –*The Hurried Child* (1981) and *Miseducation: Preschoolers at Risk* (1987)– argued that children were being pushed too hard, too early, especially with

educators as well– to realize that a child who is chronologically five may not function at a fully five-year-old developmental level, and may not be ready for the rigors of an increasingly academic and demanding kindergarten curriculum.

In summary, existing evidence is conflicting with some studies suggesting that academic-oriented curricula, namely a heightened focus on literacy and math instruction, can narrow achievement gaps and may positively affect children’s learning trajectories, and others suggesting that an early focus on academic content is unnecessary and potentially harmful. Although there is consensus among educators, parents, researchers, and policymakers that children’s early childhood learning experiences can meaningfully influence their short- and longer-term life outcomes, it is less clear precisely what aspects of the early learning environment are most critical for promoting these gains (Bassok et al., 2016).

In particular, there is substantial debate about whether academic instruction should begin prior to kindergarten entry, and the potential benefits and risks of orienting early childhood learning experiences towards academic content. Critics of academically focused kindergarten caution that focusing heavily and earlier on academic content is not “developmentally appropriate” and may have negative consequences; it may be stressful for children and may negatively impact their motivation, self-confidence, and attitudes towards school (Raver & Knitzer, 2002; Shonkoff & Phillips, 2000; for a review of research see Bassok et al., 2016). This makes the question of readiness even more complicated.

Finally, I would like to mention that kindergarten is not a miniature of the 1st Grade. Sadly, Daphna Bassok and her co-researchers (2016) have found that preschool and kindergarten today classrooms are characterized by a heightened focus on academic skills. Little children are pushed to think and act more like elementary students; they are expected to ‘sit at desks’ and learn concepts and skills that first-graders once did. Even worse, play, exploration, and social interactions have been replaced by highly prescriptive curricula, worksheets, and pressure to learn to read as early as possible –suppressing pupils’ creativity and imagination.

respect to intellectual tasks. Children are being rushed through childhood, with little time allowed for being a child and experiencing age-appropriate activities. For him, the consequences of this pressure are severe, ranging from stress to behavior problems and even to suicide (Zigler & Bishop-Josef, 2006, p. 20).

The dramatic reduction to opportunities for play is due to the pressure the preschool teachers experience to prepare children for their futures of endless testing. In general, preschool teachers now expect children to enter kindergarten in knowing much more while they devote more time to advanced literacy and math content, and substantially less time to art, music, science, and child-selected activities. Several of them see children playing as wasting time (Bassok et al., 2016).

So, focusing on the academic dimension of school readiness there is a danger to ignore the assumption that in kindergarten play must be at the center of the curriculum. The basic idea is that playful activities make children happier. Children learn so many things by playing with each other. Play enhances brain development in children and activates the brain's reward circuitry (Wang & Aamodt, 2012).

Besides, free play, play-based experiential activities, self-generated play, pretend play, and physical activities are related to many areas of child development: creativity, imagination, emotion regulation, behavioral self-regulation, and divergent thinking. They promote a healthier learning platform and the maturation of happier brains. Thus, quality preschool education requires pursuing play-based learning and instruction of academic skills simultaneously (Becker et al., 2014; Panksepp & Biven 2012; Russ & Dillon 2011; Brown, 2010, pp. 99-100; Miller & Almon, 2009; Zigler & Bishop-Josef, 2006). In a broader perspective, it seems that we lose sight of the fact that children's needs ought not to be defined in purely academic terms. For instance, since it is not bad to spend millions of euros on computers and wiring schools, it is unacceptable not to invest a single euro to improve the schoolyards with trees, benches, and playing areas.

Thus, an over-emphasis on literacy and math instruction so early in a child's schooling experience may crowd out time spent on other subjects, such as Arts, Music, Drama, and Physical Education. If anything, it may crowd out other important types of learning experiences that actually help develop social and regulation skills, each of which is a predictor of children's longer-term outcomes (Bassok et al., 2016).

Taken together, all the above lend further support to the hypothesis that school readiness lies at the intersection of cognitive and social-emotional skills. In this account, we have the exemplar of the Finnish model: in Finland, children are not considered as mature enough to go to school until they are seven years old. So government policy is strongly supportive of families and 'child-friendly' communities which create very

rich informal, early-learning opportunities. Moreover, in the Finnish educational system, where remarkable emphasis on emotional development is placed, it is believed that emotional development precedes intellectual growth (Abbott, 2014, pp. 49-50; Sahlberg, 2011).²⁸ So, we can anticipate for organizational constructs that address the pivotal issue of school readiness in broader terms and prepare kids for formal education.

In general, I conclude that school readiness constitutes a missing piece in the mainstream school system. Ironically, this ‘piece’ was identified almost 400 years before by Comenius (*The Great Didactic*, 1638) who wrote, among others, that if we follow the footsteps of nature we find that the process of education will be easy if “the mind be duly prepared to receive it”, “the pupil is not overburdened by too many subjects”, and “the intellect is forced to nothing to which its natural bent does not incline it, in accordance with its age and with the right method” (ch. XVII, p. 279).

The evaluation of the readiness of a student to leave kindergarten should be based on the review of many student performances. School readiness, in conjunction to motivation and to emotional maturity, is critical to the development of independent learning skills, to the sense that one is a capable learner. Lack of maturity in the kindergarten level, that is not yet having the ability to function in specific domains (poor executive function skill such as inability to follow directions, to manage time, to pay attention, and to impulse control) and understanding the rules for behavior and the schedule of daily activities, may be some of the reasons why children fail at so early age (Raver & Knitzer, 2002). And early failure causes children an immense loss of self-esteem across school years; and the longer a child underachieves “the more deficient in work habits, self-discipline, and study skills she will become” (Mandel & Marcus, 1995, p. 267).

²⁸ Writing this, I do not imply that we can improve an educational system just by borrowing and copying best strategies from other educational systems. International comparisons are valuable in any sense. But even the highest quality educational system must be valued in terms of the cultural context in which is designed. Thus, before borrowing and adapting good practices from other countries, it is imperative to test their adaptability in the new cultural-educational context. The original context needs to be contrasted against the targeted context, and the differences between the two contexts that must be taken into consideration (see Richter & McPherson, 2012). Each adaptation process ought to start by examining the differences between the two contexts, to go on by determining the changes needed for the targeted adaption (e.g., teacher training), and to complete by estimating the expected results.

Scholars from multiple disciplines recognize the value of measuring school readiness in school context. In my opinion, the discussion about how we can 'measure' school readiness is a touchy and difficult one because readiness to learn hinges on a range of factors. How can we classify four- or five-year-olds as less capable and more capable; as ready or unready? Is it wise to base big decisions –like whether or not a child should enter elementary education– on a single test at a single point in time? If the conception for readiness is limited to certain competencies which serve only the cognitive domain, we will possibly forge solutions which do not address the real problem.

And therein lies another problem. If we subscribe to the notion of a comprehensive school system, which does not sort students on the basis of their cognitive abilities and achievements, we ought to be very careful about how we define children's maturity. If the evaluation of children's readiness is misperceived as a means of separation (to sort "the wheat from the chaff") we shall generate an early tracked school system, an early selection system.²⁹ And research across countries has documented that school tracking shapes inequality independently of the level of education (see Meschi & Scervini, 2012; Van de Werfhorst & Mijs, 2010). The question then becomes how to assess children's abilities without increasing educational inequalities and how to support them avoiding the danger of stigmatization.

It would may be wiser to talk not only about ready kids but about ready schools and ready parents as well. Ready parents acknowledge their importance in their kid's transition to the kindergarten setting. Ready schools do not expect children to arrive at their doorsteps in same stages of readiness. On the contrary, they recognize the unique needs of children; they establish connections with families and preschools (such as home visits to know families better and to make personal connections with children and families); they can alter practices and programs if they do not benefit

²⁹ Ken Robinson (2009) underlines the misconception about early assessment writing in a humorous yet acute manner: "In cities like Los Angeles and New York, there is fierce competition for places in particular kindergarten schools. Children are being interviewed at the age of three to see if they are suitable material. I assume that earnest selection panels are thumbing through the résumés of these toddlers, assessing their achievements to date – *You mean this is it? You've been around for almost thirty-six months, and this is all you've done? You seem to have spent the first six months doing nothing but lying around and gurgling (italics mine).*" (pp. 370-371).

children and do not match students' developmental stages (appropriate curriculum, flexibility to respond to variations within a class and to meet the changing needs of individual children over time); they are equipped to facilitate smooth transitions between home and school; they provide targeted help on an individual basis; they show respect for children's cultures; they find ways to help minority children and children with disabilities; they have small size classes and well-trained teachers; they help students to set personal goals and exercise autonomy; they encourage students to identify their strengths (Allen & Kelly, 2015; Pryor, 2014; Pianta et al., 1999; Kagan et al., 1995).

Accepting the fact that school readiness and a good beginning matter in the long run (Chittleborough et al., 2014; Reynolds et al., 2011; Yazejian & Bryant, 2010; Applied Survey Research, 2008) and are the foundation of equity and quality education (Britto & Limlingan, 2012; Heckman, 2011), and given that different parts of the brain may be ready to learn at different times (Bransford et al., 2000), and that individual differences in achievement emerge very early (Smiley & Dweck, 1994), we can theorize about two options: one option is to wait until children are better-prepared to enter formal education; the other one is to create the right conditions to help them to master the skills necessary to meet the challenge of school subjects.

In any case, we should be careful about the idea of early years determinism –assuming that school success (and life chances respectively) is fixed by five– because it can be transformed into self-fulfilling prophecies. If we subscribe for a fixed readiness threshold we ignore the fact that kids may demonstrate their readiness by different manners. Consequently, it is imperative to take into account the 'within child' differences (Bronfenbrenner & Morris, 1998) in order to evaluate the readiness of a child to leave kindergarten. It is imperative to be aware of the wide range of predispositions, cultural values and differences, and early life experiences upon which development rests. The ultimate goal, in my view, is to protect every student in experiencing low self-confidence and low self-esteem in school years and beyond.

Are there any missing pieces in students' education and if so, is it possible to define them?

Case B: Non-cognitive factors: a missing piece in education?

The final finding of my study is the role of non-cognitive factors play in students' learning and academic outcomes. It is widely recognized that educational and life progress reflect children's academic as well as non-academic competencies (Moore et al., 2015) and that there are non-cognitive attributes and competencies which are related to academic performance and relevant to human learning, and by extension, to education and life chances (Meyers et al., 2013; Pingault et al., 2011).³⁰ It is also frequently noted that these attributes are important because they affect a range of behaviors and contribute to or undermine educational attainment and work success (Moore et al., 2015; Heckman & Kautz, 2013; Levin, 2012).³¹ As Duckworth put it in her 2013 TED talk "In education, the one thing we know how to measure best is IQ. But what if doing well in school and in life depends on much more than your ability to learn quickly and easily?"

The theorists of the field do not share the same conceptualization of non-academic abilities as this is a large category (Moore et al., 2015) where different names connote different properties (Heckman & Kautz, 2012, p. 4). The economists James Heckman and Tim Kautz (2013) define non-academic attributes as "the personal attributes not thought to be measured by IQ tests or achievement tests" (p. 10). For them, non-academic attributes go by many labels in the literature, including non-cognitive skills or

³⁰ The study by Jean-Baptiste Pingault and his colleagues establishes a strong connection between attention abilities in elementary school and educational success in early adulthood (high school graduation status at age 22-23). The results of the study indicate that children in the high inattention trajectory were the least likely to have a high school certificate at the age of 22–23 years (29.2%), while those in the low inattention trajectory were the most likely to have completed high school (88.5%). The study has another interesting finding: inattention rather than hyperactivity during elementary school significantly predicts long-term educational attainment (Pingault et al., 2011).

³¹ Kristin Anderson Moore and her co-authors (2015) provide conceptual and empirical justification for the inclusion of non-academic outcome measures in longitudinal education surveys. Flavio Cunha and co-researchers (2010), assessing the importance of noncognitive skills in producing social and economic success, note: "Accounting for both cognitive and noncognitive skills makes a difference. An empirical model that ignores the impact of noncognitive skills on productivity and outcomes yields the opposite conclusion that an economically efficient policy that maximizes aggregate schooling would perpetuate initial advantages" (p. 928).

abilities, soft skills, social-emotional learning competencies or skills, personality traits, and character skills. For Grover Whitehurst (2016), the field of personality traits and the field of soft skills share common components, including the intent to capture broad patterns of behavior, and the goal of identifying individual differences that are predictive of later outcomes. However, the field of soft skills is presently a Tower of Babel when it comes to constructs and measures (pp. 3-4).

In general, the distinction between “cognitive” and “non-cognitive” is somehow problematic; definitions of the terms “non-cognitive” or “non-academic” have long been under contention. Allen and Kelly (2015) note that the term ‘non-cognitive skills’ is often used in contrast to the ‘cognitive skills’ although there is considerable research that the non-cognitive skills also support learning and achievement, and they are highly relevant to cognitive skills in various traditional academic fields. In the same line of thinking, Kristin Anderson Moore and her co-authors (2015) explain that they use the term “nonacademic” rather than “nongognitive” in recognition that all these attributes require cognition: “We recognize that many of the competencies described as nongognitive or nonacademic actually encompass cognitive and academic elements, making these terms somewhat inappropriate, albeit ones that are in common use at this time” (p. 3) For Damon Jones, Mark Greenberg and Max Crowley (2015)³², there is a thin line between cognitive and non-cognitive skills: “the designation of cognitive versus nongognitive skills oversimplifies the complexity of skills and the role of cognition” (p. 2283). The researchers write:

³² Jones, Greenberg and Crowley (2015) used a rich database that combined multiple sources of information (teacher ratings of children’s social competence, parents’ reports, self-reports, and public records) in order to examine whether early childhood social competence predict key adolescent and adult outcomes measured up to 2 decades later. The researchers found statistically significant and unique associations –over and above other important child, family, and contextual characteristics– between measured social-emotional skills in kindergarten and young adult outcomes across multiple domains of education, employment, criminal activity, substance use, and mental health. Children who scored higher on social competence in kindergarten were more likely to get a college degree and have a full-time job by the time they were 25. Children with weak social skills were more likely to have negative interactions with the police and spend time in juvenile detention. All in all, the authors concluded that a school entry measure of social-emotional skills may help identify the students in need of early intervention.

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

Cognitive skills are involved not only in intelligence and achievement, but also in attention, emotion regulation, attitudes, motivation, and the conduct of social relationships. [...] Noncognitive skills interact with cognitive skills to enable success in school and the workplace. [...] Success in school involves both social-emotional and cognitive skills, because social interactions, attention, and self-control affect readiness for learning. An additional feature of noncognitive competencies is that they may be more malleable than cognitive skills and thus may be appropriate targets for prevention or intervention efforts. (p. 2283)

This is also the idea underlying in a recent report in which the researchers (Nagaoka et al., 2015) point out that cognitive and non-cognitive factors interact with each other to contribute to learning and growth (p. 14). Given that all students need developmental experiences and opportunities for action and reflection, the authors propose four foundational components that span both cognitive and non-cognitive factors: self-regulation, knowledge and skills, mindsets, and values. These foundational components are developed and expressed in multiple spheres while they are intricately interrelated and mutually reinforcing. Moreover, they are malleable; that is, they can be changed by experiences and by interactions with other people, in both positive and negative ways, and then be internalized. The authors write:

There may be conceptual reasons for distinguishing between cognitive and non-cognitive factors, but this distinction has no functional meaning. Cognition, emotion, affect, and behavior are reflexive, mutually reinforcing, and inextricably associated with one another as a part of development and learning. Adults will make little headway if they target only one particular component or subcomponent in isolation.(p. 7) [...] Noncognitive and cognitive factors should not be considered independently; they interact with each other to promote and mutually reinforce development and learning. Both are a core part of how students learn. (p. 19)

From the standpoint of scholars of psychology, Angela Duckworth and David Scott Yeager (2015) examine the confusion over terminology and conclude that debate over the optimal name for this broad category of personal qualities obscures substantial agreement about the specific attributes worth measuring. Cervone and Cushman (2014), discussing the power of social-emotional learning, focus on the dichotomy between non-

cognitive and cognitive factors in learning and the complex interplay between the two. The authors maintain that we need new language that ends the versus between cognitive and non-cognitive factors in our discussions of learning and mastery because academic, social, and emotional learning are deeply mutual and all are linked to feeling connected to school.

For the purpose of this study, I hold the term “non-cognitive” skills – for skills such as self-regulation, paying attention to tasks, staying focused, persistence, curiosity, self-confidence, displaying social skills, grit, tenacity, self-motivation, and self-esteem– as it is widely accepted in the current educational literature.

Cognitive abilities are documented to be linked with academic achievement. Yet, at the same time, we see now a growing body of research suggesting that non-cognitive factors can have just as strong an influence on academic performance as intellectual factors: non-cognitive and cognitive factors interact and jointly influence student achievement and learning (Meyers et al., 2013). Even in studies that have not found convincing evidence to support this thesis, the researchers presume that trying to increase non-cognitive skills could have long-term benefits for students. For example, in case of grit, results show that it adds little to the prediction of academic achievement beyond traditional personality factors, especially conscientiousness. But, according to the researchers, “[t]his does not exclude the possibility that other cognitive or noncognitive predictors are important correlates of academic success.” (Rimfeld et al., 2016).

The field of cognitive neuroscience taught us that achievement is actually a complex output of multiple cognitive, emotional, and social systems. Cognitive, emotional, and social capacities are inextricably intertwined, and learning, behavior, and health are highly interrelated over the life course (Noble 2014; Center on the Developing Child at Harvard University, 2014). Spengler and her co-researchers (2015) make the compelling case that the non-cognitive student predictors operate along both direct paths and indirect paths via educational attainment. Specifically, individual differences in cognitive and non-cognitive childhood characteristics may lead to cumulative effects on key life outcomes across the life span. Improvements in non-cognitive skills explain a larger share of actual gains in adult life than improvements in cognitive performance (Chetty et al., 2011).

As emphasized by Duckworth and Yeager (2015), “success in school and beyond depends critically on many attributes other than cognitive

ability” (p. 245). Non-cognitive skills open up at an early age, persist throughout an individual's life, and may predict academic achievement in children, over and above IQ, socioeconomic status, and higher well-being. In the meantime, numerous short- and long-term studies provide important evidence that non-cognitive skills and executive functions as well are malleable (Dodge et al., 2015; Blair & Raver, 2014; Melby-Lervåg & Hulme, 2013; Diamond & Lee, 2011); they are teachable and can be nurtured and developed in students.³³

For Abraham Maslow and other psychologists, humans require basic safety, sense of belonging, and self-esteem needs to be met before they engage in more academic and creative pursuits (in Tooley & Bornfreund, 2014). Bloom (1976) had recognized the power of the non-cognitive factors and had argued that the non-cognitive characteristics of each student –to which he had referred as affective or non-academic characteristics–influence her/his academic success. Tough (2012), drawing on groundbreaking research, highlights the importance of non-cognitive skills and argues that if we want to advance the learning of all students, we need to seriously consider how non-cognitive skills influence learning. Overall, he asserts that the factors that matter most in academic success have less to do with IQ and more to do with character and qualities such as grit, perseverance, self-control, curiosity, conscientiousness, self-confidence, and optimism. Accordingly, Camille Farrington and her co-authors (2012) posit that non-cognitive character traits such as resilience, persistence, and delayed gratification are as important as cognitive skills. They also provide an overview of non-cognitive traits in educational research and identify five general categories of non-cognitive factors related to academic performance: 1) academic behaviors, 2) academic perseverance, 3) academic mindsets, 4) learning strategies, and 5) social skills. However, the authors state that it is not clear how all the different types of non-cognitive factors interact to shape academic performance or what their implications are for educational practice (p. 6).

In a 2013 report titled “Promoting Grit, Tenacity, and Perseverance: Critical Factors for Success in the 21st Century”, it is highlighted that beyond content knowledge, it is imperative for educators and administrators

³³ Flavio Cunha, James Heckman, and Susanne Schennach (2010) found that cognitive skills are more malleable in early childhood whereas non-cognitive skills continue to be malleable in later stages of a child's life cycle.

to consider a core set of non-cognitive skills (grit, tenacity, and perseverance) because “these factors are essential to an individual’s capacity to strive for and succeed at long-term and higher-order goals, and to persist in the face of the array of challenges and obstacles encountered throughout schooling and life” (Shechtman et al., 2013, p. 19). Thus a first priority must be “awareness-raising so that teachers, administrators, parents, policymakers, and all others involved in the educational community see these issues as important and become invested in supporting change” (p. 85). Based on a whole child perspective, Moore and her co-authors (2015) identify four critical non-academic constructs: self-regulation, agency/motivation, persistence/ diligence, and executive functioning. They also suggest that we need to consider and assess, from early childhood through high school, other nonacademic constructs –such as social skills, relationships, behaviors, academic self-efficacy, educational engagement, and internalizing problems– because all these non-academic constructs are crucial to educational and workforce outcomes, and may operate as predictors of educational success. Another reason is that nonacademic attributes are important indicators of well-being in their own right (see also Levin, 2012).

So, the tendency to focus on non-cognitive factors is clear enough. As emphasized by Duckworth and Yeager (2015), examining the extent to which young people express self-control, gratitude, purpose, growth mindset, collaboration, emotional intelligence, and other beneficial personal qualities can dramatically advance scientific understanding of child development, impact on life outcomes, and underlying mechanisms. But when it comes to assessing, things are less clear. Are there any valid ways to ‘measure’ students’ non-cognitive outcomes? For example, it is easier to assess whether a student can count to 100, write the alphabet or sort the chemical elements of the periodical table, but it is much more difficult to quantify her/his level of ‘self-control’ or ‘grit’ (see Tooley & Bornfreund, 2014).

This picture leaves unanswered the most basic question: And now, what to do? As Whitehurst (2016) puts it, advocates for the inclusion of soft skills in the curriculum need more specificity at the level of what students need to learn, what educators should do in schools to advance and assess students’ soft skills, and what instructional practices are to be promoted. There is no clear path to the development of curriculum and teacher training. At the present, the theory and measurement of soft skills in schools

is in its infancy, with many critically important questions unanswered (p. 6). The same author takes a more extreme position writing that some soft skills –focusing on the case of grit– are not malleable. They are highly heritable as they are not skills to be taught but personality traits. He further states that we have no validated interventions for teaching grit that can be used by schools (Whitehurst (2016a). From the perspective of Duckworth and Yeager (2015), measuring personal qualities, although difficult, is only the first step. The wise use of data in educational practice is another topic that will be increasingly important. The authors suggest:

Scientific inquiry and organizational improvement begin with data collection, but those data must be used to inform action. Too little is known about the question of how to act on data regarding the personal qualities of students in various classrooms or schools (Bryk et al., 2015). If a classroom is low in grit, what should one do? If a student is known to have a fixed mind-set, how can one intervene without stigmatizing the child (and should one intervene at all)? How can multidimensional data on personal qualities be visualized and fed to decision makers more clearly? (Bryk et al., 2015). [...] What is new is the expectation that one can measure, with precision and accuracy, the many positive personal qualities other than cognitive ability that contribute to student well-being and achievement. (p. 246)

So, more is needed to know about how to evaluate the non-cognitive skills, but this discussion is beyond the scope of this work. One thing is definite: there are skills and behaviors which cannot be fully understood at an intellectual level.

Considering the role of non-cognitive factors in participants' academic performance I realized that I must focus more on self-regulation. Self-regulation is conceived as a multidimensional construct which includes behavior regulation and emotion regulation; it begins to develop in early childhood, it is recognized as integral to students' academic and social success, and it is reported as a main cause of children's lack of school readiness (Eisenberg et al., 2010). More specifically, self-regulation is the ability to control one's body and self and it includes the motivation and ability to follow rules; to resist temptation; to inhibit automatic response and inappropriate actions; to make conscious choices to direct the self; to manage emotions; to control and maintain focus and attention; to make choices that require to sacrifice short-term pleasure for long-term gain; and

to maintain, to inhibit, or to modulate actions and behaviors over time and across several situational contexts in order to achieve social adaptation and to align to particular ideals and norms (Willingham 2011; Blair & Diamond, 2008; McClelland et al., 2007; Bidjerano & Dai, 2007; Duckworth & Seligman, 2005; Eisenberg & Spinrad, 2004; Shonkoff & Phillips, 2000). By the same token, Duckworth and Carlson (2013: 209) define self-regulation as the voluntary control of attentional, emotional, and behavioral impulses in the service of personally valued goals and standards, and they point out that they use the term “self-regulation” interchangeably with the terms self-control, self-discipline, and willpower.

Duckworth (2009) clarifies that “self-discipline isn’t the capacity to do what other people order you to do; rather, it is the capacity to do what you want to do. It’s knowing how to manage your emotions and thoughts, and knowing how to plan your behavior so you can reach your goals” (p. 536). Self-discipline implies the ability to refrain from doing something while perseverance implies the ability to keep doing something. This dimension was highlighted by Dewey (1938) who wrote:

Natural impulses and desires constitute in any case the starting point. But there is no intellectual growth without some reconstruction, some remaking, of impulses and desires in the form in which they first show themselves. This remaking involves inhibition of impulse in its first estate. The alternative to externally imposed inhibition is inhibition through an individual’s own reflection and judgment. The old phrase “Stop and think” is sound psychology. For thinking is stoppage of the immediate manifestation of impulse until that impulse has been brought into connection with other possible tendencies to action so that a more comprehensive and coherent plan of activity is formed. Some of the other tendencies to action lead to use of eye, ear, and hand to observe objective conditions; others result in recall of what has happened in the past. Thinking is thus a postponement of immediate action, while it effects internal control of impulse through a union of observation and memory, this union being the heart of reflection. What has been said explains the meaning of the well-worn phrase “self-control.” The ideal aim of education is creation of power of self-control.

Self-regulation is not exactly a personality trait. The self-regulatory traits are reported to be part of Neuroticism and mostly of Conscientiousness: they are related to children’s attentional skills and abilities to focus on long-term goals over immediate impulses (Shiner, 2010, p. 1088). As children are

not born with self-regulation skills –but they are born with the potential to acquire them within the context of responsive relationships that facilitate their development– self-regulation is one of the most important and challenging tasks of early childhood (Center on the Developing Child at Harvard University, 2016, pp. 9-10).

Within the classroom settings, self-regulation manifests itself as sustained attention (attending the teacher, ignoring distractions, focusing on tasks, and remembering and following instructions), behavioral control, and persistence (McClelland & Cameron, 2012; Eisenberg et al., 2010), and it is found to moderate the relationship between performance and motivation (Daniela, 2015). It is also said to be a building block for other skills necessary for later academic and personal success, and healthy development through middle childhood, adolescence, and into adulthood (Tooley & Bornfreund, 2014; Shiner & Masten, 2012) and it is found to predict university students' academic achievement, over and above cognitive abilities (Stadler et al., 2016).

The cognitive developmental approach emphasizes the importance of giving children choices and fostering their autonomy and self-regulation. There are several studies that have investigated self-regulation as a school-entry predictor of later children's achievement outcomes at school in various domains. Several of them provide support for the efficacy of a self-regulation intervention for children experiencing demographic risk (Dodge et al., 2015; Schmitt et al., 2015). According to Shonkoff & Phillips (2000), "the growth of self-regulation is a cornerstone of early childhood development that cuts across all domains of behavior" (p. 26).

Since a large number of studies on self-regulation have been carried out in recent years, it is well worth examining and synthesizing these studies in order to understand the levels it influences school attainments. At first, there is a common argument that many children with self-regulation problems communicate clear messages by early years. Behavior difficulties and lack-of-control at 3 years of age were found to undermine academic achievement even after other contextual factors were taken into account (Bornstein et al., 2013). Self-regulation skills may predict one's likelihood to complete college, her/his future earnings and avoid criminality, after controlling for other factors such as intelligence and parents' educational background. This perspective is echoed in the study of McClelland and colleagues (2013) who found that a child with high ratings of self-regulation at age 4 had almost 49% higher odds of completing college by age 25. This

is also in line with the results of the *Fast Track* prevention and intervention program assigned to early-starting conduct-problem children. The main conclusion of this study is that teaching at-risk young children how to think about the long-term consequences when they make a decision and ‘soft’ skills associated with emotional intelligence –like self-regulation and social skills, and problem solving– can significantly reduce juvenile crime and adult psychopathology (Sorensen & Dodge, 2016; Dodge et al., 2015).

Another longitudinal research (Moffitt et al., 2011) in New Zealand has made a significant contribution to understanding the importance of self-regulation for the prosperity of the population. The findings of this research indicate that self-regulation in childhood –as measured by a combination of self-reports, reports by the researchers, teachers, parents, from age 3 to 11, after controlling for childhood social class and IQ– is a powerful predictor of well being in adulthood (age of 32): self-control predicts physical health and wealth (personal finances). Children with high levels of self-control are less likely to be single parents and substance dependent, and less likely to be convicted of a crime as adults.

Self-disciplined students outperform impulsive students on tests and school attendance. Studies conducted by Duckworth and her colleagues provided strong evidence that self-control causally influences academic achievement while measures of self-control can be a more reliable predictor of students’ average scores than their IQ’s. But they also clarify that self-discipline alone is not sufficient (Duckworth et al., 2010; Duckworth & Seligman, 2005). There is convincing evidence which support the hypothesis that self-regulation variables, alongside to motivational variables and academic self-efficacy, can predict students dropping-out of school (Meyers et al., 2013). Shannon Wanless and her colleagues (2011) examined the role of demographic risk factors in the development of children’s behavioral regulation and found that children from low-income families began prekindergarten with significantly lower behavioral regulation than their more economically advantaged peers. There is also evidence that self-regulation corresponds to gains in literacy and math achievement in kindergarten (Schmitt et al., 2013), over and above intelligence (McClelland et al., 2007).

Under this prism, several additional issues are worth consideration. Daniel Willingham (2011) and Ann Whitman (2012) ponder some interesting questions: Why do some children have so much trouble controlling themselves? Why are not all adolescents risk-takers? Can school

experiences change the self-regulation of children, for better or worse? Are there any strategies available that can support students better self regulate? According to them, helping students better self-regulate is a daunting task because it seems such a personal, permanent quality of an individual. Yet, data shows that children can learn to self-regulate through practice. They can learn that there are serious consequences when risky and impulsive behaviors go too far. Self-regulation can be taught at schools, with lifelong benefits (Dodge et al., 2015; Blair & Raver, 2014). In the home environment, data shows that kids gain self-regulation skills when parents encourage them to be autonomous; provide them with emotional and cognitive support; and impose well-structured and consistent rules. Even adolescents can be self-regulated. They do not lack the ability to control their impulses and are quite capable of making rational decisions. One of the easiest ways to prove this is to simply watch them being with their peers: in peer-related settings, we do see adolescents being self-regulated, constantly checking themselves against what they should and should not be doing socially (Baird et al., 2010).

Over the past few years, neuroscientists have tried to explain why adolescents show a tendency for impulsive behaviors; why young children and teenagers differ widely in self-regulation skills. Some children seem to have little difficulty staying on task while others get distracted easily. One's success in self-regulation is partly due to genetics. But that is only part of the story, and it is important to bear in mind that self-regulation skills, as other inherited traits, can be nurtured and change (Whitman, 2012; Willingham, 2011). In Allen and Kelly (2015) words, although these skills are referred as dispositions, they are not simply intrinsic traits in the child. They are fostered through early experience and can be supported through intentional caregiving and instructional practices. Alithe Van den Akker and her co-authors (2013), following studies which have established that Big Five personality configurations tend to cluster into three personality types – the Resilient, Undercontrolled, and Overcontrolled (Caspi & Shiner, 2006)– found support for the hypothesis that “Undercontrollers are at double risk, both due to their personality type and to the overreactive parenting they receive”. It is possible that undercontrollers elicit more coercive or over-reactive parenting because their low levels of agreeableness and conscientiousness make them harder to manage (p. 760).

In a nutshell, children who are self-regulated and can monitor their own learning process find school and school work more enjoyable and

easier, and get praised for their good behavior (Blair & Diamond, 2008; Bidjerano & Dai, 2007; Duckworth & Seligman, 2005). Self-regulation is considered as a key ingredient in academic performance and as a strong predictor of a variety of positive outcomes in schooling, even when adjusting for factors (such as family income, parents' education). The association of self-regulation and academic achievement continues into elementary and secondary school (Daniela, 2015; Bornstein et al., 2013; Eisenberg et al., 2010; Duckworth & Seligman, 2005) and even into university level (Stadler et al., 2016). Given the importance of self-regulation for academic and social success, we must further examine the type of interventions which could facilitate its growth and development.

The results of my research document that the participants (Maria, Helen, and John) who were effective in school were those who had better emotional, attentional, and behavioral regulation in kindergarten years, and had developed self-regulated learning strategies and good study skills in elementary school years. These students were leaders in their own learning and could spend more time on schoolwork. In secondary years they appeared to be convinced that their competencies could grow in response to their efforts. In upper secondary years they faced only few difficulties to overcome challenging academic and as well life circumstances. Conversely, Jason who was impulsive and careless, and could not regulate his emotions, faced various difficulties in later years. Jason presented warning signs of his inability to regulate himself at the beginning of his schooling. In kindergarten level, Jason used to move around the tables and jump over chairs, even in the middle of some group activities; he used to raise his hand to give an answer without having the answer in his head and, often, without even paying any attention to the discussion. He often disrupted the teaching-learning procedures by throwing things (toys, crayons) in the air. Sometimes he used to hide behind the library area looking at me to see how I would respond to his actions.

In upper elementary and secondary classes, Jason was observed to be unlikely to put any effort on school tasks. Although he had many creative ideas, he had a hard time organizing them on paper. The series of difficulties and failures he experienced, did not impaired his self-concept but made him somehow aggressive. In high school years he exhibited more serious discipline problems and displayed inappropriate behavior. His mother, when interviewed for the second time, said to me:

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

When he was little, he was a difficult kid, he was so energetic. [...] Let's see ... he was really happy about summer vacation because he could do things that he liked most, cycling with friends and playing football. [...] He didn't really respond when I tried to make him behave and do homework. [...] I was unable to limit the number of hours he used to watch TV and play video games.

In kindergarten years, I tried to assist Jason to adopt some strategies for calming himself –through an individualized intervention program, in collaboration with his mother– and he made remarkable progress. After all, preschool curricula ought to extend beyond academics and emphasize social-emotional development and self-control skills. But gains made in kindergarten were not maintained in elementary years. With regard to Jason's story, it is clear that major efforts must be undertaken in order to help students who lack self-regulation skills.

Apart from Jason's case, there were other cases as well. There is also the case of Lucas who could regulate his behaviors and was not impulsive (i.e., he could wait for his turn, he could work for a long period on something that interested him, he could play quietly, he harmonically worked with others, he never intruded on others) yet he had not tasted school success. In Lucas' case, self-regulation did not result in academic achievement. We have also the case of Theo who was obedient. But Theo had little confidence in his ability, was low in frustration tolerance, had low aspirations and he could not deal with the stressors. In low secondary school years, he began to internalize a sense of inability, a sense which increased year by year. In high school years, he was anxious about school –victim of academic pressure– and became totally unmotivated as learner. The result was that he gave up and withdrew from academic work. We could say that he was entrapped into what Torgesen (2004) has called a “devastating downward spiral”.

Finally, we have the case of Charlie, who was impulsive, highly energetic, and often unable to regulate his emotions. Yet he was curious, eager and quick to learn, and perceptive. Moreover, he was a rather Conscientious children (moderate to high on Conscientiousness). In kindergarten, sometimes he was unable to think before acting. But he demonstrated abilities to sustain attention and to persist at school tasks. These abilities, in combination to his huge desire for new experiences and new knowledge, eliminate the negative impact of his impulsivity. In

elementary years, Charlie took excellent scores, visibly without putting much effort. In a system which is not effort-based and gives bonus to smart students, everything was fine for him. I would like to add that, as his mother told me, Charlie was praised for being smart by his father.

In secondary years, Charlie continued to get good grades, still without devoting considerable time in doing his schoolwork. But things changed dramatically in high school years. Meanwhile, his impulsivity started to gain momentum. His grades began to deteriorate and gaps in his knowledge began to surface. For example, although he had a good understanding of math concepts, he began to make major errors in math tests.

One might say that Charlie's impulsivity made an unwelcome but rather expected "come-back". The adolescence years, in many situations, offer the ground for such changes. When I tried to interpret what was happening, I realized that it was not just the lack of self-regulation that caused these changes. It was also because Charlie was distinctly self-assured and in previous years he tended to explain his success in terms of how smart he was. In elementary and low-secondary years it was not difficult for him to perform well in school as he was an easy learner. His mother said that he tended to over-estimate his abilities due to his good grades. About this issue, research has shown that students who view academic success as a product of their intelligence, rather as one of hard work, are less likely to perform at high levels (Trzesniewski & Dweck, 2007).

Luckily for Charlie, he was competitive and had parents who were financially capable to pay for private lessons (tutoring) in order to fill the gaps in math concepts, gain skills in creative writing, and do well in school tests. As it is reported above, he entered University but did not achieve his desirable goal for the Air Force Academy. So, it might be better to see self-regulation as one aspect of Charlie's individuality which in interaction with other traits affected his progress in specific ways. It is also possible that his father's attitude, who used to dwell on Charlie's intelligence instead of his effort, has negatively impacted Charlie's willingness to try harder at school.

These findings suggest that self-regulation is a factor to take into account considering school success but it cannot make the difference by its own; it is essential and needful yet not enough. Duncan and Magnuson (2011) offer an explanation for this when they state that it is crucial to distinguish between emotional regulation and cognitive regulation (behaviors that are directly relevant for learning), and suggest that later

attainment, like high school completion, requires a combination of achievement, engagement and perseverance. Drawing conclusions from the analysis of 6 longitudinal studies Duncan and colleagues (2007) assert that, while there is evidence that a child who can inhibit impulsive behavior may be able “to take advantage of the learning opportunities in the classroom” (p. 1429), we must be more careful when we investigate the predictive nature of skills like self-regulation, because it is risky to consider the contribution of these skills to school achievement in isolation from other factors. According to these researchers, cognitive characteristics, such as academic achievement at school entry, are more reliable predictors for some outcomes, compared with non-cognitive skills. All in all, this discussion lends itself to an investigation of other factors that impact negatively the academic trajectories of self-regulated children.

An option to address the challenging issues of the school readiness and the self-regulation would probably be the extension of the duration of the kindergarten attendance (an additional K-year), under the condition that kindergarten curricula could provide enough time and space to develop basic skills, in areas where children show a lack of preparation, for student and with student. Longitudinal studies, which have followed their participants into secondary school, and even adulthood, show that comprehensive pre-K and K programs, focused broadly on developmental rather than solely academic skills, had positive effects continuing beyond kindergarten, and better long-term effects on educational and social adjustment outcomes, that is social and school progress (Chambers et al., 2010; Camilli et al., 2010; Schweinhart et al., 2005). Lilian Katz (2015) refers to a number of longitudinal follow-up studies which indicate that “while formal instruction produces good test results in the short term, preschool curriculum and teaching methods emphasizing children’s interactive roles and initiative, while not so impressive in the short term, yield better school achievement in the long term”.

Therefore, it is important to determine what kinds of early education program are most effective for young children, enhance school readiness and have positive outcomes, and what elements of these programs contribute to their effectiveness (Barnett, 2011; Barnett et al., 2007). Equal importance must be given on the timing of the intervention: the younger the child is enrolled, the greater the benefits. This means that it is less easy to compensate for disadvantage on cognitive endowments at later ages than it is at earlier ages. It also helps to explain the evidence on the ineffectiveness of cognitive remediation strategies for disadvantaged adolescents. In other

words, “the elasticity of substitution for cognitive inputs is smaller later in life” (Cunha et al., 2006, as cited in Heckman & Kautz, 2012, p. 37).

Blair (2002) proposes a neurobiological model of school readiness and preschool programs in which he highlights the importance of social, emotional and intellectual goals rather than narrow academic goals. He also emphasizes the positive role of early experiences that provoke self-regulation. Duckworth and Carlson (2013) summarize research on school-based interventions, although they note that there are fewer rigorous empirical studies than one might imagine. They conclude that there are approaches and strategies—even in the earliest years of formal education—that can help children gain control of their behavior, to develop metacognitive skills, such as goal setting and planning, and to take responsibility for their own actions. It is of great value, says Duckworth (2016), to support teachers help enhance students’ understanding of their character through regular feedback and goal-setting. But feedback is insufficient. If a student struggles with “demonstrating respect for the feelings of others,” for example, raising awareness of this problem, is not enough. That student needs strategies for what to do differently. Teachers and parents also need guidance in how to help him.

Chambers and colleagues (2010, p. 38) posit that when kindergarten teachers provide carefully planned experiences designed to move children towards success on academic outcomes, they give the children a significant advantage as they enter elementary school. Raver and Knitzer (2002) underscore the importance of children’s early emotional and social skills to their academic achievement. Unfortunately, it seems that several kindergarten programs are entrapped in the noose of the plurality of contents and provide only academically oriented experiences.

Based on my own experience from the years I worked as a kindergarten teacher, I have empirical evidence (cases of three students, non-participants in this study) which suggest that children who attend kindergarten for an extra year are better prepared for school, intellectually and emotionally. In turn, their better start in elementary school helped those children achieve greater school success, removed the need for remediation, for attending special education classes or repeating a Grade, resulting in avoiding to some extent the school failure that may otherwise plague their lives. For one participant of the present research (Jason), I can hypothesize that this option might be determinant to set him up for a positive growth trajectory, and his perseverance and motivation to learn not to be reduced. At least, it would remove the fear of rejection that seemed to signal his early adulthood.

What factors result in disparate educational outcomes for children?

Knowledge of factors associated with academic success provides a theoretical and empirical base from which to study the real goals of school. A substantial body of literature reports factors which affect the quality of the schooling and student's academic achievement. Barton (2003, p. 1) considers these factors in two groups: these that operate "in school" and those that operate "before and beyond school". The "in school" factors are (a) the curriculum (i.e., content, instructional strategies, assessment), (b) the teacher quality, (c) the school's physical, social, and cultural learning environment (i.e., school size, teacher-students ratio, school climate, parental involvement, building), and (d) all the actors involved in school (students, teachers, staff, and administrators, parents) each of whom may have a unique perspective. The "before and beyond school" factors are related to (a) family (family structure, cultural background, parents' income and level of education, unemployment, mother's mental and physical health, and age, residential mobility), (b) children's individual characteristics and their physical, emotional, and cognitive development, as been shaped across their preschool years (i.e., pre- and neonatal health, nutrition, language experiences, learning disabilities, attentional skills), (c) student's negative beliefs about their competencies (low self-esteem), a sense of lack of support from their teachers and the influence by peers who deride academic success, and (d) neighborhood (see Petridou & Karagiorgi, 2016; Muller, 2015; Rice, 2015; Kyriakides & Creemers, 2012; Kannapel & Clements, 2005; Rothstein, 2004; Hertert & Teague, 2003; Sanders et al., 1997).

In the now-famous 1966 Coleman Report, family characteristics and student background factors (mostly socio-economic) were shown to play the most important role for student achievement than any school-related factors and explain much of the variability in student outcomes across schools (Coleman et al., 1966 as cited in Teodorović, 2012; see also Heckman, 2011). However, this is not to say that schools and teachers make little difference in student achievement (Nye et al., 2004). Stewart (2008), examining the extent to which in-school and out-of-school variables are predictors of academic achievement, found that the individual-level predictors, such as student effort, parent-child discussion, and associations with positive peers, play a substantial role in increasing students' achievement. School structural characteristics were found to have relatively small effects on student achievement when compared with individual-level characteristics.

In a large-scale comprehensive school effectiveness study, using a study sample of almost 5000 students, over 250 classrooms and over 100 schools, Jelena Teodorović (2012) examined student-level factors as determinants for achievement in mathematics and language, while controlling for other in-school variables. The results indicated that differences between the students were in large part responsible for differences in achievement scores: student background factors showed much stronger association with student achievement than any school-related factors. Parental education, developmental or family problems, gender, student motivation, parental involvement in student work were some of the factors associated with student achievement. Similarly, Alexandra Petridou and Yiasemina Karagiorgi (2016), in their study which aimed to identify the students who do not take full advantage of education and explore predictors of 'risk' for school failure, detected certain student-related factors (such as gender, ethnicity, sense of belonging in school, and confidence) and family-related variables (such as parents' educational level and number of books at home) which appeared to have statistically significant effects on that risk. Hattie (2003) reports that a student's home life, school characteristics, influence from peers, and teacher, as well as the student herself/himself impact achievement. The student accounts for approximately 50% of the variance whereas home, school, and peers influence each contribute 5%-10% (cumulatively 15%-30%) of the variability in achievement.³⁴ Finally, the teacher counts for approximately 30% of the variance (as cited in Bryan, 2015, p. 5). More recently, Haertel (2013), in his review of the literature, concludes that about 10% of variations in students' scores in a single year are due to differences that can be attributed to teachers, with out-of-school factors accounting for 60%.

Many other researchers (Morgan et al., 2016; Jones et al., 2015; Duncan et al., 2014; Duncan & Murnane, 2014; Chittleborough et al., 2014; Strand, 2014; Bornstein et al., 2013; Milner, 2013; Brennan et al., 2012; Hattie, 2012; Teodorović, 2012; Pingault et al., 2011; Rodriguez & Tamis-LeMonda, 2011; Anderson, 2010; Daily et al., 2010; Berliner, 2009; Rumberger & Lim, 2008; Duncan et al., 2007; Kannapel & Clements, 2005; Ackerman & Barnett, 2005; Kyriakides, 2005; Lara-Cinisomo et al., 2004;

³⁴ Hattie (2003) writes: "Schools barely make a difference to achievement. The discussion on the attributes of schools – the finances, the school size, the class size, the buildings are important as they must be there in some form for a school to exist, but that is about it." (p. 2).

Rothstein, 2004; Barton, 2003; Hart & Risley, 2003; Hertert & Teague, 2003; Ingels et al., 2002; Lee & Burkam, 2002; Hart & Risley, 1995) took up the challenge –most of them through empirical and applied researches or meta-analysis studies– to define, describe, and analyze the predictive power of the above 'before and beyond school' factors and the degree of their impact in students' academic achievement. In these studies, the potential predictability of certain factors is discussed in details. In several cases the identified correlations had been interpreted by the researchers as causal.

These associations are also highlighted in many other studies in the field of genetics. These researches indicate that beyond situational factors, genetically influenced individual characteristics do account for the effects of success or failure (Rimfeld et al., 2015; Briley et al., 2014; Tucker-Drob & Briley, 2014). Children differ in their educational achievement within the same school and the same classroom, indicating that factors other than school differences explain a student's performance at school (Rimfeld et al., 2015). In the forefront of difficulties someone experiences at school are her/his individual characteristics. So, to reflect on someone's school failure or success is to return to the very beginning of her/his life.

At the other extreme, many studies emphasize the importance of the in-school factors. Recent studies suggest that school contexts affect student achievement through a variety of indirect and direct channels. In particular, they document strong associations between school safety and order, leadership, high academic expectations, and teacher relationships and collaboration with student achievement gains (Kraft et al., 2016; Silins & Mulford, 2002). School organizational structure and resources might amplify or set constraints on opportunities provided to students for high school completion (Kyriakides & Creemers, 2012; Ingels et al., 2002) but it is the differences at the classroom rather than the school level that explain the variation among students achievement (see Elliott, 1996; Jansen, 1995). Across OECD countries, schools with higher-quality educational materials, those that offer more extracurricular activities, and have more supportive teachers have fewer low performers in mathematics. Students' performance is also influenced by the kind of school they attend (OECD, 2016) while events of health risk behaviors that take place in schools (school violence, substance abuse, bullying, antisocial behavior) have heightened public awareness of everything that may cause negative school climate (Muller, 2015).

Teachers are considered as crucial determinants of the students' academic success (see the relevant unit). Classroom environments, school

climate, class size (smaller classes), and teaching quality are documented to have significant causal impacts on test scores and long-lasting impacts (Thapa et al., 2013; Chetty et al., 2011; Chetty et al., 2011a; Graue et al., 2009; Nye et al., 2004). The pupil/teacher ratio was also found to be one of the most determinant in-school factors which is related to pupil performance in reading and mathematics (Pryor, 2014) and in exams for transition in Higher Education (Koc & Celik, 2015). Machin (2006), in his review of literature in the education field, concludes that which school children attend does matter, even if family issues and peer effects may matter more. Similarly, Milner (2013) claims that school-related factors play a critical role in the social, emotional, behavioral, and cognitive development of students who grew up and live in poverty because these “students rely on schools in ways that other students from more affluent communities may not have to” (p. 23).

However, the aforementioned studies have not taken into account many important factors that affect students’ school performance. While it is far from obvious that school factors can increase or decrease the likelihood that a student will perform poorly, there are many other variables which operate in combination and determine one student’s school progress. This aspect should never be underestimated. As Chandra Muller (2015) notices, the heterogeneity of school contexts presents measurement challenges because each school has a unique internal structure, and within a single school context, different students may experience a similar structural position differently. Consequently, measuring the effects of school contexts is best accomplished by considering the interaction of the contexts with the individual: how a particular student responds to a context concerns the her/his developmental stage and other characteristics such as gender, race, ethnicity, culture, and family (Petridou & Karagiorgi, 2016). Apart from that, there is a lack of cross-cultural agreement on what makes schools effective and considerable differences among researcher on the characteristics of effective schools (see Elliott, 1996; Jansen, 1995).

Empirical researches have linked instructional quality to effective classroom learning and student outcomes, supporting the view that –over and above individual variables, such as family background, intellectual ability and previous knowledge– the teaching-learning environment and the teaching practices affect student learning in a significant degree (Vieluf, 2012; OECD, 2010). Eva Sellström and Sven Bremberg (2006), in a meta-analysis of relevant studies, point out important school level determinants

on pupil outcomes. Outcomes under study were smoking habits, wellbeing, problem behavior, and school achievement. The researchers identified four main school positive effects on pupil outcomes: having a health policy or antismoking policy, a good school climate, high average socioeconomic status, and urban location. However, they notice that we need more longitudinal studies using multilevel techniques in order to improve our understanding of school effects.³⁵

To conclude, several fundamental elements of schooling are recognized as having a remarkable effect on student progress. But understanding what happens in classroom represents only one aspect of education and there are various other contextual factors that need to be considered (Ansari et al., 2012, p. 114). The picture is so large making it difficult to explain how some students are able to make a successful transition to post-secondary education or workforce, and others are not (Ingels et al., 2002). School performance is not the result of any single factor, but rather of a combination and accumulation of various factors –key experiences in- and out- of the family and/or the school– that affect students throughout their lives and may undermine or heighten their performance (OECD, 2016; Kyriakides & Creemers, 2012). Thus, it is safe to assume that it is a variety of factors which account for someone's school performance and for the kind of people she/he becomes as her/his life unfolds. Studying the relations between student characteristics and behaviors in childhood and important life outcomes, Marion Spengler and her co-researchers (2015) found that being successful is more than just having good cognitive resources and coming from a socially advantaged family. Personality-related non-cognitive characteristics and student behavior measured early in life are important predictors of life outcomes in midlife.

By the same token, Anderson (2010) argues that in-school and out-of-school factors are intertwined and are not independent: students academic

³⁵ Surprisingly, a recent longitudinal study (Benbenishty et al., 2016) that explored the causal link between school climate, school violence, and a school's overall academic performance over time did not find evidence to suggest that improving school climate or reducing incidences of violence leads to improved school performance over time. In contrast to previous studies, the results point in a different causal direction: a school's overall improvement in academic performance is a central causal factor in reducing school violence /bullying and establishing a better climate. The results of the above study support the idea that it is far more complicated to find a causal direction regarding the importance of positive climate and low school violence on improving academic performance.

behaviors are impacted by school-based characteristics and by non-academic behaviors, in complex ways. Non-academic behaviors, in turn, are strongly impacted by family characteristics and early experiences. Students, in turn, influence the school climate and designate the nature of interactions in school. While this may seem like a vicious cycle, we can focus on in-school factors since family factors are out of our control and we do not have the power to compensate them. In Milner's view (2013), the debates about which factors matters more, out-of-school or in-school, "have not allowed much progress in terms of building effective policies and related practices that bridge both" (p. 5).

In the present study, it is found that the 'before and beyond school' factors can serve as strong predictors of whether a child will function competently in school across multiple domains. More specifically, the findings direct our attention to the idea of personality as essential for academic success. How a 5-6 years old child embraces novel experiences, how often she/he takes on a challenge and pursue it until she/he finds success, how many times a child invests on and is committed to an interesting activity, how often she/he places demands on adults to do activities with them, how often she/he shows a genuine interest to acquire new skills and knowledge, all these are few of the traits I related to their future academic success. Some family variables (parental involvement, parents' attitudes, support, assistance with homework) appeared to play a moderate role in influencing students' motivation, engagement with school, and fostering learning. The reason for this is that parents' high expectations operated in conflict to many of their practices in daily life. Another possible reason is the lack of home-school bonds. Yet, while it is found that family does not impact directly children's academic choices, it influences their attitudes towards school at a significant level, either positive or negative. It is clear that students' early experiences in family and that family characteristics (e.g., the quality of parent-child interactions, parental education and cultural background) impact students over time.

Theo's story is exemplar for this account. Theo had a stuttering problem. But after a few sessions, he managed to control his speech. There was no stuttering problem any more. Yet the stress and nervousness remain in high levels. And we know that stress and fear generate negative emotions and inhibit learning (Lupien et al., 2007; Sousa, 2000). In addition, data from neuroscience has revealed how early experiences and stress embed

themselves into our biology and have long-term consequences for our well-being and ability to learning (Ansari, 2014, p. 1708).

It is not easy to say whether Theo was or was not a bright student in purely academic terms. Indeed, he finished elementary school with a score of 10, which is the highest grade for this educational level. But in secondary years learning was not easy for him. He was not lazy but he had problems organizing his time. While his abilities were adequate to pass the exams, he did not have faith in his competences to understand new things and so he developed a fear for failure. He continuously used to avoid difficult tasks, became passive, and established a thinking pattern of the 'inevitability of failure'. For him, school was one disappointment after another. He did not have any learning disabilities but he might have had a kind of 'anxiety disorder' (not-diagnosed). His low self-esteem and fear for failure, alongside with anxiety, undermined learning and affected his general demeanor and his progress in school. Theo by himself was aware of his problems. He knew that the reason for his poor academic performance was not his stuttering.

I found a possible explanation for Theo's difficulties in attribution theory and in Allen and Kelly (2015) perspective. For attribution theorists, it is not the experience or the situation in itself that shapes us, but rather how we attribute why the experience occurs. That mediates how we feel and react, how we appraise and respond to a given situation. In everyday life, people constantly attribute the cause of that event to something or someone; they try to explain why an event occurred. In school, the way in which a student explains why she/he fails or succeeds can have an adaptive or maladaptive influence on how that student comes to perceive her/his capabilities and approaches learning tasks. Research has identified a number of mediating factors, highlighting a link between attributional style and: self-esteem; motivation; persistence; task avoidance; and effort (Chodkiewicz & Boyle, 2014, pp. 79-80).³⁶

³⁶ Alicia Chodkiewicz and Christopher Boyle (2014) write: "For example, take two students who fail a test: one student may believe that they failed because they had not studied hard enough, whilst another student may think that they were simply not smart enough. The explanation attributed to the failure on the test will subsequently influence behavior. The former student may use this experience as a motivation to study harder for the next test, whilst the latter will exert even less effort since he or she may be thinking "why try if I am too stupid to succeed anyway?" (p. 79) [...] The question remains: which came first, the academic underachievement or the maladaptive attributional style? The reciprocal model

Likewise, Allen and Kelly (2015) mention that children develop early a sense of themselves –“implicit theories” in the early years about who they are as a person and what it means to be intelligent– and their competencies, including their academic skills. Their beliefs about their abilities in academic fields (e.g., in reading, counting, vocabulary) derive from several sources, including spontaneous social comparison with other children and feedback concerning their achievement. These beliefs influence, in turn, children’s self-confidence, persistence, and intrinsic motivation to succeed.

In this account, it appears that Theo’s self-perception about his learning capabilities contributed significantly to his school difficulties resulting in internalizing this difficulty into a fixed mindset. And on this, there is evidence that an established pattern of thinking and behavior can have lifelong effects on a student’s learning (Chodkiewicz & Boyle, 2014, p. 80). Research has shown that of all the factors that determine how students will respond to failure, the most important one is how they come to explain their failure (see Gregory & Kaufeldt, 2016; Kohn, 1994, 2000).

But this alone does not explain what happened as Theo moved through school. This is only a part of the picture. For him, the parenting he received shaped his behavior in important ways. He experienced a stressful home environment because of his mother’s striking demands for higher education. As it is mentioned in the unit about family, Theo’s mother believed her son’s success depended on school grades. The good grades Theo got in elementary school made her believe that he could achieve at high levels in the following years. She persistently put pressure on Theo to take schoolwork more seriously. Apart from this, she used social comparisons trying to motivate him to achieve better than his peers. Her expectations were so high that were unreachable for Theo. So, the family environment played an important role for his progress.

It is also safe to assume that much of his difficulties can be attributed to personal characteristics –he was reserved, dependent on others, and shy– which were a wake-up call. His low self-esteem was evident from

postulates a bi-directional relationship in which academic failure influences the development of a maladaptive attributional style, which in turn leads to further instances of academic difficulty. To break this cycle of underachievement both academic deficits and maladaptive attributional styles need to be addressed by targeted educational interventions. (p. 80).

kindergarten and increased with age. For this, we have the results of studies which have established that self-perceived ability, also known as academic self-concept, is highly heritable and can be explained by genetic, rather than environmental factors.

Finally, the school system did not offer any opportunity to Theo to find 'something he is good at'. No teacher made any efforts to offset the stressors Theo experienced, none tried seriously to understand the causes of his failure. And as mentioned earlier, if school does not provide conditions of emotional support –that could engender the child's acquisition of characteristics such as self-confidence and self-esteem– it is highly likely for students to withdraw effort. Theo's parental expectations and school demands were combined to heighten his anxiety.

Consequently, it is clear that in Theo's case no single factor can be seen as the sole predictor of his academic performance. Genetic factors ought to be seen as significant, but the same must be said for the environment. Theo's story is not one of not learning, as much as it is a story of not finding the quality of support he needed to experience success in or out of school.

The not-a-single-factor approach is the one that suits best to all participants of this study. Their school outcomes were influenced by their genetic make-up, their individual characteristics and personality traits (as shaped mostly in the early years), their previous learning experiences, and their family.

In conclusion, children demonstrate individuality related to genetic and cultural-contextual factors. Environmental factors interact with individual characteristics to determine life trajectories. Thus, development and learning must no longer be regarded solely, or even primarily, as a cognitive issue (Kagan et al., 1995, p. 44). Moreover, there is now evidence that students' 'academic misconduct' –such as lack of motivation for learning, tendency to avoid doing homework and not care about good grades– may be driven by a genetic predisposition. Thus, researchers argue against any simplistic explanation that places sole blame for a child's lack of interest in school on either parents or teachers, and turn our attention to a genetic predisposition of this behavior (Kovas et al., 2015).

As matters stand, school will not achieve the ultimate goal of educational equity unless it pays attention to non-school factors. Teaching is not always a success story because there are many out-of-school factors

which have an impact on students' learning. Students differ from one another in their experiences, in their capacities, in the way in which they acquire knowledge, crystallize ideas, feel, and behave. Trying to explain the educational progress of students of particular concern, it is imperative to consider combinations of factors than focusing only on single factors.

Variance in school performance, that persists when certain variables are held constant, suggests that individual differences play a crucial role in determining whether children thrive or fail in school (Duckworth & Carlson, 2013). According to Briley and his co-researchers (2014), “[s]tratifification of achievement may result from the dynamic interaction between child predispositions for learning, child ability, and their educational environment.” (p. 2628). While it is risky to presume in an absolute way the predictive validity of the factors I discussed in this work, it is obvious that they influenced student progress and can be viewed as indicators, mediators and moderators of students' success. They can also help us to explain students' positive or negative attitudes towards school.

Taken as a whole, the literature documents that school success encompasses more than ability, more than content knowledge and core academic skills; a plethora of human traits matters beyond academics. Nobody can deny that the reasons behind school success or failure are varied and complicated. For the time being, it seems reasonable to assume that no single factor can be isolated and it is quite challenging to identify, in a definitive way, which of those factors account for the most (Anderson, 2010; Rumberger & Lim, 2008).

While we cannot discount the importance of all factors it seems that the out-of-school factors have major impact on a student's progress. Emphasis on non-cognitive factors is even more important than we previously thought. The findings of this study provide evidence of the strong role that individual characteristics (personality traits and prior experiences) play in students' academic progress. In other words, individual differences are found to be the most direct determinants of students' trajectories in school. Thus, we should re-consider the importance of both genetic and non-genetic background factors which influence students' progress and academic success.

SUMMARY OF THE RESULTS OF THE PRESENT STUDY

This work summarizes and discusses findings from a longitudinal study conducted within a community located in Northern Greece. The main aim of the study was to uncover the educational trajectories of 7 students –from childhood to early adulthood– and to investigate the factors that influence their academic progress, their academic choices, and the formulation of their goals towards life, focusing on the role of school.

The present research was based on the premise that it is critical to explore the factors which may impact students' school progress and to identify key indicators which may be embedded during early childhood. Investigating such factors makes it more clear that there are various factors that interact and contribute to a student's progress. The recognition of the role and the importance of students' individual differences in their academic performance and achievement has notable implications for school teachers and educational policy-makers. The findings of this study offer strong arguments for schools 'to do things fundamentally differently'.

Does consideration of factors associated with school success provide information over and above school procedures? Considering those factors, which of them are of greater importance?

The main result of the study is that no single factor emerged as the sole predictor of academic achievement. In short, the results of this study suggest that when predicting who is likely to succeed in school, individual characteristics and differences are at least as important as academic and other contextual variables. This implies that the variance in achievement among students lies on their personal characteristics and can be explained taking under consideration other important factors reported in this work. The idea that environment can cause changes in people's behaviors and even personality traits raises questions about the impact of schooling in one's life.

Student background factors (prior experiences in home, school readiness) play an important role in both initial and subsequent student achievement. School-entry skills such as early reading and math skills were found related to later academic outcomes. But the examination into student achievement over time revealed that achievement in kindergarten was not a strong predictor of future achievement. Thus, kindergarten performance has a weak association to overall student school outcomes. This implies that the

elementary and secondary schools eliminate –not even maintain– the benefits of a quality preschool program.

Personality seems to be a variable that can either increase or reduce the effects of other factors. In particular, Conscientiousness (emotional stability, responsibility, and persistence) and Openness-to-Experience (curiosity, interest in new knowledge) were significantly higher for students with higher grades. It is of high importance to notice that the vast majority of one's traits were similarly described by herself/himself, her/his mother, her/his peers (participants in the study). The results provide evidence that personality traits offer an alternate explanation for differences in educational attainment.

Engagement has not been found to be a predictor of students' performance: the participants reported feeling disengaged from school although four of them made remarkable academic progress. This implies that students do not necessarily have to be highly engaged and to have deep interest in school subjects to perform well. However, interest seems to act as an influential factor for student's attitudes towards schooling.

With respect to the role of the family, variables associated with achievement, negatively or positively, are parents' expectation, parental involvement and monitoring, parental education, family income, and parenting. Parenting was found to be the most important contextual factor that influence school performance. Parent expectations were found to be less crucial in determining students' post-secondary decisions. Family wealth is found to be a rather negative predictor of students' school progress. The relationship between students' behavior and mothers' behavior could be described as reciprocal. The influence of peers has not been associated with educational outcomes. Parents' and students' views towards fundamental elements of schooling matched at a rather significant level.

Elementary teachers were listed as sources of support while secondary teachers were reported as far less supportive. School success is found to be measured and rewarded only in the narrow domain of cognition. School, instead of celebrating the natural talents and special abilities of students, surpasses their creativity and their differentiated ways of thinking. It views students only through the lens of what they lack and not through what they can achieve in special domains. In particular, high school seems to be designed almost as if to suppress motivation for learning.

The differences among students with respect to their school performance were smaller in lower Grades and larger in higher Grades. It

was found that learning and study habits –the ability of students to study and learn on their own, completing homework assignments, devoting enough time to homework– and attitudes towards study were significantly different between high achievers and low achievers. There were also differences in the ways students tended to react to school pressure: some students could handle their pressure while others were unable to reduce their stress. The differences among students' overall achievement were more attributable to their individual differences, alongside to the kind of parenting they received, than to other contextual differences –as they were all members of the same cultural community, attended the same classes and schools until the end of compulsory education (*Gymnasium*), and shared common demographic characteristics.

In one way, we may say that the high achievers are both the 'academically bright' and responsible students; they know 'how to play the game of school.' Low achievers may be equally 'bright' but they differ from high achievers in terms of diligence, concentration, and persistence to their goals.

The results also showed that certain behaviors and competences at age 5-6 are directly related to age 19 academic achievement. In particular, certain students' personality traits –as it had been designated genetically and shaped environmentally– and the students' prior level of skills were the crucial factors that shaped their schooling behaviors, their school outcomes, their goals setting and their will to pursuit their goals. Finally, several variables (e.g., early experiences, individual characteristics) appear in more than one topic. This lends further support to the argument that with respect to school progress all factors are interrelated and pervasive; one factor influences the other. As Adele Diamond wrote in 2010:

Academic achievement, social–emotional competence, and physical and mental health are fundamentally and multiply interrelated. The best and most efficient way to foster any one of those [...] is to foster all of them [...]. We need to see the human being and human development as one whole, that those who care deeply about developing cognitive competence, social skills, emotional well-ness, or physical health and fitness are not in competition, that one component is not more important than any another, and that we have much to learn from the insights and accumulated wisdom of our counterparts in other fields and specialties. (p. 789)

It is possible to argue that, school years had little influence on participants' personality development. School did not even emphasize skills which are essential for school success, such as self-regulation, perseverance, and self-perception. These skills are teachable. They can be taught and reinforced in classroom but it takes time and guided practice to develop and maintain them. They require systematic cultivation.

All in all, considering the fact that parents are the children's first teachers and play a key role in preparing children for school and life, through being involved in their child's education from birth, we must ensure the higher levels of parent involvement in school and partnerships among families and education providers, in general, to promote children's holistic and healthy development. Taking into account the importance of school readiness, we must focus more on the kind of experiences children should ideally have at kindergarten and before they enter kindergarten, experiences that can promote school readiness and children's success in school and beyond, that is in life. Recognizing that children's earliest years are critical and essential to prepare a child for school and life and that early childhood experiences have long-run impacts on humans' lives, we must further examine the experiences we offer to children at a time when their brain is more malleable, revise the importance of hereditary predispositions – and the gene-environment interaction in particular–, and try to understand what constitutes 'deprivation' in contrast to 'enrichment' during the early years (Shonkoff & Phillips, 2000). Acknowledging the fact that windows of opportunity for brain development do not close down after the first three years of life (Bruer, 1999; Damasio, 1994), we can re-conceptualize our ideas about human competence and identify intervention procedures and practices as to overcome early disadvantage and to re-create the context for development and learning. Conceiving personality as a self-enhancing construct, we need to seriously consider how students make their choices and how they formulate their educational and occupational goals, what they pursue and why, how they display self-control, and what they stand for. Identifying self-regulation as a foundational ability that predict later academic outcomes, we can enrich school curricula in order to include activities that could help students practice self-regulatory skills. Emphasizing the importance of nurturing and developing the inherent dispositions, the talents, the potential, and the individuality of each child, we can help her/him build from strengths not from weaknesses, and to believe in herself/himself.

However, I would like to be clear. Writing all the above, I do not imply a kind of school based on the idea that we must predict in a definitive way what children are going to do and become in the future. I neither point out the need for predetermined outcomes. Nor do I allude systems or software programs (predictive analytics) which are broadly used in the business world in order to forecast whether an individual will succeed in a task and whether a strategic plan will lead to a specific result. This is not what school is about. The usefulness of prediction has to do with the kind of assistance we must provide to less advantaged students. The goal is not to use statistics and develop hypotheses about how many students are less likely to drop out in secondary school. If anything, the goal is to act in pedagogical and ethical ways: to find the appropriate interventional tool in order to help all children do better in school and life.

I believe that the clear message from the present research is that school can and ought to make a difference but it does not. Certainly there are a number of reasons that could account for this assertion: socio-economic and cultural differences in one student's family, parenting, (attitudes, level of parental involvement), teacher training effectiveness, school funding, environmental and community factors, racism and so on. The goals of school are so lofty that it inevitably fall short in achieving all of them (Levin, 2010, p. 740). It would be an exaggeration to claim that schools are not limited in how many they can provide. However, the real question, says Meier (1995), is not: "Is it possible to educate all children well?" but "Do we want to do it badly enough?" (p. 4).

Longitudinal studies can address issues of stability and change in academic development and identify the multiple origins of academic achievement. Although it is often stated that the qualitative researches do not achieve the objectivity of quantitative studies, the former have the advantage of delving deeply into key factors from multiple domains, identifying their predictive power in students' educational attainment and life progress. Despite the fact that this study is based on a qualitative data-set and does not claim to be representative, the seven cases confirm empirical results that have documented that influential power of out-of-school factors.

Major strengths of the present work consist of its longitudinal design, the broad and detailed descriptive picture of the educational experiences of the participants, the inclusion of many variables as possible predictors –representing various characteristics of the child, family, and

school context—, the multi-perspective investigation of the unique contribution of featured predictors, and the examination of the independent and interdependent effects of particular factors on participants' academic trajectories. The advantage of the present study is that a plethora of important student-level variables have been simultaneously tested as predictors of student achievement. When a rich data-set is available for analysis, a more grounded explanation is possible.

Despite these strengths, the present study has several limitations. As with all qualitative case study researches of this scale, we cannot assert that the conclusions we reached are necessarily generalizable to all students. The cases do not constitute a statistical sample. Of course, it was difficult, with the many-years time-line of this study, to recruit a larger sample. The individual level determinants reported here can be interpreted as causal or may be mediators rather predictors. Therefore, drawing conclusions is not straightforward. We cannot determine causal associations, despite the association between featured predictors and outcomes. Correlations imply but do not prove causality.

Notwithstanding these limitations, I hope that the study adds to the existing literature in several respects, as it is built off of scientific research. I hope also that it provides insights and understandings about the factors that contribute to a student's progress, and sheds light on why some students achieve in school while others face difficulties resulting in failing.

The significance of this study can be viewed on a short and a long time frame. In the short term, many of the stories of the students in this study bear witness to how difficult schooling can be for a student who struggles within an education-for-all system which tends to label and marginalize students who are less academically able. In the long term, the acknowledge that personal characteristics and out-of-school factors are influential in academic outcomes can inform policies to change the traditional model of school. The findings may have implications for the early identification of and intervention for subgroups of students in need of assistance.

Future studies could build on the results of the present study in several key ways. They could further investigated, weigh, and measure the causal association between featured predictors and outcomes. As the issues discussed in this work do not represent an exhaustive list, future studies could also explore and examine other variables which were not captured in this study; variables that may play also a role in predicting students' later

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

academic success or failure. For example, including other data-sets –data from teacher reports, in-school variables (e.g., programs quality, leadership)– would add to the results of the present study. When such variables will be controlled in statistical models in quantitative researches – testing frequencies and multivariate associations– they may enhance the existing results, add to them, or detect important variances. Finally, future research including larger and more diverse samples (other cultural groups) would be valuable in order to both replicate and generalize the findings of the present study.

So, there is a need for more longitudinal studies using multilevel techniques. Multilevel analysis can be useful in order to establish how much of the variation in a student' outcomes is conditioned by individual characteristics and how much is related to contextual factors. As Briley and his co-researchers (2014a) argue, only by undertaking multivariate studies that obtain information about the unique characteristics of each student (abilities, traits, behaviors and so on), the home environment, and the school environment can researchers fully explore the dynamic nature of the educational process and academic achievement.

EDUCATION? YES! BUT WHAT KIND OF SCHOOL AND SCHOOLING?

Children and adolescents spend a considerable amount of their time in school, as school attendance is compulsory. Hence the quality of schooling they are provided with is of great importance for their lives. Of course, school is not the only environment that plays a role in students' mental, emotional, and social health; but it is a crucial one, especially since school is a primary venue for a child's socialization. Moreover, the impact of high or low school performance may be felt well into adulthood. Suggesting that school years do not impact immensely someone's life and progress is totally irrational.

Schooling is considered to be a powerful vehicle because it cultivates attitudes, beliefs, and behaviors which can affect students' wellbeing and their development in all domains, with lasting effects on their lifetime accomplishments. Students' attitudes towards learning are important not only for school years but also for later years. As children mature from childhood to adolescence and to early adult life, they gain new experiences and have new needs. To make their way to adulthood and to be ready to lead their future, young people must be well-equipped; they must know how to navigate diverse cultural values and meaning systems, to balance multiple social dynamics, and to address new unfamiliar situations, challenges and problems for which there is no master guidebook (Larson, 2011; Larson et al., 2011).

Things were easier in the past. For example, in pre-industrial societies, the most sensible way to prepare a child was to arm her/him with the skills of the past (survival skills like crafting tools, blacksmithing and carpentry, tapestry, knitting, raising animals, knowing edible and poisonous plants, and so on), as these were precisely the same skills they would need in the future (Toffler, 1971). But the today world is a rapidly changing one. The world that youth must enter is increasingly heterogeneous, fluid, and disorderly, with enormous diversity of cultures, codes, and meaning systems (Larson, 2011; Larson et al., 2011). It is a world of unpredictability and change, far more complex than the one previous generations had to encounter. We cannot appreciate and weigh the changes because they occur

with “kaleidoscopic rapidity”, in Dewey’s words. All these raise important questions about what kinds of school experiences are likely to allow students’ abilities to blossom and to support them become well-balanced adults.

Education is both a means to an end and an end in itself. However, the current educational system is falling short; it dehumanizes the educational experience, in Larrison (2013) words. Schooling, rather than making many students feel confident, actually makes them feel like ‘fish out of water’. In schools, young people are failing to gain the experiences they need to progress in life. School does not provide holistic education. It provides specific knowledge and skills in subjects determined almost two hundred years ago. Many of the problems occur because we are still schooling like we did many decades ago. The current system excels at sorting students according to their performance in school tests.

The truth is that school programs suffer from an overabundance of information, most of it far removed from everyday experience.³⁷ The result is, as John Abbott (2009) put it, “overschooled but undereducated” students. Marvin Lazerson (2004) argues that we have created an endless cycle of over-schooling, where individuals stay in school because it is their only option; they get rewarded for continuing their formal education; the more advanced one’s schooling, the greater the likelihood of getting ahead. As more and more people continue their studies to higher and higher levels of education, one has to move to an even higher level in order to differentiate herself/himself from the others and have probably better work opportunities.

³⁷ Jinan Kodapully, an activist teacher-researcher working for many years with children and adults from non literate communities in India, reflects on modern western-type education writing that it disconnects people from the nature, and alienates them from their inner nature. Children are denied to learn in a natural manner. Putting children into an environment of toys, books, and computers, we deny them the authenticity of learning and their right to make sense of the real world. Thus, children only see the final product and never the process.

Kodapully argues that the fundamental difference between indigenous non-literate cultures and the western-literate culture is that the indigenous cultures use intuition and insight as a framework for creating, transmitting and sustaining knowledge while the western uses reason. He also adds that school prioritizes ‘learning about’ instead of ‘learning from’: ‘learning from’ demands the learner to be present where learning occurs while ‘learning about’ distances the learner from the knowledge creation. ‘Learning from’ demands the working of the senses while ‘learning about’ demands the mind to operate.” See at <https://www.academia.edu/6694527/Cognitive_justice/>.

In my opinion, this is an important reason why education does not work well. So, we need to overhaul the current educational model. Schools should move away from the memorization-and-repetition-of-content-knowledge model, from curricula with superficial learning goals to assess in a given school year, from an overemphasis on teaching, and from feeding students with static information.

Thus, a problem is that school is just about transmitting facts and procedures to students; about getting students into post-secondary educational institutes. Another problem is that school sacrifices depth of learning for breadth. That may be the reason why students soon forget most of what they were taught in school, all of which seems unimportant to them. It is not far from truth that adults maintain only few pieces of knowledge acquired at school. Even the information they were tested on as students is gradually forgotten because it was not relevant to their lives.³⁸ Having said that, I do not imply that school tests or some rote learning have no place in the current educational system. I just mean that they are didactic episodes, among many others, and not an end in themselves.

Being literate in the 21st century is far different from being literate in the 20th century. In the modern world, literacy is about finding meaning in various cultural contexts. Talking about 21st century skills and trying to figure out what they really are, Craig Jerald (2009) writes that today students need to be able to use what they learn in school (knowledge and experience) to real world problems, in order to understand their options and make sound decisions that ensure their well-being. Along with foundational knowledge in reading and math, students will need ‘practical literacy’ skills (applied literacies skills), life skills, inter-personal skills, non-cognitive skills, decision-making skills, communication and collaboration skills, critical thinking skills, and lifelong learning skills. And the list of such skills goes on and on. Obviously, classroom teachers can help students develop and implement those skills.

Current trends, says Jerald, seem to support the notion that such

³⁸ Dewey (1938) wrote: “Almost everyone has had occasion to look back upon his school days and wonder what has become of the knowledge he was supposed to have amassed during his years of schooling, [...]. Indeed, he is lucky who does not find that in order to make progress, in order to go ahead intellectually, he does not have to unlearn much of what he learned in school. These questions cannot be disposed of by saying that the subjects were not actually learned for they were learned at least sufficiently to enable a pupil to pass examinations in them.”

skills are becoming vital in today's society –particularly in the civic arena (p. 44), in the arena that matters most in my opinion. At the very least, students must better learn how to deal with real world challenges, rather than simply “reproduce” the information on tests. Those students will be at an even greater advantage in work and in many spheres of life (Jerald, 2009).

One more caveat: in our times, the interpretation of information –to make sense of and evaluate information efficiently and critically, and to separate fact from opinion– is much more important than information itself. As Alvin Toffler (1971) put it several decades ago, a today's ‘fact’ may become a tomorrow's ‘misinformation’, may soon become obsolete. But the large quantity of knowledge forms a barrier to the development of important life skills. If students are obliged to spend too much time on memorizing data, there is hardly any time left for deepening their thinking.

Today students are ‘information overloaded’. So, who could decry them when they resist dry school knowledge learning whose future utility is highly questionable? “Don't bother us with more data!” was a loud message from the students in this study. As mentioned above, a substantial body of literature reports and identifies the important role schools can play in providing students with experiences, skills, and knowledge so that they are able to face, understand, analyze, and interpret the world around them; to act responsibly and make thoughtful judgments; to manage the various types of issues and problems they encounter; to transfer skills acquired in classroom to other areas of their everyday lives. Yet, that is not an easy task. Even worse, some educational policies still insist that rote learning is enough, and do not help students develop critical thinking: to take a critical viewpoint towards every aspect of world, to think critically about things they learn at school. For such a system, it is dangerous to make students capable of ‘changing the world’.

In the present school system, if something is not going to be eventually tested, it has no place in the curriculum. The apparatus of mainstream schooling is obsessed by “measurement mania”, in Eisner (2005) words. School critiques point out that teaching for learning is totally different form teaching for testing. Half of a century ago, Carl Rogers (1969) had postulated that we ought to do away with examinations, grades, and credits because they measure the inconsequential type of learning. His underlying message was that we are not expected students to enjoy learning, but to have good grades. No one denies that literacy and numeracy are

important goals of education. But when it comes to assessment, the goal to achieve these skills in earlier and earlier Grades, and, moreover, the idea that each child must reach the same level of achievement at the same time, ignores the emotional and physical needs of the students; it overlooks even the most basic tenets of child development (Larrison, 2013; Eisner, 2005).

This narrow conception of human capacities is reflected on curricula, and school tests. While standardized tests are considered as an effective way for policy makers to evaluate the performance of each school, claiming that testing is “scientific” or “objective,” the simple truth is that test scores as indicators of student progress cover only a small part of learning. Many scholars stress that the most worthwhile knowledge and skills are not assessed through school tests. In practice, standardized tests cannot capture many skills that matter in life (Heckman & Kautz, 2012; Gunzenhauser, 2003). Clearly, isolating abilities is more convenient and easier to test them. But assessing solely a student’s ability to perform well in tests and acquiring academic knowledge, school disregards the holistic development of pupils. It is tempting to say that school grades are only the tip of the iceberg when it comes to the explanation of the differences in school achievement between learners.

Moreover, the brain researchers question the emphasis and value of the testing on reading and math. They also argue that, although it may be possible to evaluate cognitive capacities, these are not generally measurable by standardized tests. In other words, every system of standardized test is misaligned with a biologically informed model of education; classic measures of academic achievement are practically uninformative (see Noble, 2014; Larrison, 2013; Lang, 2010). Another factor of great importance is the one of inequality which is associated to social and economic forces that undermine individuals’ life chances. For Jennifer Rice (2015) “The narrow focus on the achievement gap may point to solutions aiming only to improve student test scores rather than to broader interventions addressing the underlying social, economic, and educational conditions required for students to thrive in school and beyond.” (p. 3).

In the meantime, students; well-being of has been completely lost. But it is worse than that. Why? Because school has pushed happiness out of its procedures to make room for the toxic climate of boredom, anxiety, and fear. But happiness can lead to success. The happiness research says that happy people are more creative, good thinkers, help others, have safe and long relationships, and strong immune systems (Seoul International

Education Forum, 2013). Hence successful students are those who derive long-term satisfaction and enjoyment from learning. Researchers within the field of positive psychology document that students who perceive school climate positively –and other school related factors such as school engagement, satisfaction with school, teacher and peer support, parent involvement, perceptions of academic autonomy– report high levels of subjective and social well-being, and psychological adjustment (Pilkauskaitė-Valickienė & Gabrielavičiūtė, 2015).

Academic outcomes are widely believed to predict occupation, earnings, work success, and other life outcomes. Notably, high school completion and a university diploma represent the cornerstone of educational achievement for young people. It is also a minimum requirement for pursuing most types of further education or training and for entering the labor force, at least for many jobs (Ingels et al., 2002, p.13). No one denies that educational success is critical for a myriad of reasons. But bad school scores are not ‘the end of the world’. Today, more and more people accept the fact that one’s future is not wholly dependent upon academic degrees. Talking about a school culture that assigns greater priority to educating than to measuring, Eisner (2004a) states:

We look for “best methods” as if they were independent of context; we do more testing than any nation on earth [speaking of USA in the period of Bush’s presidency]; we seek curriculum uniformity so parents can compare their schools with other schools, as if test scores were good proxies for the quality of education. [...] What we are now doing is creating an industrial culture in our schools, one whose values are brittle and whose conception of what’s important narrow. We flirt with payment by results, we pay practically no attention to the idea that engagement in school can and should provide intrinsic satisfactions, and we exacerbate the importance of extrinsic rewards by creating policies that encourage children to become point collectors. Achievement has triumphed over inquiry. I think our children deserve more. (p. 3)

Can we imagine a school with the mission to make students find their way to life and help them fulfill their individual goals? Can we imagine a school where teachers prioritize activities that are relevant to students’ lives? Can we imagine a kind of school as John Dewey (1915) envisioned it? A school built upon the ideas of character-building and responsibility? A school which does not offer abstract lessons, is not “isolated from the ordinary

conditions and motives of life” (p. 31), and is a “miniature community, an embryonic society” (p. 32)? Central in his thinking was also the idea of the importance of the existing experience of every student and the responsibility of teachers “for understanding the needs and capacities of the individuals who are learning at a given time.” Back in the 1938’s, he wrote:

It is not enough that certain materials and methods have proved effective with other individuals at other times. There must be a reason for thinking that they will function in generating an experience that has educative quality with particular individuals at a particular time. [...] There is no subject that is in and of itself, or without regard to the stage of growth attained by the learner, such that inherent educational value can be attributed to it. Failure to take into account adaptation to the needs and capacities of individuals was the source of the idea that certain subjects and certain methods are intrinsically cultural or intrinsically good for mental discipline. There is no such thing as educational value in the abstract.

The vision for the future of school requires a new conception of education as encompassing a broader idea of whole child development and success, in deweyan terms. To foster learning, as Edward Zigler and Sandra Bishop-Josef have stated, parents, teachers, and policymakers must focus on the whole child. Those who espouse the whole child approach, view all domains of development (including of course cognitive development) as synergistic and, in that respect, as the proper focus of child rearing and education. In contrast, those who believe that the cognitive system merits the most attention are essentially rejecting the other needs of the child. By ignoring the contributions of the physical and psychological systems to learning, they promote an educational system designed to fail (Zigler & Bishop-Josef, 2006, p. 30).

Are there any ways for school to move the needle to holistic development and true education for every child? By combining insights from various areas, such as developmental psychology, sociology and education research, a 2015 report paints a clearer picture of how to create meaningful developmental experiences for young people. Through a review of the literature and interviews with experts, the researchers propose policies that help students build self-regulation, knowledge and skills, mindsets, and values, and develop agency, an integrated identity, and competencies. To that end, we have to create conditions that foster both the learning of

academic content and the development of young people more holistically. As the authors (Nagaoka et al., 2015) articulate:

The current policy emphasis on content knowledge and test-based accountability undermines practitioners' ability to provide developmental experiences. Content knowledge is an essential part of what young people need to learn for the future, whether in school, at home, or in after school programs, but it is far from the only thing that matters. Policies that put too great an emphasis on content knowledge and standardized tests create incentives for practitioners to see the teaching of content knowledge as the sole outcome of interest. (p. 7).

Beyond any doubt, children of all ages need a curriculum that includes a wide range of activities that allow their capacities to blossom (Miller & Almon, 2009, p. 47): to be expressive, exhibit their abilities, and nurture their innate talents. For instance, there is a common argument that in order for children to be able to develop into well-rounded adults, they should be exposed to as many artistic experiences as possible which not only touch their intellect but reach their imagination, nurture their creativity, and encourage personal expression.

Much of the disaffection with the current school system stems from the notion that the intense focus on formal academics –for example, narrow curricula which give little space for subjects like Music, Arts, and Drama– has neglected the individual abilities of each student. The best intentions for changing the school system will fail for as long as we neglect students' life outside school and pay no or limited attention to the 'nature' of our students: their personality traits, their special abilities, their strengths, and their weaknesses, their talents and interests, and their background knowledge.

The research on early education has proven that a positive social-emotional climate in the classroom promotes the academic learning (see Tooley & Bornfreund, 2014). Elementary and secondary education could follow the path of preschool education that emphasizes moral values and caring human relationships; supports children feeling better about themselves; provide students with authentic learning experiences; nurtures a lifelong love of learning; permits greater choice to children about that things they wish to learn; and strengthens every child's individual abilities. Preschool education does not focus solely on content knowledge and academic outcomes; it meets the complex needs of students focusing on the

whole child: on her/his physical, emotional, cognitive, social, moral, and aesthetic development. Preschool curricula include goals for maintaining self-control; interacting positively with others; managing emotions; exploring curiosities; learn from trial and error; and persisting on a challenging problem. Preschool teachers do not act as a ‘sage on the stage’. That is what makes early childhood education unique; it starts with the child and not with the subject matter (Miller & Almon, 2009, p. 9). It is the absolute antithesis of the one-size-fits-all educational model.

The next logical step ought to be the decision for small classrooms (smaller child-to-teacher ratios) and small schools as well. As established by Nye and co-researchers (2000), small classes benefit students of all kinds and types of school. The positive effects of small classes are large enough to be educationally significant while they are even greater for students who have experienced more years in small classes. In this basis, many countries (Finland, Iceland, Portugal, Spain, Japan, Korea, UK, USA) made policies to reduce their class sizes (Blatchford & Lai, 2012), finding strong support by parents, teachers, administrators and consequently policy makers (Graue et al., 2009).

Several other researches document a wide range of benefits of small classes (Koc & Celik, 2015; Chetty et al., 2011; Graue et al., 2009) and small schools (Bascia & Maton, 2016): closer, positive, and more respectful relationships (among students, among teachers, between students and teachers, between family and school); improvement of average student attainment; narrowing the educational gap between advantaged and disadvantaged students; more time for teachers to work with individuals and small groups; greater safety and discipline; lower levels of violence and truancy; smaller percentage of students drops out; higher rate of parental involvement; fewer behavioral problems; more positive attitudes towards school or particular school subjects; strong sense of community; and sense of belonging versus alienation. The effects are greater for lower-performing, low-income and minority students in the early Grades, and persist over time (Bloom et al., 2010; Nathan & Thao, 2007; Cotton, 1996; see also Mathis, 2016; Rice, 2015; Bridgeland et al., 2006).³⁹ Dee and West (2011) find that

³⁹ For this we can draw conclusions from Finland. In the Finnish educational system, children are taught by no more than two teachers in their earlier years so enabling teachers to get to know their pupils very well. Their schools are small and rarely have more than 700 pupils, for the full age range of seven to sixteen (Abbott, 2014, pp. 49-50; Dyke, 2013; Sahlberg, 2011).

assignment to small class is associated with positive changes in personality (as cited in Heckman & Kautz, 2012, p. 34).

In brief, small classes affect the interactions between students and teachers, can change the dynamic in a classroom and improve school culture. They are much closer to the ideal learning environment. In small-schools scenario, the teaching-learning procedures would be more about helping students be autonomous learners with advanced interpersonal and intrapersonal skills, critical thinking and creative thinking skills, and less about delivering a content and pass exams. Teachers in small classes can have more time to spend with each student and work better with them.

Finally, it is of vital importance to accept the role that individual characteristics and home environments play in a student's academic achievement and life progress. Early life factors and both cognitive and non-cognitive traits drive the educational success that ultimately results in further success in life (Heckman, 2011, 2014). These out-of-school influential factors must gain visibility and find the place they deserve in educational policies.

Apart from the focus on these factors of high importance, there is still the challenge of differences in personal traits. If we do not accept students for who they are, we cannot educate them. That calls for teachers who can move into a mentor/ facilitator role. These teachers know how important it is to show respect to each student's personality; understand that their students have different learning needs, socio-emotional needs, and background knowledge; and are aware that a student's low performance may stem from various situations she/he encounters. It also requires more generalists teachers or, alternatively, specialists who are assigned as generalists, especially in secondary schools.

But is it possible? What about the teachers who see more than 100 students a day? What about the teachers who are aware of the real educational problems but feel unable to change the 'rules of the game'? What about the teachers who have realized that carrying out so many tasks steals the valuable time they need in order to seek for the reasons that cause a student's difficulties? The answers point to the changes needed in all levels of education. In my view, the key-word is time. Time is not the only component that holds promise, but it is one that holds some promise for improving schools.

People say that we can hit two birds with one stone. But, in my opinion, this is not the case for education. They have to be priorities. Thus,

if the priority of the school is the implementation of predetermined curricula –curricula with long lists of goals and topics that no educator could get through in a single school year– then no time is left for the teachers to get to know their students better (personality traits, sensitivities, prior experiences, cultural values, attitudes); effectively support each student; and investigate and celebrate their students’ interests.

Time is also a key-term when it comes to educational reforms. As educational ministers are impatient, they take decisions without preliminary planning and, most importantly, without calling teachers and parents to a dialogue for the real school problems. They look for fragmented solutions and practices that produce immediate results. While they rarely have long-term strategic plans, they push policy makers to design quick-fixed-improvement models. Consequently, policy makers propose changes and reforms without prior evaluation of their effectiveness, proven by empirical research, and without designing comprehensive programs for teacher training. They propose curricular changes without ensuring a lengthy period of trial and evaluation. At the same time, they demonstrate provocative unawareness that changes take time and they do not allow the previous program to operate before deciding whether to improve or abandon it. They demonstrate striking ignorance about the complexities regarding children development and social and school variables as well, and do not acknowledge the fact that results may not appear as quickly as some would like. Not surprisingly, most of their reforms have disappointing results and no impact on school improvement. So, time matters. It matters a lot!

Beyond any doubt, addressing such issues is costly and challenging, with no instant solution. Small schools are costly. Time is costly in a school program characterized by pressure. But, it is not always a matter of more money; it is a matter of investing money wisely and not wasting it. The problem is a combination of lack of adequate financial resources and lack of an understanding why school does not work well. As Eisner (2002) had put it

The lack of attention to fundamental questions of why we educate results in the aimless pursuit of school reform. [...] We are not clear about what we are after. Aside from literacy and numeracy, what do we want to achieve? What are our aims? What kind of educational culture do we want our children to experience? In short what kind of schools do we need? (p. 577)

This is also the case for the Greek educational system. Indeed, in Greece, in the last several decades, despite the numerous reforms –and millions of pages of reports– not much has changed for better. A reason for this is that the reforms made poor use of research data. There has been no coordinated effort to develop a research-data-informed vision for transformation; to get consistent, valid, reliable, updated and comparable data in order to make meaningful judgments about the effectiveness of the proposals that put in place. Quite apart from that, policymakers in Greece tend to copy strategies from top performing countries without considering that the cultural-educational context of their country has a lot of differences comparing to that of the original system. Another reason is that policy makers' suggestions are not geared towards children but towards tests. They give more attention to secondary and primary levels of education and decide top-down reforms (changes in the university entrance system and tests). Indeed, they invest too little in early years of child development, school-family collaboration, and preschool education.

Yet, this is only a part of the picture. There are many other problems, and the most prominent among those is the one of trust. Policy makers do not trust teachers. They do not consider policies that would support the efforts of teachers. In contrary, they rely on pressure as a means of making teachers feel responsible for everything that goes wrong. Nevertheless, for any reform to succeed, first and foremost it requires teachers who have the willingness to become “change agents” and to lead positive changes in their classrooms. Otherwise, the relevant discussions will become polarized and things will never be put in order.

Certainly, it is ultimately the government that bears the responsibility of any educational reform. But education is in fact an ecosystem, which includes many related and co-dependent actors, both within and outside the formal system (Perlman Robinson & Winthrop, 2016, p. 21). So, effective collaboration is especially important when it comes to taking serious decisions in order to create a truly high-functioning school system and promote the dialogue about the value and purposes of public education (Gunzenhauser, 2003) If anything, common sense dictates that teachers across the K-12 spectrum of education, researchers, and parents should share a collective responsibility and should be asked when tough decisions must be made for public schools. Why is it then that the policy makers do not work in bringing teachers, parents, researchers, and community experts together on a successful partnership and a fruitful dialogue about the real

educational problems? This question describes a fundamental paradox that plagues the Greek school system.

This also explains the fact that there are no reforms which found strong public support. The ministers of education, whatever party they belong to, face criticism regarding the value and effectiveness of their ‘innovative’ proposals (besides, the new is not always the better; change is not always for good). It is not surprising that their positions are largely critiqued as narrow and superficial. In most cases the only proponents they have are their political governmental partners while the body of their opponents comprises of most of the society, including their voters. Sad to say, in the name of their personal success, they raise the bar in a defiant way, unable to realize the distance between their proposed solutions and the needs of the society. Instead of articulating a broader educational vision, they refuse to question and re-think their entrenched beliefs; they are locked into their narrow political dogma and downplay every argument that does not fit into their agenda. Although I am not in position to interpret the rhetoric of what is at stake in using school as a means for the projection of political and economic ideologies, I realize that they move to the wrong direction proposing unnecessary regulations and putting the most crucial of “what schooling is about” question aside. Why do they do so? This is really puzzling –sarcastically speaking.⁴⁰

Occasionally, I have presented hypothetical scenarios to students and asked them what they would do in certain situations. In one of these scenarios, students, at age 16, they were asked what they would do if they

⁴⁰ Michael Apple (2005) offers an insightful analysis of the conservative discourses in school ‘reform’ and identifies the policy initiatives that emerge from the neo-liberal hegemonic ideology. These initiatives are centered around links between education and the economy, attempting to re-integrate education into an economic agenda. He introduces the term ‘conservative modernization’ in education and suggests that education is guided by a tense coalition of forces: dominant economic elites that impose their will on education; authoritarian populist religious fundamentalists who argue that our culture can be saved by a return to Biblical teachings and that schools can overcome the ‘moral decay’ by restoring a commitment to ‘traditional virtues’ such as authority, morality, patriotism, family, ‘decency’, and church; neo-liberals who are based on economic rationality and see students as human capital and public schools as ‘black holes’ into which money is poured; and policy makers who perseveringly ‘raise the bar’ for achievement, place schools into the market, and propose solutions surrounding ‘standards,’ ‘excellence,’ ‘accountability,’ and so on. Underpinning these positions is often “an ethnocentric, and even racialized, understanding of the world.” (p. 282).

were minister of Education. In this token, I asked them to make suggestions for the ideal school. Although the participants in the study did not hold the same views of the ideal school, all of them had many suggestions for a better school and each of them clearly articulated a vision that was personal and contemplative. Their suggestions were directly uttered and I had not to read 'in-between the lines'. A common attitude that emerged from this conversation was that all students really wanted a better school. Two other striking patterns are that school is not 'their school' and that their voices are ignored. Firstly, the following three quotes from Charlie, Helen, and Jason provide an example of the tendency of school to bypass an emphasis on real life skills in favor of pure academic skills. When describing her vision for the ideal school, Helen said:

We are obliged to stay up until 2 a.m. to complete daily assignments. We go home and have no free time. What for? ... I see happy people who get a good job and they don't have a certificate. My cousin ... She's a hair-dresser; she has her own studio and earns a lot of money. And it is very creative. She travels to other countries and goes to seminars; she meets people, makes new friends ... [...] No, I don't want to be a hair-dresser. You know that. I just want to say that not going to school makes some people feel happy. [...] School should be a place where we want to go to. (Helen)

Charlie said that students want to learn "important things", highlighted ways that students can be engaged in school, and implied a school model aligned to the life outside school. Jason's answer showed that there is huge gap between the ideal school and the current reality.

We learn easier the things that fascinate us. [...] I really can't remember anything interesting about History. Only dates and dates. When Napoleon was born, when he died, when he got married, when he lost the war in Waterloo... Who cares? [...] Nobody tells us why we should put any effort to learn things that are useless. And nobody has taught us anything about the real world ... I mean about terrorism and fascism and racism, the today wars. [...] We never discuss political issues in class. (Charlie)

School is something out there! It is an alien! [laughing] Seriously? School is a waste of time. Teachers just teach. Blah, blah, blah [...] I

don't know what must be done. But I can say that if they want us to like school, they must make better schools. (Jason)

John brought up the issue of school rules remarking:

If you come to our school, you'll see students smoking in the schoolyard. When kids fight, teachers don't try to break them up. There are kids who are simply too lazy to study and cheat to pass a test. [...] I don't like this. There are many things which could change.

When describing the characteristics of the ideal school, Maria brought up the issue of lifelong and meaningful learning saying:

I believe that school is important. But not this type of school. You see, many things can change [...] Yeah, tests are important ... but learning is more important. [...] There will always be more things to learn. Thus, school ought not to simply teach us things but to make us love learning.

Finally, Theo and Lucas made some good points with respect to school organization and the educational environments where students learn. Theo thinks that the school program is too heavy and has limited interest. For Lucas, school can be a more welcoming environment.

School is hard. Too many things to do, too many lessons, mountains of homework, fatigue. We need more breaks between classes, we get tired. [...] I like it when we go on school trips. [...] I'd like a school with more breaks, less studying, and more interesting things. Not only read and write. But who listens? Nobody! (Theo)

How could I be a minister? I am not a politician. [...] Politicians never ask our opinions. When we were in elementary school we wrote a letter to the Mayor and visited the City Hall to give it to him in person. We wrote everything we wanted to make our school better. Gymnastic equipment, music instruments, trees ... All these. He promised us that he'd give everything we asked for but he did nothing. [...] I'd like a school that's cleaner, more beautiful. (Lucas)

Students' voices can be valuable in bringing change to schools. By looking behind the statistics and giving primacy to students' voices, we should be

able to better understand the drivers of their discontent with respect to their schooling, and acquire a more detailed and broader picture of school problems. Initiatives that take under consideration students' opinion on issues they see as important may lead to the renewal of the discussion about the quality of school experiences.

Ultimately, the question is not how many students enter university, or how many students are average-achievers. Numbers and statistics hardly say something about the real educational problems. As such, the real question is what can be done in school in order to help all students find their way in a demanding world. At the heart of school there will always be a learner who is trying to find her/his way to the future. In the opinion of Alfie Kohn (2014), it is worth keeping in mind that "traditional schooling isn't working for an awful lot of students. We can respond to that fact either by trying to fix the system (so it meets kids' needs better) or by trying to fix the kids (so they're more compliant and successful at whatever they're told to do)."

Concededly, there is neither a formula nor a magic bullet that could change things from one day to another. The universe of things that must be done in order to overcome and improve the dysfunctional system of school is so large. And that is true in many respects. This may be the reason that wise, well-intended and well-knowledgeable educational reformers –those who think critically what is taken for granted– are afraid to open the door. As matters stand, the vision for a better school vanishes into thin air through decisions made by politicians who have little or no idea about the real educational problems.

In effect, speaking about the future of school, trying to define the problems and their scale is only the first step, because when it comes to practice various obstacles come on stage. But despite these obstacles, one thing is definite: School must get out of that comfort zone. Policy makers must take a step back and look at the big picture. First and foremost, they have to realize that the major goals of education are highly correlated and we must not think each of them independently. They must shift priorities and begin to design alternative school curricula that acknowledge the non-cognitive factors (attributes, dispositions, social skills, attitudes) which shape school performance; emphasize character in the classroom and develop new ways to evaluate and cultivate non-cognitive strengths in students; prepare students for their post-school lives (real life skills). Put it clearly, curricula should be totally re-designed so that children who do not

excel in purely academic areas will have a chance to show their abilities in other areas. Just reviewing existing curricula is useless. School system has to be completely rebuilt in order to make this happen.

All these require a philosophical shift in the way we think about the school (school subjects and programs, competition, school climate, role of the teacher, relationships) and the opportunities that are given to students so that to move on. Our conception of education needs a paradigm shift. We need to move forward. Above all, we must re-examine the definition of school experience and school success. Because, education is a much more comprehensive process; it is not a race where the prize goes to the one who finishes first (Miller & Almon, 2009, p. 63). Besides, everyone needs wins – bigger or smaller – in order to understand that she/he has opportunities and can enact the future of her/his life. Children and youngsters have dreams, they try to find meaning in their life. They refuse to consider a reality where their dreams will not come true.

To embrace education is to embrace life. If education is essential then school is essential. And if school is essential, then every student is essential, and has to be in the core of our conception of schooling. And it is worth keeping in mind that the purpose of the school is not only the cognitive but the holistic development of every child.

A FEW FURTHER THOUGHTS

School and Society (and the debate over the ever-widening social demands on schools)

Today, millions of children worldwide remain deprived of educational opportunities, have minimal or no access to schooling, most of them as a result of poverty, race, and gender. Although many people, all over the world, fight to ensure access to school for every children as they believe that education allows individuals, communities, and societies to flourish, there are still myriads barriers (financial, political-ideological, and cultural) young people have to overcome in order to gain their right for education. Many pupils in Africa and Latin America have no access to textbooks while their schools suffer from funding. I recall Malala –an education activist, daughter of the Pakistani educator Ziauddin Yousafzai– who was shot by the Taliban in 2012 simply for daring go to school. I recall schools in Tanzania where it is common to find a teacher standing in front of 80-100 pupils sitting on a dirty floor in a room without a roof, trying to take notes on piece of wrinkled paper and using as writing boards the backs of the pupils in front of them (Samoff, 1994, p. 5 as cited in Cizek, 1999). I recall women in Afghanistan who struggle to get access to higher education, within a culture that remains resistant to women's education and within a context where only 5% of the Afghan population attends university, and less than 20% of university students are female (Burrige et al., 2016).

Nevertheless, for many children in Western countries, school is considered not as an opportunity, nor as a gift, but as a problem. For several of them, learning is not a window to the world but just another duty. Csikszentmihalyi, in a rather heretic manner, said: “sometimes it seems to me that the best thing would be to forbid children to go to school until they can demonstrate that they have a real interest in something. [...] Education should be available to everyone, obviously. But education should not be an obligation, but rather a privilege that you earn by showing that you're curious about some part of the world. You get your education through that curiosity.” (Scherer, 2002, pp. 14-15).

According to Sinagatullin (2009), some middle and high school students think “that it is possible to build a prosperous life without

possessing a good education” and see education “as a burden and seek easier ways to realize success” (p. 3). The question is “why?”. What clues are hidden behind such phenomenon? In my opinion, it is not students who undervalue and diminish the significance of school; it is western societies that foremost do it; they have lost faith in the school system and particularly in public education. If we reduce our interpretation to school alone, there is danger to miss the fact that school is a societal product, is part of a wider social nexus. The crisis in the society and the school crisis are connected. It is reasonable to posit that school crisis has its origins to society. And the challenges school and societies face now are ever more complex.

Schools and communities are culturally interconnected, within various frameworks and traditions. Education is a contextually and culturally depended activity (Barrett, 2011). Modern societies have lost their ways, they have forgotten what it means to be human. School, as a micro-cosmos of the society lost respectively its way. While it is generally accepted that education enriches human’s lives, studies based on data from developed countries suggest that higher levels of educational attainment have a negative estimated effect on wellbeing and are associated with lower self-rated happiness or life satisfaction. Education correlates weakly with happiness scores in rich nations, and strongly and positively in poor nations (see Dockery, 2010).

The ‘money does buy happiness’ has become the guiding principle for the industrial and post-industrial societies; it became the foundation upon which the happiness and well-being of people of western and western-type societies depend. The result is that many children and youngsters are not prepared to cope with the increased choice of material and cultural commodities available to them and define their happiness as a function of what they wear or what model of cellphone they possess. Alvin Toffler (1971) noticed, almost five decades ago, that when choice turns into over-choice then freedom turns into un-freedom.

For as long as social values are limited to the pursuit of money, other values such as fairness, honesty, respect to others, altruism, generosity, social and civic conscience, kindness, perseverance, and integrity are disregarded. Theoretically speaking, all agree that the holistic development of children is of utmost importance of society. Yet, in real-life settings society tends to place material things on the highest pedestal. This seems, if not a contradiction, at least a major inconsistency. To make matters worse, education is increasingly conceptualized as a means to earn more money.

Under these conditions, in the age of money, an interesting question to ask is: Can school help children to build their character and their identity as conscious human beings? Goodlad (1999), taking a critical look at the problem of school reform, wrote: "The language of school reform virtually eschews reference to the maturing of the self into greater wisdom, civility, civic-mindedness, democratic character, and participation in the whole of the human conversation" (p. 576). Prensky (2014) contributes to the discussion noticing that we often ask what students should learn and how they learn best; we seek effective ways to measure their learning, we try innovating paths for instruction. At the same time, we rarely reflect on what kind of person students can become, on whether they could make the world a better place. While it is good to ask students what they want to be when they get older, it is wiser to make them think and reflect on what kind of person they want to be.

There are also scholars who interpret the current situation through the relation between education and capitalism. Abbott (2009) urges us to re-examine our cultural values and view learning as a total community responsibility. But firstly, we must contemplate on the kind of world we want: is it a world of responsible, community-minded adults, or a mass consumption world of "depended customers" who conceive their well-being with regard to luxury products, and services, and do not take full responsibility for their actions? The ideal of the education requires changes to schools, families, and communities. Similarly, Apple (2005) takes a position against the notion of the citizen as purchaser and consumer in both educational and larger social arena. He remarks that in conservative times, and particularly for neo-liberals, the world is a vast supermarket: "All people are to act in ways that maximize their own personal benefits. [...] 'Consumer choice' is the guarantor of democracy. In effect, education is seen as simply one more product like bread, cars, and television. [...] Thus, democracy is turned into consumption practices" (p. 273). Besides, a nation's economic growth is not always translated into improvement of people's health care and education. For example, as Nussbaum (2011) rightly points out that South Africa under apartheid used to shoot to the top of the development tables, despite the fact that a large majority of its people were unable to enjoy the fruits of the nation's overall prosperity.

Such considerations give rise to questions about the aim of school and our expectations from school as a whole. Is schooling just an enterprise in 'knowledge delivery'? Is the aim of school to prepare future 'workers' in

an industrialized economy of business world? Does school prepare students to live in a diverse society? What does it mean to be an educated and responsible citizen in the twenty-first century? How do we expect students to make ethical choices and to accept mores and ethics when society does not model these moral values? Is the cultivation of character only responsibility of the family? Should we provide children and youths with activities at school in order to build their character? If so, can good character traits be evaluated and taught in school like other school subjects? Pushing students to excel, do we lead them to character growth and to maturity? Is it fair to expect that teachers can shoulder the responsibility for children's character shaping? Can school fix problems in the larger society? Such questions are not entirely new. And in this topic, admittedly, there are more questions than answers. And the answers, once again, depend on our goals for school education.

Distressingly, yet undoubtedly, the cultivation of emotional and social skills, for many families, is no longer an important part of their daily routines and experiences. For instance, children surf on the Internet, watch television and play more video games than interacting with other family members. For Tomas Lickona (1993), schools must become caring moral communities in order to teach the values kids are not learning at home. Why so? Because the family, traditionally a child's primary moral teacher, fails to perform that role, thus creating a moral vacuum.

Stated differently, the changes and breakdown occurring in family and community settings, create a gap which several teachers try hard to fill. Fortunately, many elementary teachers turn daily classroom routines into opportunities for promoting moral values: they help children to work together respectfully and to discern right from wrong, they encourage them to defend their own views while, at the same time, taking under consideration the views of others, they design activities in order to prevent behavioral problems and bias incidents, they promote tolerance, they bring issues ranging from racism to gender equity, and so on. Unfortunately, this is not the case for secondary teachers who see their students mostly as test-takers and dedicate no time in the students' moral and social development.⁴¹

⁴¹ A 2016 survey of USA educators and administrators reveals an agreement among teachers that it is critical to address behavioral, social, and emotional issues in schools because these factors can impede student academic achievement. The vast majority of surveyed educators recognize student social-emotional growth and well-being as a means to

Children need moral orientation now more than ever because things have changed. Throughout the past, in stagnant pre-industrial societies when values were relatively stable, the older generation could easily impose its values on the young. Even today, there are some non-Western cultures where children assume adult responsibilities by the age of 14 or 15, whereas in Western countries adolescence lasts far longer (Whitman, 2012) giving excuse to youths for irresponsible behaviors. Alvin Toffler (1971) has remarked that millions of students pass through the education system without once having been encouraged to analyze their own values and the values of others, to search out the contradictions in their own value systems or even to discuss these matters candidly with adults and peers. Even worse, the more crucial the question of values becomes, the less willing schools are to grapple with it.

As argued above, there seems to be a conflict between the pure academic orientation of school on the one hand, and its broader mission (behaviors, attitudes, children's whole development) on the other. For many theorists, schools should not function merely as academic systems, should not be so overly focused on learning (Nagaoka et al., 2015; Prensky, 2014; Cizek, 1999; Noddings, 1997). They convey values and shape characters. Academic success is not the same as active citizenship. Paulo Freire (1973), who set out the fundamental keystones for Critical Pedagogy, pointed out that the target for a society of equity, solidarity and justice requires people with the ability to think and act critically, at an individual and collective level. The route to this goal is education. Traditional education, according to Freire, does not provide the experiences needed to form a critical consciousness, because it is disconnected from life, centered on words emptied of the reality they are meant to represent, lacking concrete activity (p. 37). Critical pedagogy is not merely a set of teaching methods or activities, but a body of cultural politics which takes education seriously as an important site for the defense of social justice and of struggle for human freedom and autonomy in any society (Amsler, 2010).

the end goal of academic success, and acknowledge that these issues should be a top priority for every school. They also note that schools must try more to implement climate and culture initiatives. Unfortunately, they also endorse the idea of systems of rewards and consequences to address student behavior. The report "The State of Climate & Culture Initiatives in America's Schools" is available at <http://go.kickboardforschools.com/state-of-school-culture>.

Why is it important to be aware of the above ideas in education? Because if the aim of school is the development of children to become responsible citizens who respect the dignity of others, regardless of culture, race, ethnicity, gender, religion, and class, we must re-think school system through the lens of character development. Tomas Lickona (1993) posits the question “Why Character Education Now?” and designates a brief overview upon the issue of character education in the 20th century. He begins from the philosophy of logical positivism which asserted a radical distinction between facts (which could be scientifically proven) and values (about which positivism held that they were mere expressions of feeling, not objective truth). He further states:

As a result of positivism, morality was relativized and privatized —made to seem a matter of personal “value judgment,” not a subject for public debate and transmission through the schools. In the 1960s, a worldwide rise in personalism celebrated the worth, autonomy, and subjectivity of the person, emphasizing individual rights and freedom over responsibility. Personalism rightly protested societal oppression and injustice, but it also delegitimized moral authority, eroded belief in objective moral norms, turned people inward toward self-fulfillment, weakened social commitments (for example, to marriage and parenting) [...] The 1970s saw a return of values education, but in new forms: values clarification and Kohlberg's moral dilemma discussions. In different ways, both expressed the individualist spirit of the age. Values clarification said, don't impose values; help students choose their values freely. Kohlberg said, develop students' powers of moral reasoning so they can judge which values are better than others. [...] In the 1990s we are seeing the beginnings of a new character education movement, one which restores “good character” to its historical place as the central desirable outcome of the school's moral enterprise. (pp. 7-8)

Helping students develop a sense of their own identity and learn to think for themselves is not an easy expedition. It is a complex, hard, and demanding one. Nevertheless, the more schools are considered only as agents of academic success, the less they will be perceived as agents for collective consciousness, the less they will operate as a means to help youths gain a deeper understanding of themselves (self-awareness), to support them live a valid, happy, and meaningful life, to let them try to change the world for the better. The new era in education calls for changes in structures and values. The new type of school must promote values, such as: material values

(nutrition for all); biological values (health for all); intellectual and cultural values (e.g., protection of the natural environment); moral values; social values (collectivity, contribution to social progress, racial and gender equity); personal or professional values; and values that determine quality of life (well-being) (Kyridis et al., 2015, p. 27). Such values have objective worth and a claim on our collective conscience; they affirm our human dignity, promote the good of the individual and the common good, and protect our human rights (Lickona, 1993). Identifying these values is critical if school is to be oriented towards promoting harmony in life.

But alas, today schools neglect civic and moral values; they are still based on an antiquated economic formula designed for the Industrial Revolution. Thus, they are ill-suited for the emotional and intellectual well-being of young people and profoundly out of step with the needs of contemporary society (Diakiw, 2012; Grubb & Lazerson, 2004). More importantly, as in our today world major changes are happening locally and globally (sociopolitical changes, financial crisis, multicultural societies), if we really want to prepare students for life beyond school, teachers must go beyond conventional content by focusing on issues related to fairness and social justice; biases and cultural stereotypes; discriminations; immigration problems; ethnocentrism; violence and terrorism; racism; sexism; civil rights and citizenship; corruption; and environmental issues. It is through a sense of personal, ethical, and collective responsibility that students will be able to make wise decisions that address such challenges.

From the standpoint of education policy makers, schools represent a major investment for the society. There is no doubt that society as a whole benefits from a better educated population, not only because education enhances economic growth, but also because it positively influences social cohesion and greater civic participation (see Perlman Robinson & Winthrop, 2016; Camilleri & Camilleri, 2015; Rice, 2015; Meschi & Scervini, 2012). How children are schooled may impact their way of belonging to the society and their social and emotional well-being (Camilleri & Camilleri, 2015, p. 5-6). The cultivation of ethics and virtues is essential to a healthy well-functioning society. The ideal of well-informed and concerned citizens depends upon education and requires teaching students critical issues such as poverty, war, race, class, gender and consumerism (Noddings, 1997). Dewey, in his work "The School and Society" (1915), argued that education has an important role in social changes and development and posited that it is possible to create a better society through school.

In this sense, the *raison d'être* of schooling ought to be to arm children and youths with skills and abilities that they could take with them into their future lives, and strengthen their character (virtues, values, ideals). But holistic development does not happen 'magically'. If we are concerned with students' whole development, we must go beyond academics, to issues such as character development, personal balance, democratic values and civic responsibility, moral values, cultural awareness, ethical behavior, and caring human relationships. Values and behaviors, such as empathy and caring for others, should be part of the curriculum and taught through teacher-student interactions at school and through authentic experiences, Noddings (1997) suggests. As Noah Webster put it in 1788, "The virtues of men are of more consequence to society than their abilities, and for this reason, the heart should be cultivated with more assiduity than the head." (as cited in Milson et al., 2010, p. 88). In the same line of thinking, Dewey (1902) has written that personality and character education should be the priority for school: "Personality, character, is more than subject-matter. Not knowledge or information, but self-realization, is the goal. To possess all the world of knowledge and lose one's own self is as awful a fate in education as in religion." (p. 9).

In my opinion, we jeopardize missing the boat of true education having schools isolated from the society. But that does not need to be the case. There are countries where schools do operate as agents for collective consciousness. In the Nordic perspective, for instance, schools are seen as cultural core places of the local community playing a pivotal role in the nation-building processes and in the shaping of national identities (Hopmann, 2008). This model holds that, rather than expecting schools to do everything, society has to provide the avenue for a collective social life and take responsibility for the next generation. This may explain why in these countries school system obtains broad support at all levels of society.

The meaningful engagement of community in schools is a promising road for the ideal of education. A 2012 report (Blank et al., 2012) presents the "community school" approach in the USA where school and community leaders—such as local government agencies; nonprofit organizations; private agencies serving youth and families; community-based organizations; neighborhood groups; other schools, and higher education institutions—develop a common vision and build a common policy framework. A community school is distinguished by an integrated focus on academics, youth development, family support, health and social wraparound services,

and community development. Community schools extend the school program, reaching students, their families, and community residents in unique ways. They are thus equipped to develop their students into educated citizens who are ready and able to give back to their communities (p. 1). The report concludes that school and community, working together, can find solutions for many of the existing problems of students and families, such as: attendance, chronic absence, suspension, parent involvement, health, improvement of educational and life outcomes for students.⁴²

To conclude, character development, in the form of virtues like fairness, empathy, respect, courage, solidarity, honesty, responsibility, and loyalty, is more important than ever. Teachers and principals around the world notice an increase in inappropriate behavior over the past few years. Nowadays children have to learn at school practices and behaviors (i.e., rules, limits, self-control, autonomy, empathy, social skills) that were supposed to learn at home. Therefore, school should give greater priority on social, ethical and cultural outcomes. A society that strives for equal opportunities for all its members –and not only for specific social groups– should rely on school to realize this (Van de Werfhorst, 2009). Otherwise, society is in danger for degradation and dehumanization. Hence adults – parents, caregivers, educators, tutors, principals and so on– must promote teaching the young, directly and indirectly, values such as honesty, compassion, altruism, and generosity. It is also worth keeping in mind that values do exist a priori, not at a vacuum. They are human constructs within a certain cultural context. The formation and the transformation of values are definitely social phenomena.

On the one hand, the responsibility for developing a good character does not lie on parents alone. Character development and acting upon ethical values and civic virtues need to be a core mission of the school; it

⁴² The community school approach is discussed in terms of students' well-being, engagement, and development. Veronique Romero Reina and her co-authors (2014) summarize as follows: the potential of a community school approach can be examined on three levels: the macro level, reflecting the effects of a community school on the society as a whole; the *meso* level, including the potential outcomes of a community school approach at the level of the neighborhood or community (local context) and; the *micro* level, reflecting the effects of a community school approach on the educational achievement of students (by creating a broad "life and learning" environment that gives the opportunity for students to feel engaged on different levels) (p. 2082). Every community school may have its own goals, but the central idea is to improve both the community and school.

must be seen as a priority for schools of all levels and types. School is the premier institution that impacts what children are going to do and become in the future. It is an important educational institution where children and youths experience and internalize values through school climate and overall structures. It is, or at least it is supposed to be, a pillar in the community. So it has to succeed in preparing children for adult life, for a life with purpose and meaning.⁴³

On the other hand, although schools are directly involved in children's personal growth, family is –and will always be– the most critical ingredient in their development. The formation of moral values begins in the family, and is strengthened in school and society (traditions, norms, values). Schools cannot solve all problems stemming from dysfunctional parents and communities. Educational policy alone –albeit essential– is insufficient. For as long as family and community are not fully aware of their responsibilities and wait from school to do their job, it is rather impossible to guide students to the path of autonomy and prosperity. Families' and schools' role regarding the moral development of children is especially important in our times where media play a dominant role in forming the individual's moral identity. All the above require a broader social consensus on the fundamental goals of education.

Beyond any doubt, the problems of the school are not merely educational but cultural, social, ethical and ideological-political.⁴⁴ Whether the hopes for a better future will be fulfilled, clearly it depends on both school and society. Paraphrasing John F. Kennedy, we could say “Ask not what school can do for you, ask what you can do for school.”

⁴³ Nevertheless, Angela Duckworth (2016), as a social scientist researching the importance of character, expresses worry about the tendency to incorporate measures of character into school accountability systems, as a metric for judging the effectiveness of teachers and schools. Such rating implies character is singular when, in fact, it is plural. So, we should not be rewarding or punishing schools for how students perform on character measures.

⁴⁴ For Elliot Eisner (2005) school improvement –in terms of structures, grades assignment, assessment and so on– is not merely a technical problem. It is a cultural problem in the sense that it deals with the quality of social life within the institution. The dilemma that we face is how to create a more holistic environment in schools when, at the same time, the society at large undervalues such an approach and underestimates the role of school as a moral socializer. Tomas Lickona (1993) detects another problem: whose values should we teach? Given the rapidly intensifying pluralism of society, it is not easy to achieve the moral consensus indispensable for character education in the public schools.

Issues of equality and equity in educational opportunities

Education is generally conceived as a great equalizer which increases social mobility, as a means to lift people out of poverty. But the rhetoric for education as a universal human right (through laws, documents of governmental organizations, declarations, and so on) appears to display 'innocence' and 'ignorance' about the dimensions of the hot issues of inequality and injustice. Politicians advocate for education as a human right and try to persuade the public that they know their obligations and have them in the first place. But one thing seems to be missing from this account: they do not perform the right actions.⁴⁵ There is a long distance from vision to action. If theory is not translated into practice, then such claims become symbolic and empty rhetoric.

Broadly speaking, educational equality is an ideal that by definition elicits applause. Irina Bokova, Director-General of UNESCO, has stated: "There is no more powerful transformative force than education –to promote human rights and dignity, to eradicate poverty and deepen sustainability, to build a better future for all, founded on equal rights and social justice, respect for cultural diversity, and international solidarity and shared responsibility, all of which are fundamental aspects of our common humanity."⁴⁶ Despite this idealistic conception of education as a human right, as also presented through myriads ambitious and magniloquent declarations, there are enormous disadvantages that persist. There are still millions of children out of school, with many more having sporadic attendance and dropping out before completion. It is not to say that no progress has occurred with respect to school access: globally 9 out of 10 children of primary-school age today are in school, compared to 5 out of 10

⁴⁵ Today, a number of high-level organizations and institutions actively promote high-quality open educational resources (OER). However, can this kind of resources play a central role in achieving educational justice in the world? For Thomas Richter and Maggie McPherson (2012), the sheer existence and availability of free educational resources is unlikely to overcome the barriers in order to reduce the educational gap between Western industrialized and developing countries. The authors write that "[i]f we want to achieve and/or foster educational justice in the world by producing and providing OER, we will need to do more than merely making such learning materials available." (p. 202). In this token, they highlight the necessity to turn contextually usable information into adaptable educational resources, in a way that could raise the value of OER.

⁴⁶ Retrieved February 24, 2016 from <<http://www.ascd.org/ASCD/pdf/siteASCD/policy/ASCD-EI-Quality-Education-Statement.pdf>>.

fifty years ago. But massive inequality and enormous disparities still exist across and within many countries between the richest and poorest, between boys and girls, and between urban and rural children. There is a “100- year gap”, say Perlman Robinson and Winthrop (2016, pp. 22-25), between educational outcomes in developed and developing countries.

Research estimates that more than one-third of children around the world lack basic reading and mathematic skills –including 130 million children who are in school (Unesco Institute of Statistics, 2015; McCowan, 2010, p. 509). According to a recent UNICEF analysis⁴⁷, millions of children living in crisis zones and conflict areas –in countries such as Niger, Sudan, and Afghanistan– have lost their safety, homes, and family members, missing out on their education. These children are much possible to grow up without the skills they need to rebuild their communities once the conflict is over. For these children, schools seem to be something more than a place of learning as they can help children cope with the trauma they have experienced and can protect them from physical danger around them. Nowadays, the Syrian conflict situation has incalculably cost to children and their families. The war has also created a substantial population of children exposed to armed violence who are out of school or have sporadic attendance.

As for 2013, 124 million children and young adolescents were still out of school. More than 50% of them were girls while a disproportionate number was from disadvantaged groups, such as children with disabilities, street and working children, and those living in shantytowns or remote rural areas (Unesco Institute of Statistics, 2015).⁴⁸ For Janine Eldred (2014), the

⁴⁷ See at <http://www.unicef.org/media/media_89782.html>.

⁴⁸ In a 2015 report produced by the UNESCO Institute for Statistics and UNICEF, it is highlighted that poverty plays a crucial role in keeping children out of school. Millions of children and adolescents remain “invisible”, hard-to-reach, and unsupported due to: a) conflict-affected countries, b) gender discrimination, c) child labour, d) language barrier, and e) disabilities. The title of this report “Fixing the Broken Promise of Education for All - Findings from the Global Initiative on Out-of-School Children” is indicative for its content: “Despite every effort and the impressive progress made on educational access in some countries and regions, the world as a whole has broken a fundamental promise to children: that each and every one of them would be able to complete primary education by 2015. That promise seemed realistic and achievable when it formed part of the Education for All goals and Millennium Development Goals. Yet the world has failed to deliver, leaving 58 million children and 63 million adolescents out of school and unable to reach their full potential” (UNESCO Institute for Statistics and UNICEF, 2015, p. 101).

data on women is probably much worse than is broadly suggested. In the *Compare* Forum “Women’s right to learning and literacy”, she articulates that behind the data “are stories of individuals, families, communities and countries less well equipped to engage with the demands of life in the twenty-first century. Women, who form the largest group of people with no or low literacy skills, are often marginalised from influence and decision-making, are unable to develop and fulfill personal potential, are less well-equipped to manage their own health and that of their families, and find themselves trapped in traditional caring, dependent roles.” (p. 655). Meanwhile, ‘old’ structures of inequality take on new forms, and new kinds of marginalization arise (see Pless, 2014, p. 239).

Throughout most of history, only the wealthy have been able to afford an education geared to the individual learner. For the rest of people, education has remained a mass affair, with standard curricula, pedagogy, and assessments (Gardner, 2009). But, for many decades, teaching everyone in similar ways at school seemed democratic. Yet the truth is that the method of mass education was adopted just because it reduced costs, time and energy –all important values in an era of industry (Parsons & Beauchamp, 2012, p. 159). With this in mind, it becomes easier to reflect on and dispel the myth of education as a path to address the issue of social inequalities: whilst education can operate as a mechanism with the potential to offset social disadvantage it is clear that it can also act to reproduce, exacerbate or reinforce them; schools, rather than providing equal chances to all students, reproduce existing inequalities in societies (Mills et al., 2016; Schmidt et al., 2015; Francis & Mills, 2012; Collins, 2009; Machin, 2006).⁴⁹ Considering our inability to transcend the social stratifying effects of schooling, Rancière (1991, 2004 as cited in Tarc, 2013) notices that the dominant conceptualization of schooling is founded on the inherent inequality of intelligence of human beings and that processes of schooling can only widen

In this report, it is clearly stated that many governments cannot address the problem of children excluded from education. So, the directors of the two organizations call for help donors (private, investments of philanthropies or business sponsors), non-governmental organizations, civil society and communities to bring both financial and human resources to the places and the children with the greatest needs.

⁴⁹ In the case of Greece, Argyris Kyridis and his co-researchers (2011) state that despite the formal adoption of educational equality, the educational inequalities are extended causing exclusions of wider social categories while the gap between privileged and not privileged people continues to exist.

inequality. This view dispel the myth of school as ‘great equalizer’ –an idea located in Enlightenment tradition and in many versions of ‘progressive’ education. Heckman (2011) writes:

Educational equity is often seen as a social movement to bring equal educational opportunities to disadvantaged populations, as well as to equalize educational achievement across a wide range of people with different backgrounds, skills, abilities, and family resources. [...] Achieving educational equity starts by recognizing that nothing is equal and everything is dynamic. (p. 35)

Another persistent problem is that policy makers address the school and society problems in isolation, although they are clearly associated. In their political agenda, school success is defined simply in terms of students’ scores. This is very convenient for them. It serves as an excuse for the lack of attention they pay to the multiple factors that influence student performance –including the impact of poverty, family and community resources, school organization, and policies about housing, health care, and early childhood services. This aspect is emphasized in a 2016 report published by the National Education Policy Center. The authors (Cochran-Smith et al., 2016) write:

When policies work from a thin equity perspective, the assumption is that school factors, particularly teachers, are the major source of educational inequality and that access to good teachers is the solution to the equity problem. This viewpoint ignores the fact that teachers account for a relatively limited portion of the overall variance in student achievement, and it does not acknowledge that inequality is rooted in and sustained by much larger, longstanding, and systemic societal inequalities. In contrast, a strong equity perspective acknowledges the multiple in- and out-of-school factors that influence student achievement as well as the complex and intersecting historical, economic, social, institutional, and political systems that create inequalities in access to teacher quality in the first place. A strong equity perspective assumes that teachers and schools alone cannot achieve equity; rather, it requires educators working with policymakers and others in larger social movements to challenge the intersecting systems of inequality in schools and society that produce and reproduce inequity. (p. 4)

So the question is: can school compensate for demographics and socioeconomic differences? Can it display a commitment to the ideal of meritocracy? Poverty, as a lived experience, is not only about lack of money. It is about lack of education which, in turn, inhibits life chances, earning opportunities, and economic security. Socioeconomic deprivation (e.g., poverty, hardship, insecurity, adverse health conditions, child maltreatment, single-parent households, compelled mobility, isolation, not adequate shelter) is such determinant factor for success; it creates disparities in school readiness and academic progress that persist or widen over the course of childhood. Far too many disadvantaged students around the world today just face the same problems as decades ago; they are entrapped in a vicious cycle of poor performance that leads to more lower scores and further disengagement from school (OECD, 2016; Ziol-Guest & Lee, 2016; Reeves et al., 2016; Rice, 2015; Fantuzzo et al., 2014). Blankstein and Noguera (2016) write that the ideal of meritocracy is undermined by the fact that those with inherited wealth and privilege still maintain considerable advantage over others. According to Catherine Chittleborough and her colleagues (2014), “children of low socioeconomic position are 2.3 times more likely than children of high socio-economic position to have a poor educational outcome at ages 15-16” (p. 2256). A sad but true fact is that not every child gets the support she/he needs at school. Too many children, families, and communities, especially those facing adversity, are not being adequately served by existing policies and programs. Once again, we face the problem of educational policies in terms of chances provided to students to reduce disparities and could eventually lead youths to experience success.

In many aspects, while schooling tends to be held up by governments as a panacea for addressing social inequality, it actually functions to formalize, certify, and entrench it (Francis & Mills, 2012, p. 257). Norton Grubb and Marvin Lazerson (2004) introduce the term “Education Gospel” to describe the groundless faith-belief that social, economic, civic, and moral problems can be solved through schooling. The message underlying the belief system of the “Education Gospel” is that economic success and professional status depend on how long someone stays in school. But school cannot succeed at its mission of creating literate citizens without collective responsibility, without social policies which target to reduce unemployment, to alleviate poverty, to narrow the distribution of earnings, and to end racial differences (Lazerson, 2005).

There is a growing body of research showing that what is known as the income-achievement gap across socioeconomic groups emerges early and tends to persist or to widen between disadvantaged and advantaged children as they move through the Grade levels and into adulthood (Reeves et al., 2016; Hair et al., 2015; Chittleborough et al., 2014; Duncan et al., 2014; Sawhill & Karpilow, 2014; Judge, 2013; Feister, 2013; Dailey et al., 2010; Burger, 2010; Berliner, 2009; Loeb & Bassok, 2007; Karoly et al., 2005; Lara-Cinisomo et al., 2004). Moreover, the achievement gap –which is so often discussed in terms of high school graduation or 3rd Grade reading achievement– does not start in the class; it opens up even before children go to school; it begins in infancy, within the family (see Banerjee, 2016; Coulton et al., 2016; Morgan et al., 2016; Murphey & Cooper, 2015; Rice, 2015; Nagaoka et al. 2015; Heckman, 2014; Feister, 2013; Francis & Mills, 2012; O’Brien, 2008; Rathbun & West, 2004); it starts well before birth.

Poverty turns out to have enormous consequences for academic progress; it is the greatest threat to a child’s well-being. It shapes children’s brain in a way that diminishes their chances of a better life (poor language skills, difficulties in emotion regulation and in memory development, chronic stress, lower achievement and fewer options in life) (Noble, 2014; Farah et al., 2008). A closer examination of the theme “The neuroscience of poverty” can shed some light on this matter. Developmental psychologists and neuroscientists investigate whether growing up poor shapes someone’s brain in ways that might also shape her/his life (see Center on the Developing Child at Harvard University, 2016; Katsnelson, 2015). They emphasize different ways that poverty may influence children’s development and can impede students’ ability to learn, and to ultimately succeed. They also suggest that poverty that a child experiences in her/his early years may be particularly harmful; the list of negative outcomes associated with poverty is long (Hair et al., 2015; Duncan et al., 2014; Willingham, 2012; Panksepp & Biven, 2012).

Recent research advances in neuroscience suggest that poverty-related gaps in academic achievement are associated with differences in brain structure and function (Blair and Raver 2014; see also Allen & Kelly, 2015; Katsnelson, 2015; Mackey, et al., 2015; Noble, 2014) and that “low SES environments influence the rate of human infant brain development” (Hanson, et al., 2015). Socioeconomic disparities may lead to differences in the environment a child grows which in turn has “cascading effects on the development of brain systems that support critical neurocognitive functions

such as language, memory, and self-regulation” (Noble, 2014, p. 8). Nicole Hair and co-researchers (2015) found evidence that poverty is tied to structural differences in several areas of the brain associated with school readiness skills. Their study reports on patterns that persist to adulthood, contributing to lifetime-reduced occupational attainment. The results suggest that the longer children live in poverty, the greater their academic deficits. And when poverty interacts with poor education experiences they jointly constitute key sources of inequality.

The findings of such studies have important implications for education. They demonstrate the value of early educational programs, especially in disadvantaged communities, in mitigating the profoundly negative effects of early, adverse experiences (Ansari, 2014, p. 1708). However, there is a need for escalated interventions that will produce far larger effects than existing efforts on the lives of children and families experiencing adversity (Center on the Developing Child at Harvard University, 2014).

There is a common argument that wealthy families have more money to invest on their children. For Willingham (2012), a useful way to perceive the impact of wealth is that it provides access to opportunities (p. 34). Affluent parents are less dependent on school because they are in position to provide their children with a variety of cultural experiences, supplemental learning opportunities, and additional support if needed (see Rice, 2015; Schmidt et al., 2015). For example, they can afford extracurricular activities (e.g., chess club, science centers, museum visits, soccer) which have been found to promote important non-cognitive skills (e.g., teamwork, grit) and shown to be no less important than test scores for predicting educational attainment and accumulated earnings many years later (see Blankstein & Noguera, 2016; Snellman et al., 2015; Baran et al., 2013). Most significant is the fact that every additional year children spend in an ‘advantaged neighborhood’ (better schools, fewer violent crimes, and a greater share of two-parent households) might improve their chances of success. Conversely, growing up in ‘high need’ neighborhoods has cumulatively negative effects (see OECD, 2016; Reeves et al., 2016; Banerjee, 2016; Coulton et al., 2016; Murphey & Cooper 2015; Compton-Lilly, 2014; Karoly et al., 2005; Cohen, 2000).

In a 2013 report entitled *Too Young to Fail*, in the UK, the authors note that poorer children as young as seven are more likely to fall behind in critical skills such as reading and are on course for poorer life chances. They

also argue that evidence shows that 80% of the difference in how well children do in school can be attributed to what happens ‘outside the school gates’ (see Brundrett, 2014). Baran and colleagues (2013) note that school structures reflect the inequalities that exist outside their doors. Growing up in home environments that fail to provide adequate support –disadvantaged family, neighborhood or community, immigrant status– constrains what a person can achieve both in school and life⁵⁰ (Leseman & Slot, 2014; Bailey & Dynarski, 2011; Berliner, 2009; Machin, 2006; Lara-Cinisomo et al., 2004; Lee & Burkam, 2002; Barnett, 2001; Cohen, 2000). Tarc (2013) reflects on this condition by asserting that the more profound truth is that the better off people are, the more and better education they (can) have. So, it is clear enough that demography is influential. We have to admit that school cannot fully eliminate all educational inequalities as most of them have their origins to family. Following this line of thinking, Pless (2014) detects the following tendency: students who come from families with no tradition of education (parents with limited educational background) are at a much greater risk of not attaining success in the educational system than young people who come from families with a strong educational tradition (p. 237). According to a 2016 OECD report, the effects of socio-economic background (e.g., family SES, immigration and linguistic background) on student achievement are well-known, and specific economic and cultural mechanisms link students’ background and achievement. It is also noted:

Students whose parents have higher levels of education and more prestigious and better-paid jobs benefit from accessing a wider range of financial (e.g., private tutoring, computers, books), cultural (e.g., extended vocabulary, time-management skills), and social (e.g., role models and networks) resources that make it easier for them to succeed in school, compared with students from families with lower levels of education or from families that are affected by chronic unemployment, low-paid jobs or poverty. (p. 63)

⁵⁰ Working-class students are aware that a degree is not enough and they try harder than their middle-class peers to ‘prove themselves’ in order to secure a top job. While there is evidence that more students from disadvantaged backgrounds enter Higher Education institutions than ever before, the composition of the Higher Education student body is still dominated by the middle classes. In the meantime, the focus on access alone has resulted in the assumption of Higher Education as the key to equality, ignoring the inequality in chances of securing jobs –and indeed specific types of top jobs (Abrahams, 2016).

Another salient issue is that poor academic skills can trigger a set of beliefs and behaviors (negative self-perception, low self-esteem) which may generate further behavioral and learning problems, and, more importantly, may lead to negative consequences later in life. The psychological implications for children who are daily reminded of their 'failure' further undermines their life-chances (Francis & Mills, 2012, p. 257; for literature review see Banerjee, 2016). For Keith Herman and co-researchers (2008) "the most enduring consequence of low academic skills is likely not just how children come to view themselves as students but rather how they come to view themselves as social beings." (p. 408).

So, the picture is far larger. It seems that the achievement gap reflects other deeper gaps. Irvine (2010, in Milner, 2013, p. 22) argues that our attention should be placed on closing not only the achievement gap but other gaps as well that exist in education and society. These other gaps include: the teacher quality gap; the teacher training gap; the challenging curriculum gap; the school funding gap; the digital divide gap; the wealth and income gap; the employment opportunity gap; the affordable housing gap; the health care gap; the nutrition gap; the school integration gap; and the quality childcare gap. Moreover, the race gaps are large enough to overcome for those who try to find and keep a good job (Reeves et al., 2016). Too many gaps! Is it possible to cope with all of them?

For Marvin Lazerson (2005), education is not the answer to all our aspirations; we cannot diminish the enormous inequalities in our society by attempting to improve education. The fact is that we cannot fix schools without fixing inequality, and we cannot fix inequality without fixing schools. Changing schools alone is therefore unlikely to fully resolve disparities in educational outcomes without additional attention to the larger structural and contextual factors that affect children's readiness to learn and performance inside school. This logic is also presented in Michael Cole's (2010) philosophical thinking. For him, efforts for school reform are largely restricted to school improvement within the same system of social structures of inequality. That is why they simply succeed to perpetuate the existing patterns of social and economic order. Cole writes: "As in antiquity, literacy and numeracy are modes of social control and accumulation of wealth and power. Failure and exclusion have always been a constitutive feature of formal schooling." (p. 464).

Most of the above aspects are also central to the philosophical thinking of Martha Nussbaum (2011) who deals, among many others critical

issues, with social justice, poverty, gender, disability, and education. Investigating the idea of *Capability Approach*, she holds that the core question to ask is “What is each person able to do and to be?” This approach “takes each person as an end, asking not just about the total or average well-being but about the opportunities available to each person” (p. 18), focusing on choice, freedom, and dignity as well. For Nussbaum, the implementation of justice needs a broader perspective. A good life worthy of human dignity requires the protection of ten central capabilities: life; bodily health; bodily integrity; senses (imagination and thought); emotions; practical reason; affiliation; other species; play; and control over one’s environment (pp. 33-34). Any policy that aims at putting an end to poverty, injustice, and inequalities must fulfill the requirements of these ten basic capabilities. The school system should provide students with skills in order to control their future, take responsibility for their actions, and pursue meaningful life paths. But above all, it should support social justice for disadvantaged people in education –as many people live below the threshold required by the CA from the very beginning of their lives. Nevertheless, Nussbaum admits that the *Capability Approach* depends on altruism. Professor of Economics James Heckman (2014) who endorses Nussbaum’s ideas, clarifies that “Creating Capabilities” is “not a strategy for shaping people to behave in any particular way, but to shape their possibilities, allow them to choose who they can be, and provide them the maximum flexibility in responding to life challenges. People with larger capability sets have more freedom to shape their own lives. Those with fewer capabilities have more limited choices.”

Another major problem is that the mainstream schooling system has been built to create collectivities through primarily ‘oppressive’ practices; it is a system predicated upon conformity, hierarchy, and authoritarian structures. School ‘teaches’ children certain cultural values and social life patterns through its climate and the imposed social interactions. In the competitive school environment, social interactions are likely to be negative rather than positive. As emphasized by Kyridis and his co-authors (2015), formal education, with its bureaucratic intolerances, cannot be effective and cannot set social goals, trapped as it is in its pedantic, severe and controlling duty. In this context, formal school mechanisms do not seem to be ideal for socio-educational actions since they embody obligation, inelasticity and non-creativity. For the authors, we need more holistic educational activities, such as those that social pedagogy proposes. Similarly, Becky Francis and

Martin Mills (2012) set out their argument regarding the injurious practices perpetrated by the existing school model, stating that school norm functions as an instrument of power by imposing homogeneity, but simultaneously producing distinction (p. 258). They also suggest that the current schooling system is inherently damaging: damaging both in its institutional impact on children/young people and teachers as individuals, and in its fundamental perpetuation of social inequality. This system actually exacerbates practices of exclusion and bullying amongst pupils.⁵¹

Social pedagogy incorporates all the characteristics missing from schools. It pays attention to the societal conditions of education and human development; it establishes the idea of community-based education and highlights the importance of social responsibility; it conceptualizes education in terms of human well-being, focusing especially on the underprivileged, poor and oppressed, aiming to prevent social exclusion and advancing social inclusion. But major efforts must be undertaken if we want to take advantage of the dynamic of social pedagogy and especially its holistic approach to child development: we must act both within and outside the school system as Social pedagogy requires close work with community. Under this scenario, reforms must take place at all education levels and also beyond the school sphere: in society, communities and the state, with special emphasis on family education (see Kyridis et al., 2015).

This tendency is highlighted by several experts who recognize that the opportunity gap is grounded in a range of social and economic factors, and assert that efforts to address the persistent problem of educational inequalities require policy solutions that extend well beyond the school system, including a broader set of services. They propose a multi-modal approach based in understanding that educational disparities stem from, and are perpetuated by, structural societal inequalities (Perlman Robinson & Winthrop, 2016; Banerjee, 2016; Mills et al., 2016; Rice, 2015; Baran et al., 2013; Berliner, 2009; Machin, 2006).

⁵¹ Francis and Mills (2012) suggest that progressive schooling, along with student autonomy, has to be concerned with pedagogical practices that foreground a commitment to active citizenship and challenging various forms of oppression that limit such citizenship (p. 266). This point is supported by research conducted in democratic schools which has indicated that where students are educated within non-authoritarian structures and have greater involvement in decision-making this can reduce levels of violence in school environment (p. 260).

The simple truth is that school creates great advantages for some students and great disadvantages for others. It is also true that success in the early Grades does not guarantee success throughout the school years and beyond while failure in the early Grades is strongly associated to failure in later schooling (Slavin et al., 1994). Put differently, it is risky to assume that support and intervention in the earliest years guarantee considerable later success. Why? First of all, because students' progress is influenced by a complex set of factors, and there is no single formula that can ensure success. Secondly, we cannot ignore the fact that what does and does not happen outside the school comes into the school whether we like it or not. In the *Fatalism Cultural Model* (Baran et al., 2013) school disparities are an intractable problem and are inevitable because some children 'naturally' do better than others; some children are privileged as they came from rich literacy familial environments and live in better neighborhoods; some children have parents who provide them out-school activities (e.g., music lessons, sports, chess lessons); and some parents and communities choose to prioritize education more than others. Wilson and colleagues (2011) ascertain the difficulties in improving the academic performance of at-risk students and point out on two possible reasons: one is that academic performance has a large genetic basis and the other is that deficits that occur early in life are difficult or impossible to reverse. The authors maintain that both of these cases imply that improvement is almost impossible or, at least, requires heroic effort.

In this pessimistic consideration, it seems somehow utopian to improve or change the institution of schooling and to raise achievement for students of all demographics. But, in my opinion, there is hope. Although we have a long distance to go, we must not underestimate the power of prevention and well-timed intervention (i.e., high-quality pre-K programs, after-school programs, inclusive programs, additional instruction, compensatory education programs, ongoing support to staff and families).⁵²

⁵² Catherine Chittleborough and her co-researchers (2014), using observational data from a large British birth cohort study, addressed the issue of what would happen to population levels of, and socio-economic inequalities in, educational achievement if school readiness could be improved through effective interventions. Their research questions had as follows: Can we estimate the effects of improving school entry academic skills at age 5 on educational achievement at ages 15-16? How would this affect socioeconomic inequality in educational achievement? For them, targeted interventions may improve school entry academic skills on poor educational achievement and socio-economic inequality in

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

As researches indicate, almost any intervention has some positive effect on achievement (Hattie, 2012) and school can make some difference under certain situations. Although schools cannot accomplish everything, and it is not easy to ensure success for all students, it might be less difficult to prevent school failure for many of them. For many years, James Heckman and his colleagues have been synthesizing what is known from the fields of biology, human development, education, psychology, cognitive science, and economics (the impact of early investment on schooling and adult outcomes) and reached the following interesting conclusions (see Heckman, 2011, p. 32):

1. Inequality in early childhood experiences and learning produces inequality in ability, achievement, health, and adult success.
2. While important, cognitive abilities alone are not as powerful as a package of cognitive skills and social skills –defined as attentiveness, perseverance, impulse control, and sociability. In short, cognition and personality drive education and life success, with character (personality) development being an important and neglected factor.
3. Adverse impacts of genetic, parental, and environmental resources can be overturned through investments in quality early childhood education that provide children and their parents the resources they need to properly develop the cognitive and personality skills that create productivity.
4. Investment in early education for disadvantaged children from birth to age 5 helps reduce the achievement gap, reduce the need for special education, increase the likelihood of healthier lifestyles, lower the crime rate, and reduce overall social costs.

Thus, the ultimate goal is to make a difference, little or greater, in the lives of all students, regardless of gender, race, ethnicity, or family's socioeconomic status. And this goal is achievable, although with several constraints. The bad news is that, although the value and the effectiveness of the aforementioned options (inclusive programs, additional instruction and so on) is well documented, they are not promoted, in many occasions, because they are too expensive (high cost per student).

adolescent educational achievement. In particular, these interventions were found to reduce socioeconomic inequality in poor educational achievement between the least and most disadvantaged groups by 15.7%. Improving school entry academic skills of disadvantaged children was also estimated to reduce the proportion of children with poor educational outcomes at ages 15-16 by 4.5%.

In short, given the importance of school years for every student, greater attention on how to overcome educational inequalities is needed. We can help disadvantaged students, by intervening with appropriate, targeted policies and practices (e.g., extra support during regular school hours or after school, remedial, language or psycho-social support). In particular, it is much more effective to intervene during the early years targeting to reduce inequality, and promote social mobility. Investing on the foundation of school readiness from birth to age 5 –by addressing the inequity in the resources families have to properly develop their children’s potential, by providing early childhood education for disadvantaged children and by supplementing the family environments with educational resources– can possibly equalize some of the factors that contribute to achievement and personal success (Heckman, 2011, 2014). Identifying and providing early support for disadvantaged students –minority and/or immigrant students, students who speak a different language at home, socio-economically disadvantaged students– is not only a goal in its own right but also a way to improve an education system’s overall performance and equity (OECD, 2016). Besides, what is fair is also economically efficient (Heckman, 2014).

Summarizing, students have an array of needs which range from exposure to violence and poverty to social adjustment difficulties. These needs are not solely academic. Yet, they can significantly affect academic achievement. Given that the environment in which children spend their early years is crucial, and can cause disparities in child development and school readiness (Coulton et al., 2016), it is imperative to cogitate a broader definition of what equal education is all about. There is a major difference between equal and equitable. Equal is not always fair. It is not fair to require the same amount of knowledge, the same skills, the same destination for every individual. What works for one child may not be right for another for many different reasons.

Equality in education is achieved when students are all treated the same and have access to similar resources. Equity is achieved when all students receive the resources they need to be prepared for success after school, recognizing that some students require more support than others to get there. Equity is more than a guarantee that school doors are open to every child (Center for Public Education, 2016). If an educational system wants all children, irrespective of family background and individual characteristics, to have the same chance to achieve academic goals, it must not offer ‘equal opportunities’. It must offer personalized experiences for

every student to make the most of her/his skills. The notion of equity is related to the earlier discussion of poverty and disadvantage, and sets the goal for personalized learning –an option that will be discussed in a following unit. As emphasized by Alan Blankstein and Pedro Noguera (2016), equity is not about treating all children the same, regardless of who they are or their life circumstances. The advancement of school cannot be achieved or sustained unless the larger population, including the groups of most vulnerable, is allowed to share in the benefits. Societal progress is contingent upon expanding opportunities for all. However, scaling up such programs to the larger population while maintaining quality is a frequently cited concern (Noble, 2014).

Concluding, every child is unique and deserves safety, love, help, and chances to succeed, to accomplish in whatever field she/he is more capable. Therefore, schools must be ready to meet the individual physical and developmental needs of all children; to ensure that pupils feel valued at school and receive adequate academic and emotional support. Achieving success for all students is not equated with achieving the same results for all students (Office of Educational Research and Improvement, 1993, p. 29). And in a high-and-equal school system, there will be less room for inequality of opportunity since the educational outcome will be less dependent on background conditions (e.g., communities living in poverty, immigrant communities, refugees and asylum seekers communities, indigenous cultural minorities such as the Roma). In this perspective, a more equal distribution of education could improve the condition of otherwise excluded individuals (see Leseman & Slot, 2014; Meschi & Scervini, 2012), considering the cultural differences between home and school. School systems can be well-functioning only if they can minimize inequality of educational and life opportunities for children and youths.

Are there any ways for school to help students make the turnaround from a trajectory of failure to the one of success?

It is now well established that the early childhood years are critical for the acquisition of key skills in various domains (see Judge, 2013; Pugh, 2010; Neuman & Dickinson, 2001). Many of the inequalities that show up in school test results are already present when students enter formal schooling and they persist as students progress through school. It comes as no surprise,

says Heckman (2011), that early experiences determine at a significant level our future outcomes: “[...] endowments shape the trajectories of our lives. By nature and circumstance, endowments are unequal. [...] We can’t completely change that picture. But we can change some of it.” (p. 32). Under this prism, early intervention and prevention policies are a necessary part of addressing educational disadvantage and social inequalities (Perlman Robinson & Winthrop, 2016; Morgan et al., 2016; Howard, 2015; Sawhill & Karpilow, 2014; Chittleborough et al., 2014; Leseman & Slot, 2014).

The success of high performing countries such as Finland and Singapore⁵³ (and other Nordic and East Asian countries) in achieving greater equity is attributed mainly to early diagnosis and investment in effective strategies, including the employment of specialist teachers who take the main responsibility from the regular classroom teacher (OECD, 2016). Early diagnosis and prevention –from pre-natal care to early childhood programs– are key ingredients for addressing students’ educational problems before they gain momentum. They pave the road to meet special educational needs of each student, even the needs of very disadvantaged ones, under the condition that diagnostic test scores will not be used to categorize children, labeling them as ‘low-achievers’ and ‘high-achievers’ (Ravitch, 2013; Prasser & Tracey, 2013, p. 31, p. 42; Sahlberg, 2011; Duncan & Magnuson, 2011; Daily et al., 2010; Schweinhart et al., 2005; Ackerman & Barnett, 2005). The main tasks of prevention programming could be summarized as follows: school readiness for all children; best education for all, regardless of socio economic level or place of birth; social systems offering support to children and parents as well; the earlier the better; pro-acting is better than re-acting.

Research in personality psychology has begun to show how social environments turn genes on and off (epigenesis) shaping trait expression in countless ways (McAdams, 2015, pp. 225-226). In the last few years, several geneticists try to identify the genes that put children at risk for developing learning disabilities and they aspire using this data as an early-warning system. For them, this could prevent problems before it is too late,

⁵³ The success of Singapore’s educational system is its commitment to equity and meritocracy; it is the value, attention and resources it devotes to lower level achievers, not just high achievers. Academic underachievers are identified through screening tests at the start of 1st Grade. Meritocracy is promoted through “subject matter banding”, a practice which allows students to progress through their studies at their own pace and interest level (OECDa, 2010, p. 167).

before problems become so severe that they can no longer be ignored. The researchers foresee that such findings will have far-reaching ramifications in terms of diagnosis and prevention, and will lead to new practices that will be based on etiology rather than symptomatology. For them, "the value of early prediction is the opportunity it affords for prevention" (Kovas et al., 2007).

In common sense, the interest for the identification of such genes contradicts the importance of school and education. If we accept the genetic influence on school achievement as a fact, there is nothing that school could do. Everything is genetically determined. But, as it is illustrated in previous units, while there is evidence that individual differences in school achievement are due to genetic differences to a great extent (Shakeshaft et al., 2013), it is also well documented that the environment plays an important role in determining the ultimate phenotypes of an individual and contributes to differences in school performance. Thus, it seems reasonable to expect that such performance profile differences might be most susceptible to intervention. School processes provide the ideal basis for the dynamic interplay of genes and environments (Shakeshaft et al., 2013; Haworth et al., 2011; Kovas et al., 2007; Pigliucci, 2001).

It has been argued that policies and strategies that target the disadvantaged children to be effective should focus on fostering non-cognitive skills (Moore et al., 2015; Cunha et al., 2010). Recently, a remarkable variety of programs is designed and implemented in schools in order to help students to be self-motivated and more confident about their learning capacities; manage their stress; handle challenging situations and persist in the face of challenges; facilitate school adjustment and school engagement; promote self-regulation skills; encourage positive relationships with peers; develop care and empathy in their communication with others; manage their emotions; and improve academic performance and reach their potential. These programs go beyond curricula. They must begin even before pre-kindergarten, with the home environment and direct services to the child and as well to the family (see Murphey & Cooper 2015; Howard, 2015; Noble, 2014; Ródenas et al., 2014). Features of such programs include, among others, well-prepared teachers; professional development for educators and caregivers; small class sizes (5-6 children); weekly home visits; and training, and services that engage and support parents. Their ultimate goal is to promote students' well-being and make children and youths feel safe, valued, happy, and self-confident. These programs adopt a

holistic approach to educating the whole child and they are especially important for students who do not have family support. Most of them are pre-K and kindergarten programs, SEL programs and Character Education Programs.

The SEL movement stems from scientific research on emotional intelligence which was popularized by Daniel Goleman (1995). Targeted SEL interventions programs are designed to create learning environments that meet the developmental needs of students, prevent aggressive behavior, and both improve the social-emotional attributes of classrooms and facilitate students' personal, social-emotional and academic well-being (Brackett & Rivers, 2014; Panksepp & Biven, 2012). Flavio Cunha and his co-researchers (2006) report that the most effective adolescent interventions target personality traits. James Heckman and Tim Kautz (2012) hold that intervention programs that enhance soft skills have an important place in an effective portfolio of public policies.

Research has shown that we can teach children to employ strategies in order to understand and manage their emotions (emotional intelligence) and set goals, with measurable benefits for academic achievement (Duckworth, 2016). As environment matters greatly in a child's development, we can intervene and help children succeed in life (Dodge et al., 2015). As it is earlier reported, personality traits are not identical to behaviors. Certainly, traits impose behaviors. But traits are relatively enduring while behaviors are context-dependent. That is the reason why people can act 'out of character': because of environmental influences. While shifts in behaviors may have little or no impact on long term personality trait change (Roberts, 2009), they are still very important for someone's life. So, creating an environment that does not permit a certain behavior to occur through an interventional program –focusing not on personality traits but on special behaviors– we can expect promising results.

Many studies document the positive effects of intervention strategies to students with special educational needs and behavioral or emotional problems. In particular, they confirm that high-quality intensive pre-K and kindergarten programs have positive impact (greater academic achievement, cognitive development, school completion) on disadvantaged children, prevent problems, and reduce the negative effects of economical and learning disparities and of family risk factors. Participation in such programs has shown promising gains and may narrow significantly the gap between advantaged and disadvantaged children (Leseman & Slot, 2014;

Chittleborough et al., 2014; Judge, 2013; Sawhill & Karpilow, 2014; Barnett, 2011; Reynolds et al., 2011; Burger, 2010; Camilli et al., 2010; Yazejian & Bryant, 2010; Reynolds & Temple, 2008; Barnett et al., 2007; Ackerman & Barnett, 2005; Schweinhart et al., 2005; Magnuson et al., 2004; Reynolds et al., 2001).⁵⁴ Cognitive neuroscientists, from their side, increasingly note that as brain plasticity and the ability to change decrease over time, getting things right the first time produces better outcomes and is less costly, to society and individuals, than trying to fix them later (Center on the Developing Child at Harvard University, 2014).

There are some early-childhood intervention programs that have shown results in substantial long-term benefits. *Early Head Start* (EHS), a federally funded family-centered, early childhood program for infants and toddlers in families with high needs, constitutes an evidence-based model. Children who participated in EHS showed statistically significant, positive impacts on standardized measures of cognitive and language development at age 3, as compared with a control group of children who did not participate (Murphey & Cooper, 2015).⁵⁵ In the study of Niles, Reynolds and Nagasawa (2006) the findings suggest that early childhood programs can, in addition to cognitive advantages, provide a positive social and emotional benefit to participants, especially in the shorter term (social adjustment in school, assertive social, task orientation, frustration tolerance, and peer social skills).

The *Responsive Classroom* (RC) approach is a widely used professional development intervention comprised of a set of practical teaching strategies designed to support children's social, academic, and self-control skills. The findings of a recent longitudinal research study

⁵⁴ Greg Duncan (2011) expresses his objections to the results of the studies which correlate early socio-emotional skills with later achievement. For him, these studies rarely ask whether these correlations can be attributed to the fact that children entering school with behavior problems also often lack foundational literacy and numeracy skills as well. In addition, most of them fail to estimate family and child background factors and concurrent achievement. Therefore, they do not provide an accurate picture of children's actual prospects for succeeding in school.

⁵⁵ *Head Start*, a comprehensive intervention program, has embodied a focus on the whole child, with components addressing physical and mental health, nutrition, social, emotional, and cognitive development, education, services for children's families, and community and parental involvement. From its inception in 1965, the founders of *Head Start* believed that preparing children who live in poverty for school requires meeting all of their needs, not just focusing on their cognitive skills (Zigler & Bishop-Josef, 2006).

demonstrate the positive impact of the RC approach. The researchers randomized elementary schools to intervention versus control conditions and followed a cohort of students and their teachers from the end of 2nd Grade through 5th Grade. The results showed that teachers' use of RC practices was associated with reading and math achievement outcomes which appeared to be stronger for students who were initially low achieving than for others. Training in the RC approach produces large changes in teacher practices and can improve classroom climate (Rimm-Kaufman et al., 2014).

Programs focusing on self-regulation improvement in children are expected to have long-term benefits, with the effects being more notable for the most disadvantaged kids. Blair and Raver developed (over 18 years), implemented, and evaluated the impact of an innovative program known as *Tools of the Mind* designed to promote academic learning and ability by broadly focusing on multiple aspects of self-regulation including executive functions –such as self-control, attention, planning, and reasoning– and the regulation of stress response physiology. Their results suggest that a focus on executive functions and associated aspects of self-regulation in early elementary education has positive effects on social and emotional competence, reasoning ability, the control of attention, and improvements in reading, vocabulary, and mathematics at the end of kindergarten that increased into the 1st Grade. The authors summarize that the *Tools of the Mind* program can lead to academic gains as well as gains in a key set of indicators that reflect neurobiological and academic benefit (Blair & Raver, 2014). Other studies confirmed these results, noting also benefits in classroom behavior, working memory, and cognitive flexibility (Barnett et al., 2008; Bodrova & Leong, 2007). Thus, the adoption of readily implementable programs embodying a focus on self-regulation development in kindergarten can be expected to reduce or eliminate the school readiness gap associated with poverty while boosting early achievement for all children.

Another multicomponent developmental science-based program, targeted towards early-starting conduct-problem children, is the *Fast Track* prevention and intervention project. This program began in 1991 to test the hypothesis that comprehensive intervention that addresses multiple components of antisocial development and is implemented continuously with early starters and their families across 10 years of childhood (1st Grade through 10th Grade) will have an enduring impact on adult psychopathology.

The program blended parent behavior-management training, child social-cognitive skills training, peer coaching and mentoring, academic skills tutoring, and classroom social-ecology change (Dodge et al., 2015; see also Sorensen & Dodge, 2016).

The *Fast Track* team assessed outcomes at age 25, a full 8 years after the intervention program had ended. According to their results, individuals assigned to intervention at age 6 displayed lower prevalence of externalizing problems, internalizing problems, substance use problems, fewer violent and drug crime convictions, less risky sexual behavior, and less aggressive relationships bad parenting, as well as higher well-being. Although it is not found that intervention had an impact on education or employment, the analysis confirms that such interventions can reduce delinquency, arrests, and other behavioral problems and increase the overall well-being and happiness scores (Sorensen & Dodge, 2016; Dodge et al., 2015).

This short presentation of selected intervention programs will close with the *RULER*, a multi-year, structured program that combines an emotional literacy curriculum for students with comprehensive professional development for school leaders, teachers, and support staff, as well as training for families. The *RULER* acronym represents each of the five interrelated emotional literacy skills: recognizing emotion (in the self and others); understanding emotion (understanding the causes and consequences of emotions); labeling emotion (making connections between an emotional experience and emotion words, with an accurate and diverse 'feelings' vocabulary); expressing emotion; and regulating emotion (in ways that promote both intra- and interpersonal growth). These skills are considered as important for effective teaching and learning, decision making, relationship quality, and both health and well-being for children and adults (Brackett & Rivers, 2014).

After evaluation by independent observers, *RULER* schools as compared to those which used the standard curriculum were rated as having higher degrees of warmth and connectedness between teachers and students, more autonomy and ethical leadership, less bullying among students, and teachers who focused more on students' interests and motivations. Classrooms in *RULER* schools exhibited greater emotional support, better classroom organization, and more instructional support at the end of the second year of program delivery (Brackett & Rivers, 2014; Hagelskamp et al., 2013).

In general, effective SEL and Character Education Programs are based on the axioms that academic and social-emotional learning are

intimately interconnected; children's ability to manage their behavior and emotions can predict their academic performance; schools and families should share the job of nurturing character and teaching good manners. These intervention programs represent a promising approach to enhance children's healthy development and success in school and life. A growing body of findings from correlational (meta-analysis) and longitudinal studies document that these programs yield significant positive effects on targeted behaviors, competencies, and attitudes about school, on classroom climate, and contribute to students' social-emotional development and academic achievement. These studies enforce the connections between non-cognitive variables and academic performance (see Lewis et al., 2015; McCormick et al., 2015; Schmitt et al., 2015; Adams, 2013; Duckworth & Carlson, 2013; Thapa et al., 2013; Pellegrino & Hilton, 2012; Brackett et al., 2012; Brennan et al., 2012; Durlak et al., 2011; Snyder et al., 2010; Cunha et al., 2010; Guerra & Bradshaw, 2008; Bodrova & Leong, 2007; Duncan et al., 2007; Niles et al., 2006; Bear & Watkins, 2006; Durlak & Weissberg, 2005; Murray & Malmgren, 2005; Blum & Libbey, 2004; Cleary & Zimmerman, 2004; Izard et al., 2004; Zins et al., 2004; Gumora & Arsenio, 2002; Raver, 2002; Ialongo et al., 2001; Izard et al., 2001; Wang et al., 1997). There are also programs which give particular attention to the prevention of bullying and violence at school. Many of these programs involve parents as intervention research consistently highlights the importance of parents in shaping positive outcomes for youth (see Rivara & Le Menestrel, 2016; Ródenas et al., 2014). Finally, there are alternative educational programs and alternative schools which have written their own success story in transforming negative schooling to positive educational experiences (mostly for students who have left school and wish to come back). The magic words for such a success are "care", "respect", "flexibility", "choice" and "meaningful and challenging learning tasks" in a supportive environment (Mills et al., 2016; Bascia & Maton, 2016).

Still there are some disagreements about the evaluation and the appreciable effectiveness and impact of these programs. For instance, self-report and teacher-report questionnaires have serious limitations for such evaluations and could be biased by a non-shared frame of reference (Duckworth & Yeager, 2015). Even positive research findings are often called into question because of weak study design, small or restricted samples, evaluation design not strong enough to produce trustworthy evidence, and results that may not be generalizable (Howard, 2015). It is also worth keeping

in mind that the studies reporting positive effects of interventional programs are more likely to be published than the studies with mixed or null results. Apart from this, we need more data to clearly understand what works (and does not) for whom, when, in what context(s), and why; to understand who benefits the most from an intervention and who benefits the least or not at all, and why we get these different results. This knowledge requires, among others, extensive research on the effectiveness of the programs and an evaluation plan that may lead to replication and scaling (Center on the Developing Child at Harvard University, 2016, pp. 35-36).

In addition, some critics view the positive effects of such programs with a dose of skepticism because the early benefits in terms of school achievement may eventually fade. For several programs, the improved outcomes for participants are not large enough to fully compensate for the disadvantages they face. That is, the programs typically do not fully close the gap between the disadvantaged children they serve and their more-advantaged peers (Karoly et al., 2005, p. xix). Meghan McCormick and her co-researchers (2015) argue that little is known about how SEL programs work because most evaluations only examine immediate effects, measured in the short-term post-intervention. They also note the lack of research testing the variation in the efficacy of SEL interventional programs. As such, it may be that longer term follow-up study is needed to identify and test whether and how interventions improve proximal outcomes, which in turn link to more distal outcomes, and to understand the explanatory mechanisms linking SEL intervention impacts not just on students outcomes, but on the classroom settings in which they are embedded.

Another problem is that these programs, given time constraints and competing demands, are often squeezed out at the secondary level to make room for more intense academics (Tooley & Bornfreund, 2014). It also appears that even the best interventional programs cannot be effective if they are not followed by subsequent action steps. If not, the positive effects of intervention on children's achievement can diminish over time, a finding known as the "fade-out" effect (Bailey et al., 2014). Isabel Sawhill and Quentin Karpilow (2014) notice that early childhood intervention alone is not enough to improve outcomes for adults because its effects fade out over time. If we want to see larger and longer lasting effects we may have to intervene at several life stages, combining early childhood initiatives with interventions in elementary school, adolescence, and beyond (multiple interventions).

In brief, for the children with the greatest needs, the interventions to have long-term impacts and be effective are those that last for more than one school year. Lynn Karoly, Rebecca Kilburn, and Jill Cannon (2005) in their detailed review of nearly 40 early childhood intervention programs infer that such programs can have a statistically significant effect on a range of outcomes, both early in children's school years and later into adolescence and adulthood. Nevertheless, they articulate:

Although the logic of early childhood intervention is compelling, the question is whether there is evidence that intervention programs can improve the outcomes of participants and, if so, how much of a difference such programs make. (p. 89) [...] The size of the effects tend to be more modest for cognitive and behavioral measures, and, as noted, the favorable gains in these measures often shrink in size over time. (p. 129)

Furthermore, there is a dispute among researchers regarding the context of implementation for this kind of programs. Many researchers and theorists take the position that these programs must be an integral part of school life and they must be embedded in every class procedure (Brackett & Rivers, 2014; Hunter, 2012; Durlak et al., 2011; Anderson, 2000; Kohlberg, 1985; see also Tooley & Bornfreund, 2014). In that respect, teachers must be provided with the training and coaching necessary to best promote non-academic skills in their classrooms.

Finally, there is less consensus on which skills should be emphasized: Is it better to focus narrowly on specific social or emotional variables, such as preventing bullying, substance abuse, delinquency, or promoting character development? The integration of emotional literacy into existing curriculum presupposes the training of both students and adults (school leaders, teachers, family members)? (Brackett & Rivers, 2014). Do we have to prioritize social-emotional skills (e.g., cooperation, self-confidence, self-regulation) or is it requisite to equally emphasize academic-oriented performance skills (e.g., curiosity, persistence, attentiveness)?

With respect to the last question, Kohn (1994), in his analysis of relevant studies, uncovered several programs intended to help children develop self-esteem which failed to raise students' achievement. The *Head Start* program was also placed at the center of critique as research found that children who participated in this program failed to sustain their advantage once they moved to elementary school (Zigler & Bishop-Josef, 2006).

Camille Farrington and her co-authors drew on prior research to support this view: “there is little evidence that working directly on changing students’ grit or perseverance would be an effective lever for improving their academic performance. [...] all students are more likely to demonstrate perseverance if the school or classroom context helps them develop positive mindsets and effective learning strategies” (Farrington et al., 2012 as cited in Tooley & Bornfreund, 2014, p. 14).

However, there is also compelling evidence showing that the implementation of SEL programs have positive impact on students’ scores, especially on those who are low-achievers. Developing social-emotional skills, improving classroom climate, and cultivating quality relationships, all these can boost academic achievement (Rimm-Kaufman et al., 2014; Brackett & Rivers, 2014; Hagelskamp et al., 2013; Brackett et al., 2012).

Avowedly, both sides of this debate have strong arguments, but the truth, as always, is somewhere in the middle. Indeed, there is a tendency to evaluate intervention programs gathering data only from the cognitive domain (grades, IQ test scores), ignoring their comprehensive nature, and focusing on one narrow outcome (Zigler & Bishop-Josef, 2006).

Ultimately, for any intervention program to succeed, the designers must take into account the family’s needs and the community’s role. At first, given the size of the SES gap by the time children enter school, policy makers should carefully consider such factors in order for a program to be effective and sufficient as well. Secondly, targeting parenting may be an effective avenue of intervention, given that young children spend the vast majority of their time at home (Noble, 2014). It is equally important to ensure participation from the community from the beginning of the program (Perlman Robinson & Winthrop, 2016, p. 57). For Joseph Durlak and his co-authors (2011), interventions (school-based SEL programs) are “unlikely to have much practical utility or gain widespread acceptance unless they are effective under real-world conditions” (p. 407). Nevertheless, every intervention can have an effect size above zero which means it can claim to ‘work’ (Hattie, 2012).

All in all, we must not wait until a child is acting out and failing in school in order to intervene. Schools must find time and space to address all of these issues despite the intense pressures to only enhance academic performance. As Wexler (2006) claims, the proper kind of early intervention and early developmental experiences can change a child’s educational future. On the hand, it is obvious that we need prevention because later

remediation is harder, often ineffective, and more expensive in terms of both societal and individual effort. The implications for intervention beyond the early childhood years are clear. Change is certainly possible, but the ultimate results are not likely to be as good as they would have been if things had been done well in the beginning (Center on the Developing Child at Harvard University, 2016, p. 13; Heckman, 2014). That is, social pedagogical actions aiming to improve and change social and educational mechanisms, ought to operate not only through intervention, but also and primarily through prevention (see Kyridis et al., 2015, p. 37).

In my personal view, the main difficulties for organizing an effective interventional program arise from the fact that we can never be sure about the factors (out-of- and in-school factors) which might influence or cause an outcome and the degree of the factors which inference a child's development (predispositions and innate personality traits, environment and early experiences). Moreover, genetic studies call for caution when developing interventions. Why? Because we must take under account possible biological differences among students and specific mechanisms underlying its variation. Besides, and as it is found in this study, there is not just one factor that points to a student's success or failure. As Kovas and co-researchers (2015) put it "current educational policies are based on average effects and are designed to operate at the family-wide and class-wide levels. However, [...] many true effects may be masked within any class or home, and that individual-specific educational approaches are required." (p. 56).

Thus, identifying students in need, while it is important, is only the beginning. Why? Because problems, such as negative behavior and low self-confidence, will not automatically disappear by an interventional program. The most important step is to find out and examine the factors behind this outcome. For example, what influences their inattentiveness? It might be a learning disability, a family problem, a personal problem and so on. That step must be followed by policies that invest in the relationships among schools, families, and communities, and give priority to a holistic account of every student needs. Once we identify the students who are moving towards thresholds of poor performance and behavior as well, we have to decide about the appropriate intervention or prevention program. In any case, we must not wait until the student behavior or school difficulties escalate to the point of needing intensive intervention.

Individualization and personalized learning

It is widely recognized that people vary in the ways of acting and behaving, of thinking and feeling, of interacting with a situation or a person, of perceiving and gaining knowledge, of responding across messy situations, and so on. Some children are able to avoid stressful outcomes while others are profoundly affected from stressful circumstances. There are children who address the learning processes with openness and curiosity (academically motivated) and others who are more suspicious and less self-confident. Apart from this, some parents expose their child to a broad spectrum of experiences while some others offer her/him limited opportunities. Why, then, do most schools function as if all students were the same? Why does school system ignore the apparent fact that students of the same age or year level are not at similar stages in their capacities for learning? How should we approach this historic education challenge?

We commonly say that school must serve diverse students with varied abilities, that learning is a personal journey, and there is no single set of strategies appropriate to all learners. While many teachers are familiar to the theories of learning differences among individuals, in reality, the application of these theories is relatively shallow. A limited acknowledgment of individual learning differences leads to a continual search for the one 'best' method for students to learn and teachers to teach. And students who do not learn through the particular 'best approach' happens to often be labeled 'disabled' because they do not respond to that particular method (Guild & Garger, 1998).

So, personalizing learning is not a new concept. And it would be a mistake to say that teachers do not know that learning occurs only when children are met where they are, and student achievement gains from personalized learning exposure. Several of them are conscious of how important it is to recognize every children's instructional needs in order to adjust the level of scaffolding or to provide adequate support. Why, then, as it is noted above, do they fail to craft instruction to meet individual student needs? "We know how kids learn. We know what classes should look like. And yet our classes look almost the opposite" says Adam Holman, a passionate Texas educator who emphasizes a school culture that empowers students to develop ownership of their learning.⁵⁶

⁵⁶ Retrieved June 2, 2014 from <<http://ww2.kqed.org/mindshift/2015/01/22/unexpected-tools-that-are-influencing-the-future-of-education/>>.

School system places emphasis on learning characteristics that certain students share. These characteristics are well and systematically documented while less effort has been given to the study of the domains where students differ. For instance, there is evidence that kinesthetic students have limited opportunities to use their strengths in the classroom and several of them underachieve in school. In general, schools do a more effective job with learners who are linear, or analytic than those who are practical or holistic (Guild & Garger, 1998). Uniformity continues to dominate school practices.

In this school system, teaching the same content to all children, at the same time in the same method, is seen as the most rational. For Nel Noddings (2011) today schools “claim to offer equal opportunity by forcing all students, regardless of interests, into the same curriculum. This does not meet a democratic criterion for equal opportunity” (p. 4). The concept of equality is seen as uniformity to all: pedagogical solutions planned for the ‘average able student’ taught by the ‘average teacher’ in ‘average schools’. This ‘average able student’ is considered as the medium able, knowledgeable and motivated student, regardless of cultural diversity, of previous learning experiences, of diverse capacities and interests (Formosinho & Figueiredo, 2014, pp. 398-399). Eisner (2004a) posits that uniformity in curriculum content and in assessment is questionable, because it fails to recognize differences among students and to consider education as a practice of democracy:

What is troublesome is the push towards uniformity, uniformity in aims, uniformity in content, uniformity in assessment, uniformity in expectation. Of course for technocrats uniformity is a blessing; it gets rid of complications –or so it is believed. Statistics can be a comfort; they abstract the particular out of existence. For example, we comfort ourselves in the belief that we are able to describe just what every fourth grader should know and be able to do by the time they leave the fourth grade. To do this we reify an image of an average fourth grader. (p. 4)

It is therefore reasonable to infer that when school is just about conformity – when it requires all students to act, to think, and to perform in the same way, to learn the same things at the same time– it cannot optimize equal opportunities to children of different social, economical, and cultural backgrounds. Besides, in real life differentiation is much more the rule than the exception. According to Rick Wormeli (2011):

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

When we graduate and go into the working world, we have a skill set that matches a job's skill needs. We gravitate (self-differentiate) toward those jobs we're good at doing. We don't have to be good at everything everyone else in the company is good at doing at the exact same time and to the same degree of proficiency. In school, however, we have to be good at everything everyone else is good at doing, all at the same time and to the same degree of proficiency. No wonder we adjust things occasionally, or often, for students for whom the regular, one-size-fits-all classroom doesn't work.

These considerations raise the challenging issue of individualization. Researchers have used different terms to refer to the concept of individualization such as "personalization" and "differentiation". Individualization is not opposite to collaboration or participation; it is not identical to inclusion, prevention or intervention; it is much broader. While the latter serves students to succeed academically throughout the school years, individualization has long-term effects and it is more crucial to their well-being. The highest goal of individualization is giving learners more choices to locate their own purpose and pleasure when learning; it is about to help students learn in ways that suit them best. Yet, we must be careful because individualization can be misunderstood as a goal of making every student feel good regardless of results.

There is no common understanding among teachers of what theorists and researchers mean by "individualization". Individualization could be conceived as a kind of differentiated instruction that meet the individual needs of struggling students (providing resources to help them catch up) and advanced students as well; as a kind of instruction that takes into account the learning styles of all students (e.g, visual, verbal, kinesthetic, sequential, global, intuitive). Eisner (2004) claims that individualization means to cultivate what is personally and productively idiosyncratic about each student. In his thinking, schools ought to help students identify their individual strengths, at least to some degree, and make it possible for them to follow their dreams. Eckert and her colleagues (1997) draw on the issue of individualization through the lens of diversity. Based on the assumption that not all children mature in the same ways and at the same time, they advocate for a school which is built on diversity, a school which recognizes the learner in every student. The authors go on stating that children come to school "with different experience, different knowledge, different tastes, different ways of speaking, doing, and thinking" (p. 4) and conclude that in

an ideal learning community, students should be valued for their “diverse backgrounds, experience, abilities, concerns, knowledge, interests and accomplishments” (p. 5).

As far as personalized learning is concerned, there is not one shared definition yet. Some of the experts of the field describe it through three main domains: (1) approaches that accelerate and deepen student learning by tailoring instruction to each student’s individual needs, skills, and interests; (2) a variety of rich learning experiences that collectively prepare students for their future educational choices; and (3) teachers’ integral role in student learning: designing and managing the learning environment, leading instruction, and providing students with expert guidance and support to help them take increasing ownership of their learning (Pane et al., 2015, pp. 2-3). According to James Rickabaugh’s (2016) model and definition, personalized learning shifts the roles of learners and educators, and ensures purposeful learning (students and teachers work together to make decisions about learning, and to reflect on the “why” of learning); it supports individual learning goals and action plans; varies the pace of learning while remaining focused on established standards (variations in how and how quickly students learn are respected); focuses on broader concepts and deeper learning (instruction goes beyond academic content to help students build lifelong interests and skills); develops collaboration skills and strategies; uses technology as a support; affords learners greater ownership of and influence over learning (students develop the skills necessary to make decisions about and engage independently in their learning long after leaving the classroom); supports a variety of learning approaches; builds learners’ skills and capacity with the support of important content (skills necessary for continued learning); fosters learning independence.

Many researchers highlight the importance of ascertaining the unique needs of the individual. For them, effective differentiation is absolutely critical in all classrooms. It is a matter of ‘fairness’ if we consider “fair” as not giving the same thing to all students but what she/he needs. As students have incredibly diverse learning needs, it is school’s obligation to ensure to meet every single need (Zhao 2009). Individual child performance is multi-dimensional, highly variable, episodic, and culturally-contextually influenced (Guild & Garger, 1998). According to Hattie (2012), differentiation requires that teachers know where each student is, what she/he brings to the classroom, and what affects her/his ability to learn. The whole-class instruction is unlikely to accomplish this. As Hattie (2012) suggests:

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

This is where the skill of teachers in knowing the similarities across students and allowing for the differences becomes so important. Differentiation relates primarily to structuring classes so that all students are working “at or +1” from where they start, such that all can have maximal opportunities to attain the success criteria of the lessons [...] For differentiation to be effective, teachers need to know, for each student, where the student begins and where he or she is in his or her journey towards meeting the criteria of the lesson. Is the student a novice, somewhat capable, or proficient? What are his or her strengths and gaps in knowledge and understanding? What learning strategies does he or she have and how can we help him or her to develop other useful learning strategies? Depending on the student's phase of learning, their understanding of surface and deep thinking, their phase of motivation, and their strategies of learning, the teacher will have to provide different ways in which students can demonstrate mastery and understanding along the way to meeting the success criteria. (pp. 109-110)

From the perspective of Ken Robinson (2009), we must recognize that students inherently have different strengths and weaknesses, interests and ways of learning. Thus, targeting to “put students in an environment where they want to learn and where they can naturally discover their true passions” (p. 376) the curriculum “should be personalized” (p. 391). In Gardner's view (2009), it is possible now and for the first time to individualize education: to teach each person what she/he needs and wants to know in ways that suit them best and are most efficient. Writing about intelligence and individual characteristics, he claims:

Owing to the accidents of heredity, environment, and their interactions, no two of us exhibit the same intelligences in precisely the same proportions. Our ‘profiles of intelligence’ differ from one another. This fact poses intriguing challenges and opportunities for our education system. We can ignore these differences and pretend that we are all the same; historically, that is what most education systems have done. Or we can fashion an education system that tries to exploit these differences, individualizing instruction and assessment as much as possible (Gardner, 2002, p. 187).

Interestingly, neuroscience has proven that there are no two brains alike. The fact that different people are born with different abilities, combined with their varying levels of knowledge and skills, justify differentiation in classroom practices (Tokuhama-Espinosa, 2010). For example, a teacher

who knows that different parts of reading are related to different neural networks and processed differently in the brain would be better able to organize teaching-learning situations tailored to students' individual needs. Thus, discoveries about the brain can help teachers individualize learning (Tokuhama-Espinosa, 2012).

Finally, from the field of genetics, Shakeshaft and his colleagues (2013), based on results of their studies which indicate that school achievement is attributed more to genetics than to school or family environment, underscore the need for a more individually tailored approach to educational curricula. The authors note that once we understand the dynamic interplay of genetic and environmental factors, we will be able to design and implement personalized learning programs. Likewise, the results of the study of Krapohl and her co-researchers (2014) support the trend towards personalized learning which "has become more practical with rapid advances in technology and educational software to supplement or supplant one-size-fits-all traditional systems of education" (p. 15276). In the same token, Haworth and her colleagues (2011) point out the use of interactive information technology as a possible solution for personalizing education and describe the opposite of personalized education as the attempt to use education to equalize children's learning. Furthermore, they note that the field of education might profit from accepting that children differ genetically in *how* and *how much* (authors' emphasis) they learn and underline that we must think about education as a way of countering genetic differences among children.⁵⁷

Individualization, first and foremost, has to do with learning environments which are compatible with the idea that children learn in different ways, through instruction that is paced to the learning needs of each student, materials designed for use by students of varying abilities, and classroom procedures tailored to the specific interests of different learners. It encourages educators to be more open and flexible, and to make better pedagogical and interventional decisions, so that students can be encouraged

⁵⁷ People often express their fear about the advances in genetics as they believe that they will probably serve to justify social inequality. But the researchers of the field clarify that identifying genes responsible for differences in academic performance does not mean that we shall just put all available resources into educating those children with the most favorable genes and forget the rest of the children. It means exactly the opposite: the identification of genes that put children at risk for learning problems in school could serve as a system to predict problems before they occur (Kovas et al., 2007).

to design their own personal learning paths and get more motivated to capitalize on their unique skills and potential (Grant & Basye, 2014, pp. 1-2). Moreover, individualization seeks for those practices which may assist children who lack the academic basis to build upon. It is not that these children know nothing. It is that what they know is not valued as useful in school terms. In particular, given that culture creates a way of learning, the emphasis on uniformity is a serious disadvantage for students whose culture has taught them behaviors and beliefs that are different from the norms of the dominant culture (Guild & Garger, 1998). In this perspective, individualization may be the answer to problems related to social and educational inequality.

At present, there are only few studies that have examined the effects of personalized learning environments at schools. In a 2015 study, it is found that in schools which employ a number of practices that support personalization, students make greater progress. Students attending these schools made gains in mathematics and reading that were significantly greater than comparison groups made up of similar students selected from comparable schools. The researchers hold that their findings suggest the impact of personalized learning and its effects on student achievement are promising (Pane et al., 2015). Another study, conducted in Romania, investigated the obstacle primary school teachers face in achieving the differentiation and individualization of their instruction. According to teachers' views, the differentiation and individualization are obstructed by: the curriculum nature and the existing teaching methods (which lay on the uniformity), the daily rhythm of the school activities, and the complexity of the levels and ways of manifestation of each child's personality. While teachers tend to consider the differentiation and individualization of the teaching-evaluating process as important, they conclude that its principles remain theoretical highlights and they cannot practically applied in classroom (Frunză & Petre, 2015).

The acceptance that every child is unique and completely different from every other child argues against policy-level solutions designed to suit all children (Baran et al., 2013; Parsons & Beauchamp, 2012; Gardner, 2009; Sinagatullin, 2009; Keefe, 2007) and against not-flexible age-based classes: students could be grouped and regrouped based on their interests and needs (Eckert et al., 1997; Office of Educational Research and Improvement, 1993, p. 29). In fact, personalized learning does not mean that students have to be isolated as they learn. To the contrary, working in pairs,

in small groups, and as a whole class, helps students to develop important skills as they draw from others to build new knowledge (Rickabaugh, 2016). Personalized instructional methodologies and practices for certain students will result in improved instruction for all (Anderson, 2016; Guild & Garger, 1998). That is why school learning experiences must be either individual or collective.

Admittedly, we cannot create a separate curriculum for each student, even different lesson plans for each student. Rather, the matter is about finding the balance between uniformity and diversity and giving teachers time and tools to diagnose student needs and plan learning experiences in a more personalized way (Tokuhama-Espinosa, 2010). The utmost goal is to know where students are and aim to move them “+1 beyond that point” (Hattie, 2012, p. 97), to focus on each student’s unique competences, wider learning needs and interests, strengths and weaknesses, to provide tailored support, and to ensure that every student has an equal chance to participate in classroom procedures. This perspective is aptly epitomized in Ken Robinson's famous quote about personalized learning: it is “what good teachers have always known. That their job is not to teach subjects, but to teach students.” Nevertheless, he added: “It isn’t that everyone has to learn different things, although eventually our interests will take us in different directions.”⁵⁸

For this, we have the Finnish story. The Finnish system of education is open and has a flexible grading structure. There is no national comprehensive standardized curriculum prescription and the details of the curriculum are left to individual schools and teachers to decide. Pasi Sahlberg (2011) argues that the smaller jurisdictions are “the most effective way to maintain effective school systems, providing, of course, these jurisdictions have the freedom to set their own educational policies, and conduct reforms as they think best” (p. 8). He also inform us that Finnish officials are concerned with an equity of opportunities rather than excellence and competition. They operate as to create learners, not test takers (Abbott, 2014, pp. 49-50; Dyke, 2013; Sahlberg, 2011).⁵⁹

⁵⁸ Passage from Robinson's lecture in Vancouver, Canada (August 24, 2011). Retrieved April, 29 2013 from <<http://www.canada.com/story.html?id=683b7b0c-1770-44e0-904c-744022ebe2ff>>.

⁵⁹ For Finns, excessive emphasis on schooling and on competition-driven education environments not only threatens the child’s life in school, but weakens the community and social capital at the same time; achievement is most apt to occur in a friendly, collaborative,

In my opinion, the key-words for individualization is “time’ and ‘chance”. These two key elements are indicators of flexibility and diversity. Teachers need time to work with students to create individual goals and to craft instruction to meet individual student needs. This is practically difficult when they have 30 students in a class and are required to teach more than 100 students in a regular school day. One step in the right direction would be to have small learning groups and curricula which provide teachers with the framework for a more detailed and holistic account of their students’ needs.

As for “chance”, traditional education allows little room for student choice. Chance implies a more active role for both students and parents in curricula implementation. But in terms of life-long love of learning, we should re-consider students’ autonomy and students’ freedom to choose their own areas of study. When all students are doing the same thing at the same time and in the same way, there is a limit to how far they progress, while they are more likely to view each other as competitors. In contrast, when they are given chances to be self-differentiate and to work on things and in ways that are personally relevant, learning can be more varied and much richer. That is, in personalized teaching-learning environments, students’ various strengths and creative abilities come to the surface (Anderson, 2016). Thus, school must provide students with chances to set personal goals and make personal choices about their academic and non-academic future as well.

Certainly, it is not always easy to make choices. The more options offered to someone to choose from, the more difficult is for her/him to make the right choice. For Paul Kirschner and Jeroen van Merriënboer (2013) it is important to give students “limited rather than unlimited control, because having to choose from too many options is perceived as frustrating” (p. 178). Thus, students should not be left alone to choose what they prefer. The necessary knowledge provided by teachers or coaches will help them to use the autonomy-oriented practices for their best. Students need freedom as well as rules and limits.

I also subscribe to Csikszentmihalyi who stated that “it is kind of hypocritical to expect that all children should be good across the board

and trust-based classroom atmosphere guided by a well-trained teacher. The schooling young Finns receive is founded on collaboration, equity and responsibility (Abbott, 2014, pp. 49-50; Dyke, 2013; Sahlberg, 2011).

when most adults aren't successful at everything” (in Scherer, 2002, p. 15). As individualization highlights equality of opportunity rather than equality of outcomes we can dream of a very different world where, according to Gardner (2009), many more individuals will be well-educated. Even more importantly, these individuals will want to keep learning as they grow older because they will have tasted success and may be more motivated to continue. Individualization is a promising way if we wish to resist to the increasing demand for selection and excellence in school and to de-emphasize standardized learning. Finally, we must be very careful in the design of personalized programs, because there is a great danger to focus only on brighter students and forget the students in need.

In summary, many researchers and educators have long embraced the idea of individualization as a key to learning and they claim that if we insist forcing students into one-size-fits-all academic approach is going to make some of them confront failure. A growing body of studies indicates that students who have difficulties in school and are falling behind can be prospered if learning processes customize to each student (i.e., personalizing instruction, appropriately-designed educational experiences). Wherever and whenever personalized education takes hold, as Gardner (2009) points out, the resulting world will be very different.

Yet, we must acknowledge that there is a long distance from recommendations to real-classroom settings, from theory to practice, from rhetoric to action. The challenge is much bigger, the obstacles are various. If the research has shown us anything, it is the difficulty of finding practices and instructional strategies that will be effective for every student. It is nothing short of common sense to believe that we can adjust the curriculum with regard to personalized learning environments from one day to another. Thus, taking action steps –such as adequate resources, teacher training, less quantity in curriculum contents, small schools, and reduction of teacher-student ratio– we may meet the challenge of individualization. And we should not forget that diversity is a gift of our world, a gift of humanity.

Is technology the answer to the question about the “how” of personalized learning?

Today, there are substantial transformations which take place in the current learning environments. New technologies change the social, cultural, and educational context of teaching and learning in an unprecedented rate. There is a general consensus that the world of the web constitutes an infinite resource of information and that the digital era is here to stay. Policymakers, and the majority of the public as well, focus on technology as *the ultimate solution* to address disparities in educational outcomes. Many of them think of new information and communication technologies as magical tools, express faith in the equalizing power of the technology, and argue that advancements in technology can contribute to personalize the learning experience for many more students efficiently and effectively (Baran et al., 2013; Project Tomorrow, 2012). Admittedly, there is a tendency to idealize the role of new technologies in classroom. What are the arguments for or against the case of technology in school targeting customized, personalized education?

It is frequently noted that technology can be used to improve and increase access to education, and to share educational material and teaching expertise (Ivala, 2011). Those who advocate technology-centered teaching-learning describe its benefits as follows: it motivates students to learn; maximizes opportunities for students as self-directed learners; provides environments where the characteristics of individual students are taken into consideration; creates and empowers environments where learning is self-directed, self-paced, and self-determinant; improves student engagement; provides more quality time and space to deliver the curriculum; creates chances for working and thinking at the edge of one's competence; and blurs the lines between formal and informal learning (Kyei-Blankson & Ntuli, 2013; White, 2013; Project Tomorrow, 2012; Lee & Levins, 2012; Prensky, 2012; Harasim, 2012; National School Boards Foundation, 2009; Seely-Brown & Adler, 2008; Bonk & Graham, 2005). Among them, there are several who denigrate non-digital learning and ignore the fact that entrepreneurs see technology in schools as a new way to make money (Ravitch, 2013).

On the other hand, there are those who are more skeptical and note that technologies in classroom have little chance to succeed without the essential commitment of thoughtful and highly qualified teachers, who can

facilitate learning and ensure it is really happening. Introduction of new technologies will not necessarily transform learning, and may simply replicate pre-existing learning practices in a new medium (Ivala, 2011).

Today children and youths have limitless resources of information and new tools to gain knowledge. Children born after the development of mobile information technologies have been labeled the I-Generation or I-Gen. The 'I-' standing for both "information" and "individualization" because their childhood has been so powerfully influenced by their ability to individualize and customize all aspects of media and information-sharing to suit their own purposes (Rolstad & Kesson, 2013). But their engagement with technology is not merely educative and for many of them does not go beyond social purposes.

Notwithstanding, the idea that children and youths are able to monitor their learning sparks heated debate. Indeed, students are highly familiarized with the digital tools to gain information but have no skills to filter and interpret it. Kirschner and van Merriënboer (2013) discuss the notion that students are extremely information-competent digital natives and they claim that what we see is "a generation where learners at the computer behave as butterflies fluttering across the information on the screen [...] unconscious to its value and without a plan" (p. 171). For them, the existing studies provide little support for the evidence about digital learning to be considered as 'promising' for all students. Students are really not the best managers of their own learning with respect to navigating through the digital world. Thus, the idea that all one needs to know and learn is 'out there on the web' and that today students are self-regulated and can self-direct their own learning is rather a legend.

In a broader perspective, there are scholars who express their worry assuming that youths have created their own virtual parallel worlds and that children grow up in environments where the real has been replaced by the virtual to an alarming degree. They also point out that digital communication, such as social networking, though an avenue for socialization and connection for youngsters, it dissociates them from the real life situations resulting in perplexing their real-world identity and their online identity. On the other hand, there are many who posit that the young generations who have been born into the social networking domain, do not perceive 'community' as a dichotomy between 'real' or 'online' relationships, but as a composite of both" (Rice, 2009, p. 170 as cited in Cress, 2013, p. 41). Individuals are not hapless victims of technology; they

have the ability to evaluate various technology options and can make choices about how to use them in ways best suited to their goals (O'Sullivan, 2000, p. 56). Students utilize online forums in productive and meaningful ways, as a means to document their life stories, to continue conversations that began face-to-face, to find new friends, and to augment existing friendships (Cress, 2013, p. 42). So school can integrate new technologies and social media into teaching-learning processes.

Where does the truth lie? Probably, in the middle. In fact, viewing only partial elements of the senior portrait of the integration of technology in school, we fail to convey the entire image and to take under consideration problems such as equity, feelings of isolation, cyberbullying and other types of negative social-network interactions, not-responsibly and not-ethically use of digital media, suitability for education, difficulties in evaluating and applying informations wisely and honestly, and plagiarism (see for example White 2013; Palfrey et al., 2008; Erdoğan, 2008; Zhang, 2005).

White (2013) discusses, among many other things, the issue of equity in relation to the use of digital technologies and digital media in teaching-learning and asserts that several strategies do not take under account students from low-socioeconomic backgrounds, those with low English language proficiency, and those with a disability. The issue of equity is also important as there is a gap between students who use computers both at home and school and those who use technology only at school: there is evidence that the former do better than the latter. In fact, it appears to be a negative effect on learning for students who only use computers at school (OECD, 2009 as cited in White, 2013).

In a similar line of thinking, Jenny Perlman Robinson and Rebecca Winthrop (2016), while they underline the great potential of technology to accelerate progress in learning and to help overcome historical inequities,⁶⁰

⁶⁰ Technology in the form of distance learning constitutes a viable solution for geographically isolated regions and areas. For instance, in Brazil's Amazonas state, where only six of the 62 municipalities are connected by road to the capital, more than 2 million children are not attending secondary school. For the thousands of young people living in small communities scattered along the Amazon jungle, it could take days or even weeks to travel to secondary school by boat. With the help of technology –Amazonas State Government's Media Center, a distance-learning model based on the realities of the region– hundreds of thousands of teenagers have a chance to complete a quality high school without needed to travel far –something that was unthinkable only a few years prior (see Perlman Robinson & Winthrop, 2016).

they note that we move in the wrong direction choosing a technology first and then looking for an educational problem to solve with it, rather than the other way around. For them,

“high tech” was not always the best solution, especially in the contexts of low resources or low literacy. [...] One potential risk of leveraging technology for scaling is that it often targets and benefits those who already have access to the Internet and therefore may perpetuate inequalities that exist in access to technology. (p. 94)

It is a fact that the adoption of personalized learning approaches has increased significantly in recent years in part due to rapid advances in technology (Pane et al., 2015, p. 1). In the Internet era, many students find ways to personalize their learning by themselves: they are self-taught, at least in certain domains. They pursue their interests and devote time and commitment to master a skill. As long as school is an adult-controlled space, youths will seek Internet spaces in order to express their views and feelings and to build their identities. Today children and youth are ‘Digital Natives’, in contrast to ‘Digital Immigrants’ namely older people who encountered technologies as adults (Prensky, 2012; Palfrey & Gasser, 2008). Nevertheless, the majority of teachers use computers mainly as a support for teaching the traditional content of school subjects. For the time being, it is clear that pedagogically, as Renzulli (2014) observes, we haven’t progressed much beyond the type of learning that Skinner advocated with his teaching machines (p. 4).

Thinking about the digital future, Weigel and colleagues (2009) argue that learning may be far more individualized yet social, and interactive than ever before. Although they admit that technology per se is not a panacea, they underline that schools cannot neglect the use of digital media in classroom because young learners themselves are different from prior generations in their learning orientations. Ito and others (2013) concur that technology opens up new possibilities for individuals to study on their own, but they add that learning is a fundamentally social process and is more productive when done with others. Lee and Levins (2012) argue that internet accessible devices are personal items and allow students to engage in personalized learning both at home and at school. Seely-Brown and Adler (2008) describe the ways in which technology brings changes that can better serve the needs of twenty-first century students. The authors note that these

ways have already begun to change the game in education by leveraging the potential of social learning (open participatory learning ecosystems), by expanding access to all sorts of resources, including formal and informal educational materials, and by fostering a new culture of sharing and learning that extends beyond formal schooling. In a similar vein, Peggy Grant and Dale Basye (2014) state that mobile devices and one-to-one personalized learning techniques are breaking the boundaries of education, encouraging learning in a real-world context and helping bridge school, after school, and home environments, resulting in true “anywhere/anytime” learning: turning the entire world into a potential classroom (p. 2).

In a recent survey report of the organization *Project Tomorrow* (2012) on students', educators', and parents' perspectives on digital learning, with an in-depth focus on personalized learning experiences and environments, it is found that students by themselves, and perhaps without even realizing it, had already created personalized learning networks and environments that directly fuel their individual learning passions in a modality that is highly customized to their needs. They constantly seek out ways to personalize their learning and this has changed their overall expectations for their education. Two-thirds of the 330,117 K-12 students who participated in this survey stated that they define school success in terms of the achievement of their own personal learning goals. These students had already realized the benefits of personalized learning networks and environments and had an intrinsic understanding that personalization is the key to their own engagement in the learning process. The research team came to the conclusion that it is the time “to create a shared vision for personalized learning that includes [...] students, parents and educators” and “to map new personalized learning journeys that allow every student to self-direct their own path and to use the tools that best fit their needs” (p. 2).

Concluding, no one can deny that digital environments present a major challenge for education. The use of new digital instructional tools can create transformative, synchronous and a-synchronous, and inclusive learning environments where teachers can make explicit pedagogical choices helping students realize where they stand in terms of their learning. However, Grant and Basye (2014) emphasize that simply providing technology to learners does not necessarily make their learning personalized: Personalized learning is neither the digitization of traditional learning nor a ‘patch’ for a broken education system. It is not a replacement for teachers or for the traditional classroom experience. It is rather an

invitation for educators to create new opportunities for learning that takes advantage of the digital skills most students already possess, through collaborative practices among teachers, students, and peers. Technology is the tool that makes personalized learning easier and more efficient, freeing up teachers to spend more time interacting with students (pp. 1-5).

In my opinion, it is still too early to decide if the integration of newly invented digital technologies into school settings will create more personalized learning environments. Personalized teaching-learning is not just about technology; it requires more than access to various resources, educational videos, interactive whiteboards, electronic messaging, and social networking applications. The targets of self-directed, self-motivated, and self-regulated learning for all are much more demanding. It is far from clear if we are ready to implement digital-expanded curricula wisely as to address the needs –the weaknesses and the strengths– of every child. At the present time, we must keep also in mind that there are many children from low-income families who have no Internet at home; nor do they have personal computers or laptops; they lack access in technology. If schools cannot ensure technology-based education for all, we will just create another cycle of disadvantage. In other words, the potential of new technologies ought to be considered not only in the context of its educational value but also in the basis of its social-ethical use.

While questions about the integration of technology in school certainly remain, we may stand on the threshold of a new era where we will have virtual schools, digital curricula, students who attend online classrooms, and homeschooling. In light of this scenario, the teachers' role will not be the same as it is today. But, as the abilities and competences of students will always vary considerably, we will always need teachers to tailor tools and materials to match children's learning needs and capacities, and to act as mentors. Digital resources will never entirely replace teacher and physical teaching-learning procedures. They constitute a powerful tool, but teacher is the one who will judge and decide how to use it in her/his classroom.

All in all, given the importance of individualized goal-setting for students, we should emphasize personal learning environments tailored to each student's individual developmental needs, using both digital and non-digital resources, so that students become owners of their own learning. Technology does have a place in education and is expected to transform classroom instruction in the coming years. But it is not a silver bullet; it

cannot improve instruction by itself and it is not alone a guarantee for educational equity. Technology constitutes a catalyst, a vehicle; it is neither the goal nor the destination. It is useful to know how to drive but it is absolutely necessary to be aware of where to go. In the case of school, there is another prerequisite: to have the same direction when we travel with our students.

From Behaviorism to Brain-based teaching-learning

We all know that the aim of education is learning, but for the most part of the history of formal education, theorists and scholars focused almost exclusively on teaching. For the past half-century, environmental factors, such as characteristics of schools (e.g., curriculum, teacher training, discipline systems), neighborhoods (e.g., poverty, crime), and families (e.g., parental education, parenting style) have been the prime focus of researchers. During all these years, far less attention has been given to the possibility of genetic influences, other than IQ, on characteristics of children that affect academic learning (Kovas et al., 2007). In addition, for many decades in the first half of the 20th century, school practices drew upon Behaviorists who regarded the brain as simply an input/output system.

Behaviorism described learning as the acquisition and application of stimulus-response connections through reinforcement, and provided the basis for the value of external motivation, such as rewards, praises or punishments. Thorndike argued that rewards could increase the strength of connections between stimuli and responses (Bransford et al., 2000). The idea of behaviorists that praise is important is still a common sense despite the fact that many students do not benefit neither from rewards nor from punishments. Indeed, the idea of punishment is even more problematic. Speaking about the nature of rewards Hattie (2012) argues that while praise can make students feel welcome, it must be kept separate from feedback about their learning. Recent research have found a low effect size for praise and showed that in order for feedback to assist with a student's learning, it should not be combined with praise.

Behaviorists also focused on teachers' excellency and on practices like exercise and repetition, and underestimated the importance of student's inherit dispositions and prior experiences (Vieluf et al., 2012; Tompkins, 2010; Illeris, 2003). Gardner (1993) wrote: "In the heyday of the

psychometric and behaviorist eras, it was generally believed that intelligence was a single entity that was inherited; and that human beings – initially a blank slate– could be trained to learn anything, provided that it was presented in an appropriate way” (p. xxiii). As Kohn (2000) notes, behaviorism is consistent not only with a particular kind of pedagogy but also with a situation where the curriculum is fixed and the students have little to say about the processes or the content (p. 65).

Many problems of school have their origins in a misunderstanding about how children learn. Behaviorism theorists and educators suggested that children learn through reinforcement. For them, a strategy X produces a result Y. Paraphrasing the old saying, they are convinced that “you can lead a horse to water, and you can make it drink.” Understandably, many students failed in this setting. And, sadly, students who do not respond to their efforts are often labeled as “lazy”, “don’t care”, “stupid” or “difficult.” But alas, our current model of education is still based on the principles of behaviorism.

The middle of the 20th century saw the rise of cognitive psychology and thus a shift of focus from behavior to learning processes and knowledge structures. During the 1970s and 1980s another theory emerged. It was Cognitive Constructivism which suggested a more student-centered approach to instruction. Through interacting with the environment, students were thought to actively build up mental structures of knowledge and skills. At the end of the 20th century, there was yet another turn in educational theory: Socio-Constructivist theories, inspired by the ideas of Vygotsky, emphasized the cultural context of the learning process and the social and situational characteristics of the learning process. Numerous instructional approaches are based on these theoretical ideas (Vieluf et al., 2012).

And have what the inspired education philosophers, big thinkers, theorists, and researchers proposed about assisting children to become active learners? Lev Vygotsky ([1930]1978) emphasized the social function in the process of learning (constructing knowledge alongside with others); for Jean Piaget (1969, with Inhelder), the keys are the opportunities to discover the environment and to construct new knowledge upon previous experiences; for John Dewey (1938), it is experience and real-life situations; for Jerome Bruner (1960), it is the discovery of learning and the transformation of learning (learn-how-to-learn procedures, metacognition); for Carl Rogers (1980), it is freedom; for Mihaly Csikszentmihalyi (1990), the answer is curiosity and intrinsic motivation; for Howard Gardner (2007), it is

cultivation and practice of the five minds (respectful, ethical, disciplined, synthesizing, and creative); for Ken Robinson (2009), it is creativity and personalized learning. All of them urged us to change our perspectives as well as our school practices.

Their ideas had significant implications for the entire way we think about the concept of engagement; their recommendations are broadly acceptable and honored, they still being discussed and debated. And it would be an exaggeration to maintain that school payed no attention to their ideas and methodological approaches. Then, why did these strategies not result in the school improvement that was hoped for? Why did they not change the school system and the school culture? Why are they not effective for all students?

For instance, constructivists proposed a student-centered concept of learning, asserted that learning is a process that is individual to each learner, and claimed that we must allow students to create their own, new knowledge using their existing background knowledge (Tompkins, 2010). However, they did not provide us with accurate answers to essential questions regarding students' background, such as: What about children from diverse cultural backgrounds? What about disadvantaged students? How are they required to expand what they have already learnt and to connect the new material to previously learned material when they lack background knowledge? Certainly, terms like "trust", "caring", "engagement", "motivation", "creativity", "collaborative teaching-learning", and so on, are not buzzwords. They are key ingredients for learning. Yet, it is clear that they are a sine qua non; they are necessary but not sufficient. How will they construct new knowledge when they have no adequate academic basis to build upon?

During all these years, many teachers, using their own expertise and skills, took up the challenge of how to foster students' motivation and interest for school subjects. They had long tried and used various instructional strategies to engage students.⁶¹ By doing this, one would hope

⁶¹ John Bransford and his co-authors (2000) argue that the question "Are some of these teaching techniques better than others?" is a wrong one: "Asking which teaching technique is best is analogous to asking which tool is best—a hammer, a screwdriver, a knife, or pliers. In teaching as in carpentry, the selection of tools depends on the task at hand and the materials one is working with. Books and lectures can be wonderfully efficient modes of transmitting new information for learning, exciting the imagination, and honing students' critical faculties—but one would choose other kinds of activities to elicit from students their

that they could meet the needs of disadvantaged students and could fundamentally change students' attitudes towards school and their performance as well. Unfortunately, despite their well-intended efforts for effective interventions and the emergence of many innovating approaches to curriculum and instruction, a significant number of students continues to fail at school or end up poorly educated (Ravitch, 2010), and we still face the case that "students who start well finish well".

The problem is clear: in spite of the sometimes Herculean efforts by their teachers and parents, some students continue to have academic problems. I believe that a big part of the frustration lies in the fact that teachers want to help all of their students, yet not all of them are ready to receive their help. A teacher cannot achieve good results simply through encouragement and good words, such as "keep trying" or "you can do it", although all of these practices are helpful. Academic success entails much more than just making students feel good about their efforts. Having said that, I do not imply that students' efforts should receive less emphasis than ability and results. I just claim that motivation is not enough. Just because students are encouraged to perform well, it does not mean that they will achieve it. Students do not come to succeed just because they are simply motivated to do so. To put it succinctly, we are able to facilitate learning but we cannot force it.

There are at least two substantive reasons why we cannot enable and ensure learning for all students in the present system. Although we know that ability is not enough and effort is crucial (Hattie, 2012) it is also true that academic achievement and success is strongly correlated with innate abilities and previous experiences. The second is that there is much more variation in the competencies of individuals of the same age, and much more variation in the developmental patterns by which particular competences are achieved, than is implied by strict developmental perspectives (Grobstein & Lesnick, 2011). In my view, there is a third reason: we focus mainly on what is expected to happen in classroom settings and overlook or underestimate the many out-of-school intricate factors that come into play and the complex interplay between out-of-school

preconceptions and level of understanding, or to help them see the power of using meta-cognitive strategies to monitor their learning. Hands-on experiments can be a powerful way to ground emergent knowledge, but they do not alone evoke the underlying conceptual understandings that aid generalization. There is no universal best teaching practice." (p. 22)

and inside-school variables. This may explain the fact that although many instructional practices have a surface logic, they rarely lead to expected outcomes.

School lies on pedagogy to raise student achievement, but it appears that this approach is inadequate, because learning is promoted and regulated by the environments and children's biology as well. Although intelligence is not as strongly related to academic achievement as once thought, there are other genetic factors, namely brain functions, that determine the maturity of the individual, her/his readiness to meet new content. Children's individual differences are factors that influence their learning and their academic achievement. Research guided by these perspectives focuses largely on identifying individual characteristics related to learning.

Amazing advances in neuroscience help us now understand the neural mechanisms that subserve human learning, the specific brain changes that occur during learning, and the limits of plasticity of brain circuits underlying cognitive functions that are shaped by education. They also provide new insights into learning processes at a more detailed level than on the basis of behavioral methods alone (Ansari, 2014; Ansari et al., 2012). The brain of a developing child is a product of interactions between biological and ecological factors –a complex blending of genetics and experiences. Learning occurs when the dendrites from one neuron reach out and connect to another neuron's dendrites, and that one to another neuron, and so on. These connections, the synapses, lay the road for new learning. Experiences wire the brain's cells and regions together, forming new networks. Knowledge grows as our neurons make new connections, and as they increase or decrease the strength of existing brain networks. Mind is created in this process (Tokuhama-Espinosa, 2010; Erlauer, 2003; Zull, 2002; Bransford, et al., 2002).

The billions of neurons in our brains alone do not make the brain 'clever'. Specifically, when an infant is born, she/he have trillions of brain cells. Adults have a lot fewer brain cells than new born babies but in adults' brains the connections among neurons are larger, stronger and more complex. Information enters the brain through its existing networks of neurons. Learning and practicing skills strengthen the existing neural connections, and over time new behaviors can become permanent habits (Gregory & Kaufeldt, 2016).⁶² So it is these existing networks, including

⁶² The researchers of the Center on the Developing Child at Harvard University (2016)

past experience and prior knowledge, that is the substrate for constructing new understanding. Experiences and learning affect the development of the brain and build new synapses, a capacity of the brain which is known as neuroplasticity. But, sometimes the old networks are so powerful that they become a barrier to new knowledge. That is why we often carry childhood beliefs with us for a lifetime, even when we know that they were proven incorrect. That is why many adults notice the difficulty to abandon their current practices and to leave their ‘comfort zones’. That is why no dismissive or praised comment by a teacher, no red pen mark or gold star can suffice to eliminate existing neuronal networks in a student brain (Tokuhamma-Espinosa, 2008, 2010; Erlauer, 2003; Zull 2002; Sousa, 2000).

Indeed, any product of human effort, including learning, has a brain basis and can be better understood and explained with the help of brain function. The brain chemicals –adequate amounts of dopamine and oxytocin flow and lesser amounts of adrenalin and cortisol– can, in some respects, predict students’ learning behavior (see Shore & Bryant, 2011). Meanwhile recent neuroscience studies show correlations between socioeconomic status (i.e., family income, children’s home learning environments, early experiences) and important aspects of young children’s brain functioning associated with learning. These studies suggest that income may matter for brain development in the early years although we need more evidence to prove this conclusively (Duncan et al., 2014; see also Ansari, 2014).

In addition, from the field of Genetics, Plomin and Walker (2003, in Shakeshaft et al., 2013), note that education has been slow to take on board the importance of genetics for educational achievement. Even today, many educational scholars scarcely acknowledge genetics despite the evidence for its importance (Rutter & Maughan, 2002). According to Yulia Kovas and colleagues (2007), some of this reluctance comes from a major misconception that the admission of genetic influence will diminish the importance of school. And much of the reluctance is likely to involve another misconception such as “genetic influence will serve to justify social inequality”. The authors express their objection to these views and explain

explain: During the first few years after birth, 700-1,000 new synapses form every second. After a period of rapid proliferation, these connections are reduced through a normal process called pruning. This process enables remaining brain circuits to become stronger and more efficient. Early experiences affect the brain’s developing architecture by determining which circuits are reinforced and which are pruned through lack of use. Some people refer to this as “use it or lose it.” (p. 7).

that the “myth of environmental nihilism” is based on the misconception that if “disorder is heritable there is nothing that can be done about it environmentally”. Moreover, they make clear that the identification of specific genes which are related to learning abilities and disabilities will help us to decide about the appropriate resources to helping disadvantaged children.

For the time being, we must no longer pretend that genetic differences do not exist. Genetics impact on how we are able to learn in a significant way (Kovas et al., 2015). Different people are born with different potential, namely with different abilities which they can improve upon or lose, depending on the environment and the new experiences. Some children are simply more prepared for the world from birth, they differ genetically in how easily they learn and what they like to learn. For instance, even mathematical anxiety has been found to be depended on genetic factors – alongside to exposure to negative experiences with mathematics– associated with general anxiety and additional genetic risks related to math cognition (Wang et al., 2014).

This is a harsh reality to face because it explicitly establishes a definitive framework for someone's potential. But this does not mean that there is nothing we can do. Thus the key is to maximize this potential. There are thousands of people who are born with the potential to be quite capable in specific fields but do not live up to this possibility. On the other hand, there are thousands of people who are born with modest potential, but who maximize this ‘limitation’ well beyond expectations. Both the improving and deteriorating developmental patterns demonstrate the plasticity of the brain (Shakeshaft et al., 2013; Tokuhamas-Espinosa, 2008a, p. 356).

Genes, previous experiences, and what the child does with her/his potential contribute to the child's success as a learner (Tokuhamas-Espinosa, 2008a, p. 356). While we have a long way to go to understand the general mechanisms at all levels of analysis from genes to brain and to behavior (Davis et al., 2014; Kovas et al., 2007), the acknowledge of the pervasiveness of genetic differences among children provides a valid basis to re-examine the role of education (Haworth et al., 2011). So we must focus on instructional methods which can improve every students' potential, and help all students with high abilities from losing them. Why? Because education nurtures and develops the brain, either for better or worse.

Focusing on brain literature, an interesting thing to me is that many findings seem to confirm what we already know and practise –or, at least,

we have theorized— about various teaching-learning issues, such as: readiness for learning; the rhythm of learning (quick, slow); learning problems; the value of certain types of motivation; novel activities; emotional intelligence; positive emotion; the interrelationship between cognitive, emotional, and social capacities; flow experiences; classroom experiences that are relevant to students' lives; spiral curriculum; stress; climate of joy and interest; revisiting content through reflection; harnessing students' natural curiosity; meaningful connections to new information; physical activity; reading to children in early ages. In this regard, brain-based research does not introduce new strategies for teachers. Then, why is it important? Because it provides a scientific strong rationale on why certain instructional strategies are more effective than others. It brings into the fore a wide spectrum of issues students face thriving to learn at school. The brain revolution has stimulated a better understanding of how students learn as well as the production of more effective educational materials (Dubinsky et al., 2013; Larrison, 2013).⁶³ Shonkoff and Phillips (2000) write:

We don't need sophisticated research to prove that aggressive preschoolers are easier to 'rehabilitate' than violent criminals. Common sense tells us that the learning and behavior problems of young children can be fixed more easily and at less cost than those of adolescents and young adults. Neuroscience tells us why the statements are all true". (p. 6)

What are the implications from the above data for the school? The lessons from neuroscience research had proven the validity of certain pedagogical approaches and good practices, adding to their credibility for use in curriculum design (Tokuhama-Espinosa, 2010), helping us now to better understand some causal links between certain in- and out- school factors and educational outcomes (Nelson & Sheridan, 2011), and making stronger the case of already known educational approaches and techniques. While it is possible that insights from neuroscience will lead to changes in education – some experts speak of a complete revolution in the way certain subjects are currently taught— new evidence can also play a critical role in affirming as

⁶³ But this is not enough for neuroscience to support our common sense notions about parenting, education, or rehabilitation. For John Bruer (2015), "[i]t would be disappointing if all neuroscience provides to policy makers is support for common sense generalizations of breathtaking generality. One would hope that the science would allow us to move beyond common sense."

well as speaking against what educators already do today and thereby strengthen certain approaches they adopt in their classroom instruction (Ansari, 2014, pp. 1709-1710). In short, the development of brain science results in new and innovative ways to consider old problems in education, offers evidence-based solutions for the classroom and provides us with new paths –and vocabularies– for thinking and talking about learning.⁶⁴

There is a plethora of ways in which neuroscience can inform pedagogy. For instance, neuroscience studies show that a stressful or fearful climate generates negative emotions to students and inhibits learning (Lupien et al., 2007; Sousa, 2000). Under this prism, the ‘don’t smile before Christmas’ approach gets no support from recent studies showing that positive emotional environment is a critical component to true learning. In another example, if teachers and parents are aware of the fact that most genes unfold their effects in interplay with environmental influences and that the children’s early experiences affect how genes are turned on and off, and even whether some are expressed at all, they will be more alert in providing young children with safe environments, caring relationships, experiences, and materials that influence positively their developing brain architecture. Apart from that, policy makers are also required to realize that providing remedial education –and other interventions later in life– is more expensive than providing social and financial support to families and appropriate learning experiences to children earlier (Center on the Developing Child at Harvard University, 2016, pp. 7-12).

Eric Jensen (2008) defines brain-based learning as “the engagement of strategies based on principles derived from an understanding of the brain” (p. 409). In this basis, neuroscience can inform education about the brain mechanisms underlying attention, curiosity, working memory, creativity, self-regulation, disposition to learning, and other non-cognitive dimensions of the mind. Neuroscientists have also noted a close tie between emotions and memory, and the importance of student interests, choice, and self-determination. Moreover, they have proven that human brain is a social brain: we like to learn with others; we learn better through communication and collaboration because this elicits stronger emotional responses to everything we do. Furthermore, it is documented that brain remembers

⁶⁴ For Daniel Ansari and his co-authors (2012), there is exciting evidence that teaching students about brain function and development can influence their attitudes towards learning and consequently, lead to improvements in learning (p. 111).

information which is linked to prior experiences and knowledge, and evaluates it as meaningful (Gregory & Kaufeldt, 2016; Ansari, 2014; Tokuhama-Espinosa, 2010; Erlauer, 2003, p.13; Sousa, 2000). As James Zull (2002) puts it, the match of learning difficulties with the structure of the brain went unnoticed in the past. Certainly, there is far more need for studies that evaluate the effects of structured remedial educational interventions on brain function for students with learning difficulties (Ansari et al., 2012). All in all, brain imaging provides new –and sometimes unexpected– insights that may ultimately help us understand how the brain wiring system changes through educational experiences and realize the complexity of how learning occurs.

As far as pedagogy is concerned, it can inform neuroscience in a variety of ways. Educational neuroscientists must work together with educators to draw on their wealth of practical knowledge regarding existing classroom practices (van der Meulen et al., 2015; Pincham et al., 2014). Educators can help neuroscientists to detect those aspects of their researches that could be applied in classroom. In other instances, educational settings can confirm or defy findings in neuroscience labs by offering environmentally valid settings –something often missing in lab research (Harley 2004 in Tokuhama-Espinosa, 2010, p. 29; Geake, 2008). Overall, although neuroscience has great potential to provide evidence that could improve education (educational environments and pedagogy) and help educators make informed decisions on which educational approaches are most optimal –rather than basing their educational decisions on opinions and intuitions– neuroscientists do not know what education means and what children should and should not learn (Ansari, 2014, p. 1715).

Nonetheless, Anna van der Meulen and her co-authors (2015) identify the problem of the transfer of findings between neuroscience and education –a problem that has many forms and becomes apparent in neuromyths such as the assumption that we use only a fraction of our brain (10% is frequently cited), the distinctions between left- and right-brained thinking, or between visual, auditory and kinaesthetic learning styles (see also Howard-Jones, 2014). For example, the widespread neuromyth about ‘right-brained’ and ‘left-brained’ individuals is directly contradicted by a vast amount of available evidence showing that the brain activation during most cognitive processes involves both hemispheres (see Larrison, 2013;

Ansari et al., 2012, p. 112).⁶⁵ Considering the myth of learning styles, John Geake (2008) writes that

there are undoubtedly individual differences in perceptual acuities which are modality based, and include visual, auditory and kinaesthetic sensations (although smell and taste are more notable), but this does not mean that learning is restricted to, or even necessarily associated with, one's superior sense. All of us have areas of ability in which we perform better than others, especially as we grow older and spend more time on one rather than another. (p. 124)

Many of these pervasive neuromyths are biased distortions of scientific fact, and that is troubling because they may work against educational achievement, states Paul Howard-Jones (2014). Thus, neuroscientists need to assume great responsibility in ensuring that the valuable information they communicate is interpreted correctly, in providing teachers with tools to evaluate scientific evidence in order to avoid misconceptions about neuroscientific evidence –without overstating the potential for direct application– and to guard them against the proliferation of neuromyths. This requires individuals who are well versed in both cognitive neuroscience and education (Ansari, 2014, pp. 1709-1716). As results from research cannot be directly applied, the main responsibility of educational neuroscientists – those who possess knowledge both on neuroscientific and on educational research techniques– lies in their expertise for translating the results of their research for education; assessing their educational applicability; and finding ways to avoid the inappropriate use of the evidence. This kind of transferring has to take place in close collaboration of neuroscientists with practitioners in all stages of the research process (van der Meulen et al., 2015; Howard-Jones, 2014; Ansari, 2014; Pincham et al., 2014; Larrison,

⁶⁵ Neuromyths have been defined as misconceptions “generated by a misunderstanding, a misreading, or a misquoting of facts scientifically established by brain research to make a case for use of brain research in education or other contexts” (OECD, 2002, p. 111). Larrison (2013, pp. 26-29) writes: “The history of the implementation of scientific findings from brain research into education is imbued with misunderstandings and pseudoscience. [...] The term neuromyths has been used to describe this misinterpretation of scientific research and continues to persist in the general belief systems about the brain. [...] These misconceptions have been contested by members of the academic and MBE community as being misleading over- simplifications of how the brain actually engages in learning (Tokuhama-Espinosa, 2010).”

2013). Under this prism, Paul Howard-Jones (2014) proposes the establishment of a new field of inquiry dedicated to bridging neuroscience and education in order to inform and to improve communication between educators and researchers. This is an area that requires interdisciplinary collaborations with neuroscientists, developmental and cognitive psychologists, genetic scientists, educational researchers, and teachers working together, in order to to blend findings and ensure that the neuroscientific findings are properly interpreted and applied through targeted educational interventions.

All in all, what light does neuroscience shed on links between brain function and school success? Tracey Tokuhama-Espinosa (2008) summarizes as follows: 1) Each brain is unique and uniquely organized 2) All brains are not equally good at everything 3) The brain is a complex, dynamic system and is changed daily by experiences 4) The search for meaning is innate in human nature 5) Brains have a high degree of plasticity and develop throughout the lifespan 6) Learning is based in part on the brain's ability to self-correct 7) The search for meaning occurs through pattern recognition 8) Emotions are critical to detecting patterns, to decision-making and to learning 9) Learning is enhanced by challenge and inhibited by threat 10) Brains seek novelty 11) Human learning involves both focused attention and peripheral perception 12) The brain conceptually processes parts and wholes simultaneously 13) The brain depends on interactions from other people to make sense of social situations 14) Feedback is important to learning 15) Learning is a constructivist process, and the ability to learn goes through developmental stages as an individual matures 16) Learning involves conscious and unconscious processes 17) Learning engages the entire physiology 18) Different memory systems (short term, working, long term, emotional, spatial, rote) receive and process information in different ways, and can be retrieved through different neural pathways 19) The brain remembers best when facts and skills are embedded in natural contexts 20) Learning relies on memory and attention 21) Neuroeducation principles apply to all ages 22) Use it or lose it (pp. 356-362). Future research in neuroscience will doubtlessly shed more light on the above principles and will further delineate the relevant processes of schooling as well as how brain and education intersect in relation to educational performance. Finally, future studies may begin with educational premises, rather than with neuroscientific findings that are molded to fit real-school settings (Tokuhama-Espinosa, 2010).

Leslie Hart in his influential book *Human Brain, Human Learning* ([1983]1999) claimed that designing educational experiences without an understanding of the brain is like designing a glove without an understanding of the human hand (in Tokuhamas-Espinosa, 2010, p. 57). David Sousa (2000) writes that it is the teacher's job "to try to change the human brain every day" (p. 3). Tracey Tokuhamas-Espinosa (2010) claims that teachers who can use information from neuroscience and psychology will be the real game changers in the decades to come. From her side, she proposes a new model for teachers: the *MBE (Mind, Brain, and Education)* model. *Mind, Brain and Education* (MBE), referred to as neuroeducation, is an emerging field bridging the gap between brain science and education research; a novel approach to teaching and learning providing a model that addresses student needs on a biological level. The *MBE* professionals can integrate cognitive neuroscience and psychological foundations into their practice and are able to connect information across fields, and apply multiple lenses through which to view the same problem. For Abigail Larrison (2013), this approach holds a greatest potential to provide a framework for evidence-based practice:

MBE provides an avenue to begin to examine how educational approaches support or constrain critical cognitive capacities and can provide the framework for understanding how to encourage a change in the system so that we are supporting teachers and schools to develop students' cognitive abilities. [...] In general, MBE emphasizes the development of the brain with respect to cognitive development and the support of cognitive capacities, such as emotional intelligence, communication, critical thinking and creativity. (pp. 9-10)

Daniel Ansari, Bert De Smedt and Roland Grabner (2012) stress the importance of 'neuroeducation' becoming a truly interdisciplinary endeavor that involves neuroscientists, educational researchers, and teachers as equal partners. Through interdisciplinary training programs, neuroscientists will become knowledgeable with regard to educational research and pedagogy, and will be able to ask more educationally relevant questions. Accordingly, teachers and educational researchers will be exposed to the latest neuroscientific findings, theories and methods, including their limitations, and will be able to use knowledge gained through exposure to neuroscience in their educational practice. The bi-directional and reciprocal interactions

between both disciplines of neuroscience and education (praxis and research) will allow to transcend the obstacles in communication, to achieve a common language, and to generate future research questions. The authors write:

While neuroscientists have an in-depth understanding of how the brain changes as a function of learning, only a few neuroscientists have a good insight into educational research methods or indeed, into what is known from a long-standing history of educational research about learning processes. Unfortunately, in our experience, neuroscientists are frequently ignorant about progress that has been made in educational research and, consequently, will misrepresent or underestimate current research on learning and instruction, which can, justifiably, lead to negative attitudes amongst such researchers towards neuroeducation. Furthermore, neuroscientists frequently are largely unaware of the current pedagogical approaches used in schools and, therefore, lack an actual overview of what is being taught in school, how this is taught, and what expectations are being set by curricula etc. (p. 112)

In short, if we want teachers to understand the potentiality of brain-based education we need programs from public institutes and organizations and published works, ‘friendly’ to educators, and with an appeal to psychologists as well. Teachers must receive training and support for providing instruction with-the-brain-in-mind and in order to take advantage of knowledge about the brain and to understand why they must use a particular instructional strategy.⁶⁶ Finally, they need help to separate non-scientific information – based on little or no research, overgeneralizations, half-truths– from valuable, accurate, and up-to-date knowledge (Howard-Jones, 2014;

⁶⁶ Janet Dubinsky and her colleagues (2013) developed and implemented a sequence of professional workshops called *BrainU*, aiming to improve teachers’ knowledge of and confidence in basic neuroscientific research. The knowledge of the biological basis of learning gave teachers a more positive attitude towards each student’s ability to change and learn. *BrainU* teachers became more self-aware of how their own teaching behaviors had the capacity to change students’ brains as students construct their own knowledge. They indicated they would transform their pedagogy, change their teaching strategies and classroom practices, and implement more active, student-centered lessons. They reported that this new neuroscientific knowledge increased their ability to be patient and helped them better understand how factors, such as stress, influence students’ performing in school. Finally, they shared their newfound knowledge of brain with their students, increasing their understanding of metacognition and their role in learning.

Larrison, 2013; Dubinsky et al., 2013; Tokuhama-Espinosa, 2012; Shore & Bryant, 2011; Willingham & Lloyd, 2007; Tokuhama-Espinosa, 2008a); they should seek valid scientific research before integrating brain-based practices in their classrooms (Geake, 2008). Above all, brain-based teaching-learning procedures need new pedagogical language and interdisciplinary collaboration.

This does not mean that teachers have to become neuroscientists and know exactly the function of brain's areas. However, it is very imperative to become aware and keep in mind that different brains learn differently. They must be well informed about brain plasticity: how brain works, what brain areas are interconnected, how brain changes in response to various situations and stimuli, what kind of experiences develop particular brain areas, what restrains plasticity as the brain matures, and how difficult it is for a brain to 'unlearn' deeply embedded skills or knowledge. They should be informed about the malleable characteristics of students and implement practices (e.g., on-going personalized support, relevant curriculum, flexible repertoire of classroom strategies) that can positively affect these characteristics and can increase the chances for progress for all students. They have to constantly remember that there are many different brains in their classroom, and every brain is unique due to the difference in synapses which is the outcome of genes, prior experiences, family environment, and all learning environments. Overall, they have to recognize and respect individual differences among students and stop lecturing to fill students' tabula rasas.

Teachers' awareness of brain functioning may help them re-consider the notion of 'non-teachable' student; re-examine the characteristics of passive students; understand why some students struggle at school (e.g., to pay attention, to follow directions, to understand, categorize, and retain information, to organize their actions); conceive the importance of student's emotional wellness and the benefits of a positive climate in the classroom; scrutinize practices that stimulate thinking rather than inhibit it; establish climate and methods that activate students and facilitate learning; develop stimulating and supportive educational environments; and realize that the same environment is experienced differently by particular children due to their individual characteristics (e.g., one student's brain may categorize information differently from another student's brain).

Curriculum designers, from their side, must join neuroscience and education in order to promote brain-compatible methods of teaching-

learning, re-examine the issue of scheduling time, and look ahead for enriched environments that could potentiate the brain for learning. For example, there is substantial evidence that play, physical activities, outdoor experiences, music, and arts feed and strengthen many key areas of the brain, because they appeal to every aspect of humans (physical, social, emotional, cognitional, aesthetic), and maximize neural circuits that are not engaged by verbal and/or auditory learning experiences.⁶⁷ Indeed, when students are engaged in joyful activities and find learning interesting and relevant to their lives, their brains are able to store what they learn in long-range memory more effectively (Gregory & Kaufeldt, 2016; Willis, 2006). Thus, curriculum designer ought to re-examine the role of the non-core school subjects, such as music and arts. It may be time to rethink our curriculum from zero. Finally, neuro-findings can also illumine policy makers to develop more apt interventions based on brain works (Larrison, 2013; Shore & Bryant, 2011).

To sum up, the advances in neuroeducation is a promising avenue to move towards a truly equitable education for all students. However, there are many conceptual, practical, and ethical issues to consider (Ansari, 2014, p. 1705). Abigail Larrison (2013) posits that translating brain research into practice is still a matter of clarifying the pedagogical approaches of neuroeducation, that is the theoretical underpinnings between the science and the classroom practice (mainly, curricular model that could be applied in schools). She also turns our attention to issues of ethics⁶⁸ in education writing:

⁶⁷ The arts have become a central piece for brain researchers studying the learning sciences. There are many programs, from the Dana Foundation, National Science Foundation and John Hopkins, that focus on the impact of music and art on the brain (on learning, memory, motivation, and creativity and so on). Larrison (2013) states that the “interdisciplinary research on neuroaesthetics is helping to combine findings from neuroscience, cognitive science and philosophy to shed light on the impact of the arts in human experience and their capacity to transform our educational system (Croft, 2011). [...] Arts naturally lead themselves to integration of subjects and artistic activities themselves can be easily created to be process oriented. [...] One of the advantages of neuroscience is that it can demonstrably show the neural benefits of the arts.” (pp. 63-64).

⁶⁸ Bruer (2015) states that “we know very little about what types of experiences are most influential in brain development and even less about the timing of those experiences. Doing adequately controlled studies about the timing of experiences is difficult in animals and even more so in humans for both methodological and ethical reasons.”

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

What does it mean when we recognize that our interactions are shaping the structure and neurochemistry of our students' brains? What does it mean when learning is understood for its functional and structural impact on the brain? The responsibility of teachers as shaping the architecture and neurochemistry of the brain brings about the discussion of ethics in education. By not providing teachers with an awareness of how they might be interfering with natural processes of learning, or how they may be mis-wiring the brain is one that deserves attention in relation to questions regarding whether we should move forward in the agenda of neuroeducation. (pp. 37-38) [...] As the unknown is faced and new possibilities for education are uncovered, novel issues affecting the field, such as neuroethics, neuroaesthetics, and the connection of spiritual experiences to sense of meaning, motivation and learning will need to be addressed. Although the debate surrounding the primary goals of the field will continue to evolve, there is great hope that this approach to education can make significant change in policy and practice that will better serve teachers and students in the future. (p. 386)

We certainly live in the 'Brain Era'. School should not be 'brain-unfriendly' any more. Neuroscience can be a reliable educational ally and can help the educational field moving forward. Although neuroscientists are not yet providing all the answers about what happens in the classroom, they can help us understand and explain why we must focus less on the 'what' and 'how' we teach and more on 'who' and 'when' we teach. Teachers, from their side, could bring issues they observe in the classroom to neuroscientists, to help boost the research in a way that is fruitful. The brain matters. It matters for teachers, for parents, for policy makers, for curriculum designers. The brain matters because children matter.

“Hole-in-the-wall Learning Stations”: a pioneering work, an inspired idea (and the example of “Unschooling movement”)

Whether the new technologies will be used effectively in school is open to question. Attempting to address this challenge, and given the fact that learning occurs outside the school walls, Sugata Mitra, the winner of 2013 TED prize, set up the “Hole-in-the-wall Learning Stations” project in India as a new paradigm in the learning process. His model is based on studies which indicate that children learn best in environments that are conducive

and aligned to their cognitive and mental models. The “Hole-in-the-wall” provides unrestricted computer and internet access to groups of children in an open playground setting targeting to stimulate learning using child’s natural curiosity. The unstructured, collaborative, and unsupervised nature of the “Hole-in-the-wall” settings ensures that children themselves take ownership of their learning and that the entire process of learning is driven by a child’s natural curiosity.

In Mitra’s project, computers were installed and embedded into brick walls close to slums in several Indian cities and villages. The data reported by Mitra (2005) provide conclusive evidence that groups of slum children, between the ages of 6 and 14, are able to learn how to use computers on their own or by teaching each other, if they are given access to a computing facility: children with no computer skills, learned how to use computers but also learned basic English; it did not take them long to become ‘experts’ themselves. The ability of groups of children to learn on their own is found to be independent of who they were or where they were. In other words, economic, social, geographical or other factors do not seem to affect their ability to be self-instructed in groups. Such group self-instruction does not seem to happen within a school, possibly because the learning groups cannot be diverse enough (see also Mitra et al., 2005).

In a recent study, Mitra and Dangwal (2010) posed the question “What and how much can children learn without subject teachers?”. In order to define the limits of self-organized learning, they carried out a “Hole-in-the-Wall” experiment. The researchers found that village children, who only had access to computers and Internet-based resources in the “Hole-in-the-Wall” learning stations, with the support of a mediator (such as parent, grandparent or other adult), achieved test scores equal to students’ from a privileged private urban school. The progress made by the students alone was considerable. And therein lies the lesson: it may be possible to develop a model for future schooling where children learn together working in groups with access to the Internet and a friendly mediator.

Disadvantaged children are at double jeopardy, because they do not receive literacy experiences at home and are unable to cope with school challenges. Mitra’s pioneering work offers new paths of reflection and analysis about the limits of learning and constitutes a promising road for reducing educational disadvantage. From this perspective, one can envision the need to look for alternative pedagogy and for opportunities for children to learn outside school walls: in the community and the local environment.

The “Hole-in-the-Wall” project can serve as a proof that education must not be taken as synonymous with schooling. As Tristan McCowan (2010) points out “there may be ways in which the right to education may be provided even in the absence of a formal school system. There are many arenas in which education can occur, such as in apprenticeships, voluntary organisations and local community settings” (p. 514). Unfortunately, non-formal education rarely leads to the type of certification that grants positional advantage to individuals, with ‘success’ in the formal system. No matter how much can one learn through non-formal education, and whatever the knowledge and skills can one acquire, “these opportunities are not available in most societies without this certification” (p. 521).

At this point, I would like to refer to the “Unschooling movement”. Unschooling is not a new movement. This form of education was first coined by John Holt in the 1970s, who suggested that school is not the only place for a child to learn. School attendance is not the only way to become a successful, sociable adult. John Holt once said that “Birds fly, fish swim; man thinks and learns.” So, if we know that we need to study the life of birds and fish in order to learn how they travel in the sky and the sea, why, then, do we refuse to learn from the very lives of children? Why do we end up stifling the real needs of children and forcing them to spend so many years in an environment that is not connected with real life, which traps learning to the infertility of textbooks? Holt’s ideas about teaching and learning continue to be adapted by a variety of homeschooling parents and independent alternative schools (Meighan, 2007).

The Unschooling movement is also influenced by Ivan Illich’s work (1971) around the ideas of educational freedom and learning through real life experiences, and his criticism of modern bureaucratic, authoritarian institutions as purveyors of conformity, pollution, mindless consumerism, war and a host of other social evils (see Rolstad & Kesson, 2013). Illich (1971) strongly criticized the school education system noticing that the most important education is the one implemented out of the school: there is no need for school since life is a school and every person is a teacher. More than that, schools alienate children and youths from learning, killing their imagination.

The idea of “Unschooling movement” comes into practice –with very good results (reported by parents, teachers, and researchers)– in today home-schooled children (Gray & Riley, 2013; Rolstad & Kesson, 2013;

Martin-Chang et al., 2011).⁶⁹ The reported benefits of unschooling include improved learning, better attitudes about learning, and improved emotional and social wellbeing for the children; and greater closeness, harmony, and freedom for the whole family (Gray & Riley, 2013).

Home-schooling is about families who get together and hire a teacher to educate their children at home instead of sending them to school. In most cases teachers are the very same parents of the children. The homeschooling family is not necessarily a wealthy one. It may include traditional, middle-class two parent households, but also single parents, low-income families, families with parents or children who have physical disabilities, and two income families.⁷⁰

Families come to unschooling from many different paths (Gray & Riley, 2013). The most important reasons for homeschooling is the dissatisfaction of parents with the current mainstream educational model, with the school environment and the academic instruction available at schools (i. e., lack of creativity, high stakes testing, bullying and other violence), and the need to provide religious or moral instruction to their children. It is also likely that families flee schools in favor of educating their children for creativity and the love of learning (Rolstad & Kesson, 2013; Princiotta et al., 2004).

Home-schoolers follow no predetermined curricula. They learn primarily through everyday life experiences. They participate in apprenticeship activities and learn from and in the community, that is, in the real world. The informal home-school curricula are based on subjects and inquiry projects that interest children and match their abilities. They involve many outside activities from library and museum visits, to planting trees and keeping animals.

Unschooling constitutes a revolution in the way parents and teachers think about learning. It places pleasure in learning at the forefront (Rolstad & Kesson, 2013). Home-schooling provides flexible learning environments

⁶⁹ A 2011 Canadian study (Martin-Chang et al., 2011), which compared the academic achievements of homeschooled children with children attending traditional public school, found that “structured” homeschoolers (who were taught from organized lesson plans) students ages 5 through 10 outperformed traditional students. But the data showed that “unstructured” homeschoolers (who were not taught in an organized way) well are achieving the lowest in standardized scores in comparison with the two other groups.

⁷⁰ Retrieved January 22, 2016 from <<http://www.johnholtgws.com/writing-by-patrick-farenga/>>.

for creating personalized learning experiences where children can learn on their own pace. In this account, home-schooling has many things in common with Mitra's project. They are both based on the premise that schooling is not the same thing as education. Besides, due to the explosion of digital resources, many today youths are home-schooled. As stressed by Perlman Robinson & Winthrop (2016) "[T]he combination of massive failures in schooling and the promise of new methods and technologies to create a different learning environment has many people asking whether schooling as we know it is even necessary" (p. 128).

At the present time, the option and the importance of non-formal education, which takes place outside mainstream education system, is well recognized by Unicef and Unesco. Non-formal ways of education may be a viable alternative, providing foundational skills to out-of-school children and helping them overcome the multiple problems they face (UNESCO Institute for Statistics and UNICEF, 2015). All the above do not to suggest that going to schools does not matter, but rather that there are alternative ways to think about education and about the bonds between school and society. The most salient feature that Mitra's project and unschooling movement has in common is that they both embrace the idea of outdoor learning and community real-life projects. If anything, their success provides a rich source of evidence of how natural and pleasurable learning can be for children who are encouraged to pursue their interests, beyond the traditional forms of schooling.

EPILOGUE 1 – RESEARCH-BASED EDUCATION

The notion of research-evidence-based education and the issue of the translation of scientific research into educational applications have a long history. Knowing why certain strategies work and why others do not is instrumental for boosting the transformation of education pedagogically (Shore & Bryant, 2011, p. 38), for improving instructional practices and outcomes. In this context, researchers need to carry the conversation forward; they must raise new meaningful questions.

Teachers, from their side, like all professionals, need opportunities to make further progress: to learn about innovate instructional methods, to find practices that actually work or to transform their existing practices, to be more effective instilling desire for lifelong learning to their students. To this end, they have to be well informed about the advances in educational related research, to make thoughtful use of the research –even to synthesize research– and to set and reach particular goals under certain conditions.

But what is really happening? Teachers have to deal with an enormous body of research which is like a tsunami. Even worse, they have to deal with articles in popular press and leaflets which present checklists of things they could do in order to motivate their students to learn. The Internet is full of non-scientific sites which describe “Effective ways to maximize academic progress for all students” or offer guides in form of recipes on “How to close the Achievement Gap for all students”. And there are also sites which advertise their potential to measure accurately students’ growth, responding to school-market needs: measurements and accountability. Unfortunately, many teachers trust these sources. And they ignore recent advances in behavioral and social sciences, neuroscience and genetics that provide valuable data that can inform and improve their existing practices.

Teachers need to learn now more than ever, how to separate the wheat from the chaff: to be able to detect the differences between well-documented scientific methods and interventions, and other well-advertised solutions proposed by people who want simply to sell their products. But this is only the first step. The next action step is to offer them help to understand why their practices ought to be aligned with research. This is a crucial step, because teachers tend to reject data that does not affirm their

prior experience and, most important, the experiences they had as pupils. Simply asking teachers to use research data is not sufficient. Researchers should be ready to explain the advantages of a particular method and should consider whether the way they present their results is understood by the teachers.

The dream-team of the Center on the Developing Child at Harvard University (2016) emphasize that generating, implementing, and evaluating new ideas is most effective when it results from active collaborative processes that link theory, practice, and research, and combine multiple domains of knowledge, expertise, and experience. These domains include: science that offers relevant contributions from a range of fields; practice that is grounded in a pragmatic understanding of what it takes to design and implement specific strategies in particular contexts; community that brings the expertise, wisdom, and values of local leaders and parents who understand best what kind of resources and supports are needed; policy makers that can identify the balance between costs and benefits, and know how to generate system-level conditions for promising innovations (pp. 33-34).

But productive collaborations of the above types are complex and difficult to be achieved. Sadly, it seems that a gap between research and practice still exists in areas such as education, and child development. For Alicia Chodkiewicz and Christopher Boyle (2014), the responsibility for narrowing this gap lies with the research community, educational practitioners, and educational psychologists as well. Pia Britto and her co-authors (2008) take another point of view noticing the complex relationship between scientific findings and the political systems that either sanction or subvert their use. They assert that “the validity of the information is tested in terms of the quality of the research, the methodological robustness and technical merit. The utility criterion, on the other hand, tests the implications of the research for ameliorating the problem situation the policy is designed to address” (p. 103). For Marc Tucker (2016) and Thomas Kane (2016), the problem is not about the quality of the educational researches. It rather lies in the failure of the researchers to adequately deal with education system effects and the lack of an effective distribution system to get the research to the ‘target-group’, namely to teachers. The result is that educators are confused and develop skepticism about whether a research might be applicable or not.

Educational researchers are criticized by teachers for using overly scientific language (specialized vocabulary) that is not understandable to

anyone else beyond their field, and their inability to translate their findings into practice. The research community has been also criticized for its over-reliance on laboratory studies far removed from real classrooms (Chodkiewicz & Boyle, 2014) and its tendency to overstate and “advertise” the exciting results of a study, often in isolation of other factors that are correlated in school settings.

Another issue that sparks heated debate is the one of the applicability of a proposed method. In particular, teachers seek approaches that are feasible to implement. In this basis, several teachers have realized that an instructional method X demonstrates better results in learning compared to a previous traditional method Z just because in control groups teachers might be less passionate. In other words, many innovative approaches, methods or programs show positive results in many researches in part, because they were implemented by well-trained and/or enthusiastic teachers and researchers-educators who teach more intensely and devote a higher proportion of classroom time to achieve their goals. Gains made in laboratory settings or in small-scale interventions are not always maintained when the recommended practices are integrated into the real classrooms settings. Their promising results cannot be replicated in larger populations. This may be happening because small-scale studies are not followed by larger randomized controlled studies, with different populations or age groups. All the above may explain why strategies have been proven effective by research and scientific findings and that were hailed as heralds of a new era in education, they have not found a place in classroom nor impacted on educational reforms.

Apart from that, teachers get confused when they note that there is not always consensus among researchers and policymakers on the effectiveness of certain educational intervention. Consequently, many educators tend to question the value and efficacy of many studies. Moreover, they feel that the findings tell them little about how and why to act. How can such evidence be applied to real world classroom settings? Certainly, we cannot expect research to provide easy answers or answers to everything, or a ‘quick fix’ to educational problems. Research provides findings and not recipes for better teaching. It cannot determine directly how teaching should take place (Ansari et al., 2012). Besides, there is no a single method which works well for all students under all conditions.

Another major problem is that scientific knowledge encounters obstacles reaching policy makers. It seems that science does not speak for

itself. Thus, many researchers begin to realize that they have to make scientific data user-friendly in order to increase awareness, knowledge, and most importantly, policy action (more investments in research projects, revision of curricula, designing of interventional programs and so on). Bringing data to decision makers in ways that could be understood, there are more chances for effective reforms. At the other extreme, the absence of a research-based educational reforms may threaten the future of education (Center on the Developing Child at Harvard University, 2014).

Concluding, scientific research can be a catalyst for developing new approaches that have the potential to achieve breakthrough outcomes for children and youths. Clearly, good research data can lead to solutions for improving school practices. But educational researchers have to study the educational problems in depth in order to bridge theory and practice, seek solutions and provide new tools and new horizons for policymakers and practitioners as well. They must produce useable knowledge in order to assist educators to transform and improve their practices –or revise those that do not work. They must find new ways to support leaders as they seek solutions (Kane, 2016). They must try to reduce the communication barriers and share their results in clear and concrete ways; in ways that they make sense to the teachers who are ultimately responsible for applying them in classroom. Otherwise their efforts though scientifically-grounded are useless (Shore & Bryant, 2011, p. 38). Above all, it is essential for researchers to see schooling from the point of view of teachers and respect their professionalism; to know about what it takes for teachers and schools to implement novel classroom techniques. Understanding problems, obstacles, and dilemmas teachers face is a good entry point for educational researchers to define their agenda.

EPILOGUE 2 – CRITICAL RECOMMENDATIONS

Many factors contribute to student achievement in school. I hope that the discussion of the present work painted a clear enough picture of the pivotal role of preschool experiences and the impact of certain personality traits and non-cognitive factors on students' achievement in school and on their lives after school. Admittedly, we need much more research involving both longitudinal and comparative studies to test hypotheses about the importance of factors such as the role of parents, school readiness, childhood non-cognitive skills, and personality traits, in progress in school and life before/ in order to determine the predictable value of those factors and to draw accurate conclusions.

An academic mindset requires certain academic behaviors and the belief that with effort and persistence they will succeed. School system works, reasonably, for students who have the competencies that it requires; who are convinced that their future may depend on the school grades; who can develop appropriate habits of learning and studying and possess skills to 'survive' in school; who have adapted more effectively to the system. Students who value school learning, for various reasons, often fare quite well. Schools are designed for them; for high- and average-achieving students. But what about the 'others'? Those who have not developed academic mindsets and are not 'a pleasure to teach'? Those who are not academically either able or challenged? Those who are gifted in non-academic domains? Those who do not have many early experiences to draw from? Those who come from disadvantage socio-economic backgrounds? Those who are unable to cope with school pressure? How can we best support students who are in academic need? And what about those who are demotivated and believe that they do not need to learn what is taught in school? Are they doomed to fail later in life? On the other hand, those who are able to cope with the demands of school have better and more opportunities in life? Are they better prepared for life and workplace requirements? Is it the case that the *Matthew effect* (Stanovich, 1986) has become the norm? That is, the rich, namely the academically capable student, will get richer and the poor, the academically less-capable student, will get poorer?

Why should we care about your school if you don't care about us?

This question emerged indirectly yet explicitly by all students in this study, by both low achievers and high achievers. Given the today reality – bureaucratization and centralization of school systems, using test results to reward or punish teachers and schools, rigorous assessment and accountability systems, emphasis on everything that can be measured—almost nobody is seriously concerned about this matter. The ambitious politicians, legislators, and administrators who decide about the ‘what’, ‘where’ and ‘how’ of education disregard the ‘for who’ and ‘by whom’ questions.

The institution of school proves largely resistant to true reform (McCowan, 2010, p. 522). Myopic policymakers continue to advocate for an outcome-based school and try to raise school quality by adopting management strategies, by experimenting with various reform models, from increasing accountability to establishing new standards, and by proposing top-down solutions. They keep on making important decisions –about children and youths, their teachers and their parents– based entirely on standardized test scores, despite compelling evidence that this model cannot work. Lacking the ability to think holistically about education, they insist on focusing narrowly on the symptoms of the failure of the school, by scapegoating teachers, and not on their own responsibilities. And they continue to adopt factory-, management- or market-based models, models which are designed to create and rank winners and losers, and to disregard what happens inside classrooms (Carlbaum, 2014; Connell, 2013; Ravitch, 2010). They think they can “fix education by applying the principles of business, organization, management, law, and marketing to incentivize the workforce –principals, teachers and students– with appropriate rewards and sanctions” (Ravitch, 2010, p. 11) Through their policies they impose a ‘technocratic-bureaucratic pedagogy’ at both classroom pedagogy and curriculum management level (Formosinho & Figueiredo, 2014, p. 399). Without ignoring the fact that policy decisions have major economic and social effects, we ought not to see education as industry. By analogy, schools are not businesses; they are a public good (Ravitch, 2013).⁷¹ Children are firstly human beings, with unique

⁷¹ For Apple (2005), education is an arena of struggle and compromise: “It serves as a proxy as well for larger battles over what our institutions should do, who they should serve, and who should make these decisions. And, yet, by itself it is one of the major arenas in which resources, power, and ideology specific to policy, finance, curriculum, pedagogy, and

personalities and gifts, and secondly students. They are not ‘cases’ or statistics. No longer can schooling be about creating test takers, but rather about nurturing human beings (Wolk, 2007). Today students have so many more needs than the traditional school offers.

Certainly, there are some well-intentioned educational reforms that have succeeded to introduce new methodological and assessment tools. Yet the problem is that the vast majority of them cannot be de-caged from a standardized curriculum which is limited to students who are able to perform well in the core school subjects and on the tests. Consequently, they do not offer opportunities to many other students to develop their talents in other areas (see Zhao, 2009). So, they end up simply ‘polishing’ the existent mechanism. In addition, we can list a number of ways in which contemporary practices of schooling infringe human rights, including discrimination against minority and disadvantaged groups (McCowan, 2010, p. 518). The current system fails when dealing with the heterogeneity in the school and the rich and complex cultural diversity of individual students.

When it comes to assessment, test scores are readily accepted by policy makers as reliable indicators of educational quality (Gunzenhauser, 2003). But measures of learning outcomes are just one partial source of information on quality. As reported by Angeline Barrett (2011), performance in tests covers a small part of the curriculum, usually just mathematics and literacy. Hence the concept of education quality is reduced to a convenient but partial measure. Thus, as long as school treats test scores as the major proxies for student achievement and as selection mechanisms, as long as it continues to label children by academic ability, it will be impossible to realize what really matters in school (Eisner, 2004, p. 6).

In other words, we must all be skeptical about solutions –and studies as well– which are based alone on students’ scores on standardized tests and graduation rates. These decisions pay little attention to the factors that are behind scores data and measurements and even less attention to groups of students most in need. Certainly, there are students who succeed in the traditional school settings. They succeed in spite of, and not because of, what, how, and by whom they are taught at school. The success of these students distracts many observers and reformers and leads them to the false conclusion that since the present system works well for some students, it can work well for everyone (Prensky, 2012).

evaluation in education are worked through. Thus, education is both cause and effect, determining and determined” (p. 272).

The fact that today schools in the vast majority of western countries are not that different from those a century ago is common ground.⁷² Formal education is a predictable and tired system, a stagnant structure, based on academic disciplines which are poorly integrated with each other, shaped by inflexible rules, rigid standards-based instruction and punitive reward processes. Ken Robinson, in a 2006 TED Conference, stated that we have been trying to meet the future by doing what we did in the past, and on the way we have been alienating millions of kids who do not see any purpose in going to school (Diakiw, 2012). Thus the goals of education should always be subject to review and debate. Education system is built for continuous improvement. We cannot have the once-and-for-all answer to education quality because it is not an easy expedition: it belongs with the many policy-makers, educational professionals, students and parents, who influence and participate in education in various diverse contexts all over the world (Barrett, 2011).

The education system is guilty for its inability to place student voice at the centre of teaching-learning procedures; it is guilty for its tendency to marginalize students who do not exhibit certain 'academic' characteristics, who do not fit in school system; it is guilty of fossilizing emerging inequalities as a result of its failure to adapt to underlying social and cultural change; it is guilty for isolated, fragmentary reforms, and for policy measures that enhance, or maintain at best, the social inequality. Of course, it is easy to criticize the school system while it is more difficult to suggest a better one. Everyone can acknowledge the complexities of changing schools and school systems. Therefore, while I recognize that it is not fair to put all the blame on school, it is reasonable to assert that, as long as it remains

⁷² Alvin Toffler (1971) had noticed that the whole administrative hierarchy of education, as it grew up, followed the model of industrial bureaucracy. The inner life of the school thus became a perfect introduction to industrial society. The most criticized features of education today are precisely those that made mass public education so effective an instrument of adaptation for its place and time. Ken Robinson (2009) writes: "Why are school systems like this? The reasons are cultural and historical. [...] [M]ost systems of mass education came into being relatively recently –in the eighteenth and nineteenth centuries. These systems were designed to meet the economic interests of those times –times that were dominated by the Industrial Revolution in Europe and America. Math, science, and language skills were essential for jobs in the industrial economies. The other big influence on education has been the academic culture of universities, which has tended to push aside any sort of activity that involves the heart, the body, the senses, and a good portion of our actual brains" (pp. 35-36).

purely bureaucratic, we stand off the vision of learning communities wherein their members –students, teachers, and parents– share knowledge, experiences, ideas, and ideals with moral values.

There is no rationale for continuing with the educational policies we have now. There is no excuse for anyone who attempts to maintain the status quo of school, for anyone who denies the need to question the traditions of schooling, for anyone who accepts the school system as a given and pursues reforms that are fragmentary or marginal. Now, more than ever before, it is imperative that we find ways to address school's problems. It is necessary to break a lot of the conventional and archaic rules we used to take for granted. There is a need to create environments in which all students embrace the idea of life-long learning. There is a need for curricula designed to prevent early failure syndrome and provide early victories. We are morally obligated to re-envision the educational system from the perspective of the learner.

There is no need for a better school within the present conditions; there is a need for a different school.

Clifford Geertz (1973, p. 9) wrote that “one of the most significant facts about us may finally be that we all begin with the natural equipment to live a thousand kinds of life but end in the end having lived only one”. School years have a far more lasting and wide-ranging effect on this life. Ironically, we tend to ignore the fact that school is for children's and youths' real life. School is certainly not only about their future; it is mostly and overall for their present. Grobstein and Lesnick (2011) note that the perspective of school as ‘living’ opens the door to reconsiderations of pedagogical practices at all levels of the educational enterprise. What if we could create the conditions for them as to find the life inside the school building as exciting as the life outside the building, or even more exciting? What if we could apply the deweyan notion that “education is a process of living and not a preparation for future living” (Dewey, 1897, p. 78)?

Everything children do in school affects their future, positively or negatively. The philosopher Eric Hoffer (1954) has written: “The only way to predict the future is to have the power to shape the future” (p. 78). So, deciding the kind of school we want, we decide the quality of future we want. A future where the school-train will not continue to leave the station with the disadvantaged students left at the platform? The future is in our hands.

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

It may be utopian to believe, in Eisner (2004a) words, that we can mount a revolution. What we can do is to generate other visions of education, other values to guide its realization, other assumptions on which a more generous conception of the practice of schooling can be built (p. 4). So, the story of school can be re-written as a narrative of failure, or it can be re-written as a story of real progress –even as a story of success.

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From kindergarten to early adulthood. What factors most influence students' academic trajectory?

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APPENDIX

Students' profiles (in alphabetic order)

CHARLIE (he entered kindergarten 4,5 years old)

Openness-to-Experience: huge desire and interest in new knowledge and new experiences; tendency to approach new tasks with enthusiasm; sensitivity to perceptual experiences; curious; creative and inventive; innovative; interest in art and aesthetically sensitive; free spirit; ability to think outside of the norm; problem solver; unconventional; ability to think in symbols and to understand concepts and ideas.

Conscientiousness: selectively responsible; persistent; organized and efficient; desire and goals for achievement; dedicated but selectively diligent; little attention to detail; great deal of spontaneity.

Extraversion: extrovert; persuasive; high pleasure in social interaction; optimistic; enjoying team participation; taking initiatives; preference for activities that involve adventure; easily and highly enthusiastic; intensity of reaction (whether positive or negative); positive emotions; talkative; stubborn; energetic; liking changes.

Agreeableness: friendly; helpful; genuine; not forgiving; compassionate; dominant; assertive; selectively tolerant; not jealous; often antagonistic towards others (occasionally selfish).

Emotional Stability /Neuroticism: decisive; sensitive; high self-confident; no anxiety about his performance; ambitious; high impulsiveness; temperamental; concern about other people; ability to cope with the unexpected.

School-Behaviors: love for school; selectively obedient; awareness of following rules and procedures; in a hurry to complete school tasks; self-reliant; sloppy regarding his personal stuff; strong sense of justice; leadership tendencies; desire and effort for autonomy; ability to work both independently and as part of a group; self-motivated; devoted to any school activity yet easily distracted.

School-Skills: high level of school readiness; perceptive; concentrated and committed to school tasks; ability to follow instructions involving two or more steps; memorization ability; classification skills; comprehension skills;

metacognition skills; he learnt to recognize and write numbers up to 10, he could count a set of objects up to ten, and he was able to solve simple addition and subtraction items (he demonstrated particular interest in this task); he developed reading and writing skills at a sufficient level (understanding the letter-sound relationship); rather rich vocabulary; high interest in nature and sciences; he demonstrated ability to realize his errors and correct them; appreciating doing schoolyard activities (running, climbing, digging, rolling in the grass); interest in painting; moderate interest in music activities; rhythmically accurate; feeling comfortable in drama activities (high improvisation skills); skillful in physical activities; interest in the classroom library; at “free choice time” he used to play in the blocks area, puzzles area, and drama play area.

In the first interview with mothers, Charlie’s mother confirmed this profile in its whole. Charlie’s mother and I came to agreement that Charlie would make remarkable academic progress. At the age of 19, Charlie’s mother confirmed anew her son’s profile but she stressed that her son lacks the ability to make responsible decisions and manage emotions.

HELEN (she entered kindergarten 4,6 years old)

Openness-to-Experience: desire and interest in new knowledge and new experiences; tendency to approach new tasks with moderate enthusiasm; sensitivity to perceptual experiences; moderate curious; creative and inventive; problem solver; interest in art and aesthetically sensitive; free spirit; ability to think in symbols and understand concepts and ideas.

Conscientiousness: responsible; persistent; organized and efficient; self-disciplined; desire and goals for achievement (and did not deviate from them); dedicated and diligent in almost everything she did; striving for accuracy; attention to detail; moderate spontaneity.

Extraversion: pleasure in social interaction; displeasure in high intensity situations and conflicts; moderately enthusiastic; positive emotions; moderately talkative; a little stubborn; moderately energetic; preferring activities with controlled social contact; rather timid.

Agreeableness: friendly; helpful, not forgiving; enjoying team participation; not very modest; considerate; somewhat assertive; sometimes jealous; sometimes suspicious; sometimes antagonistic towards others (occasionally selfish).

Emotional Stability /Neuroticism: calm; rather sensitive; self-confident;

From kindergarten to early adulthood. What factors most influence students' academic trajectory?

not ambitious; no anxiety about her performance; emotionally stable; decisive; managing impulsivity; self-controlled; high self-concept; ability to cope with the unexpected.

School-Behaviors: love for school; obedient; sometimes in a hurry to complete school tasks; self-reliant; sometimes sloppy regarding her personal stuff; no leadership tendencies; self-motivated; enjoying autonomy; ability to inhibit behavior; ability to work independently and as part of a group as well; focused on most school activities; responsible in following rules and procedures; not easily distracted.

School-Skills: high levels of school readiness; perceptive; concentrated and attentive; ability to persist on school tasks despite distractions; ability to follow instructions involving two or more steps; memorization ability; classification skills; comprehension skills; metacognition skills; she learnt to recognize and write numbers up to 10, she could count a set of objects up to 10, but she showed no interest in solving mathematical problems; she developed advanced reading skills (word decoding skills, understanding the letter-sound relationship, making inferences using cues) and writing skills; rather rich vocabulary; low interest in nature and sciences; she demonstrated ability to realize her errors and correct them; interest in painting; moderate interest in music activities; she easily learnt to recognize the notes on the staff; rhythmically accurate; feeling comfortable in drama activities; feeling comfortable in physical activities; interest in the classroom library; at "free choice time" she used to play in the puzzles area, drama play area, and art area.

In the first interview with mothers, Helen's mother confirmed this profile. Helen's mother and I came to agreement that Helen was a promising student, noticing her dispositions to learn and her self-concept. At the age of 19, Helen's mother confirmed anew her daughter's profile. In Helen's mother's view, Helen had met her parents' academic expectations.

JASON (he entered kindergarten 4,6 years old)

Openness-to-Experience: selective interest in new knowledge and new experiences; tendency to approach new tasks with enthusiasm but with shallowness; curious; selectively creative and inventive; highly imaginative; interest in art and aesthetically sensitive; free spirit; unconventional; difficulty in thinking in symbols and understanding concepts and ideas.

Conscientiousness: rather irresponsible; occasionally persistent; ill-

organized; not self-disciplined; desire for achievement; not diligent; inattentive; great deal of spontaneity.

Extraversion: extrovert; pleasure in social interaction; taking initiatives; high-spirited; rather individualistic; high sociability; highly enthusiastic; optimistic; positive emotions; talkative; rather stubborn; energetic; carefree; liking changing; indiscreet; intensity of reaction (whether positive or negative); interpersonal skills; preferring activities with high social contact.

Agreeableness: friendly; cheerful; helpful; genuine; affable; generous; forgiving; compassionate; trusting nature; cooperative; not jealous; not suspicious; assertive; sometimes antagonistic towards others (sometimes aggressive).

Emotional Stability /Neuroticism: adventurous; ambitious; highly sensitive; self-confident; no stress; no anxiety about his performance; emotionally unstable; temperamental; high impulsiveness; low self-concept; careless; preoccupation with situations that involve danger; concern about other people; ability to cope with the unexpected.

School-Behaviors: love for school; not obedient; in a hurry to complete school tasks; reliant on others for help with completing a task; sloppy regarding his personal stuff; leadership tendencies; desire and effort for autonomy in specific activities; ability to work as part of a group but often only in his own terms; selectively self-motivated; in some cases he used to react aggressively; difficulty in following rules and procedures; devoted to selected school activities; easily distracted.

School-Skills: low levels in school readiness; inability to sustain attention and to persist in school tasks due to distractions; inattentive; less committed to school tasks; difficulties in following instructions involving two or more steps; moderate memorization ability; low classification skills; moderate comprehension skills; he learnt to recognize and write a few numbers (1-10) and to count a set of objects up to 10; difficulties in solving simple addition and subtraction problems; he developed limited reading and writing skills (he learnt to write his name and to recognize the names of his classmates); difficulties in understanding the letter-sound relationship and the rhyming of words; rather poor vocabulary; interest in nature and experiments in class; appreciating doing schoolyard activities (running, climbing, digging, rolling in the grass) and outside activities like gardening, nature walks geared towards observing nature; low ability to realize his errors and correct them; love for painting; interest in music activities; rhythmically accurate; feeling very comfortable in drama activities (high ability to improvise); expert in

physical activities; low interest in the classroom library; at "free choice time" he used to play in the toys area and drama play area.

In the first interview with mothers, Jason's mother confirmed this profile in its whole and stressed his high desire for making friends. Jason's mother and I came to agreement about Jason's difficulty in staying calm when he got angry. At the age of 19, Jason's mother confirmed anew her son's profile. She emphasized that Jason is a sensitive child and very popular among his peers (high interpersonal skills).

JOHN (he entered kindergarten 4,6 years old)

Openness-to-Experience: positive attitude towards learning; selectively intrigued by new things; moderate curious; creative at moderate level; interest in art and aesthetically sensitive; moderate ability to think in symbols and to understand concepts and ideas.

Conscientiousness: responsible; occasionally persistent; organized and efficient; self-disciplined; desire and goals for achievement (and did not deviate from them); diligent in everything he did; moderate interest in accuracy and attention to detail; lacking spontaneity.

Extraversion: pleasure in social interaction; low ability to socialize; displeasure in high intensity situations and conflicts; moderately enthusiastic; positive emotions; discreet; moderately talkative; not stubborn; moderately energetic; shy when meeting new people.

Agreeableness: friendly; kind; affable; forgiving; trusting nature; cooperative; modest; tolerant; considerate; sometimes jealous; not assertive; not suspicious and not antagonistic towards others; not demanding.

Emotional Stability /Neuroticism: calm; moderate confidence; not ambitious; somewhat hesitant; difficulty to cope with the unexpected; occasionally anxious about his performance; emotionally stable; managing impulsivity; high self-concept.

School-Behaviors: love for school; obedient; never in a hurry to complete school tasks; occasionally self-reliant; well organized regarding his personal stuff; no leadership tendencies; moderate ability to work independently; ability and desire to work as part of a group; ability to inhibit behavior; responsible in following rules and procedures; committed to most of school activities; not easily distracted.

School-Skills: moderate levels of school readiness; moderate ability to sustain attention and to persist on school tasks despite distractions; attentive; systematic; rather committed to school tasks; moderate ability to follow

instructions involving two or more steps; memorization ability; moderate classification skills; comprehension skills; he learnt to recognize and write numbers (1-10), he could count a set of objects up to 10, but had difficulties in pure mathematical problem solving (simple addition and subtraction items); he was able to recognize and write several cue-words but he did not develop advanced reading skills and writing skills (typical whole language learner); rather rich vocabulary; moderate interest in nature and sciences; he demonstrated ability to realize his errors and correct them; moderate love for painting; limited interest in music activities but rhythmically accurate; feeling uncomfortable in drama activities (unable to improvise); rather awkward in physical activities; interest in the classroom library; at “free choice time” he used to play in the puzzles area and blocks area.

John had an exceptional stable family life, with no conflicts. Family, and especially his sister, have also been a significant reason for his progress. His sister was a very good student, first in her class, and very creative. School work was not equally easy for John. He was a hardworking student, with more determination than academic brilliance. But he admired his sister and was motivated by her success. His decision to do his best combined with his willingness to be as good as his sister made the difference for him and increased his learning capacities.

In the first interview with mothers, John’s mother confirmed his profile in its whole but she stressed that John was a shy kid. John’s mother and I came to agreement that John was not a “difficult child” and he probably would not face problems as a student. At the age of 19, John’s mother confirmed anew her son’s profile. She added that her son was very anxious during the period of his preparation for the university but after that period he felt better. She also said that in the first year of university studies her son was optimistic about his future, have more friends than ever, and a rather rich social life.

LUCAS (he entered kindergarten 4,8 years old)

Openness-to-Experience: interest in new knowledge and new experiences yet selectively; intrigued by new things; moderately curious; creative and inventive in domains of his interest; interest in art and aesthetically sensitive; practical; difficulty in thinking in symbols and understanding concepts and ideas.

Conscientiousness: responsible; occasionally persistent; well organized and efficient; self-disciplined; desire and goals for achievement; dedicated and

diligent in selected tasks; striving for accuracy in selected tasks; attention to detail in selected tasks; lacking spontaneity.

Extraversion: extrovert; pleasure in social interaction; high sociability; organized; displeasure in high intensity situations and conflicts; preferring a calm environment; moderately enthusiastic; positive emotions; somewhat optimistic; talkative; not stubborn; preferring activities with social contact; moderately energetic; happy when meeting new people; taking initiatives in certain situations.

Agreeableness: friendly; kind; pleasant and cheerful; helpful; affable; forgiving; generous; genuine; compassionate; trusting nature; cooperative; modest; tolerant; considerate; not assertive; not jealous; not suspicious and not antagonistic towards others; not demanding.

Emotional Stability /Neuroticism: calm; sensitive; empathetic; self-confident; not ambitious; no stress; no anxiety about his performance; ability to cope with the unexpected; relaxed; emotionally stable; self-controlled; not impulsive; high self-concept.

School-Behaviors: love for school; obedient (at school and in home as well); never in a hurry to complete school tasks; occasionally reliant on others for help with completing work; well-organized regarding his personal stuff; no leadership tendencies; ability to work both independently and as part of a group; selectively self-motivated; ability to inhibit behavior; easily distracted but had the ability to stay focused and attentive on his preferred activities for more than 15-20 minutes; responsible in following rules and procedures; adaptable to changes in routines or plans; he participated eagerly in class activities.

School-Skills: He entered kindergarten with curiosity about the world around him and a love for picture books; low levels of "academic" readiness; difficulties in sustaining attention and persisting on school tasks due to distractions but highly concentrated on preferred tasks; ability to follow instructions involving two or more steps; memorization ability in domains of his interest; classification skills; low comprehension skills; he learnt to recognize and write numbers 1-10 (not all of them) and to count a set of objects up to 10; difficulties in solving simple addition and subtraction problems; he developed limited reading and writing skills (he learnt to write his name and to recognize the names of his classmates); many difficulties in understanding the letter-sound relationship and the rhyming of words (poor phonological awareness skills); rather poor vocabulary; high interest in nature and sciences; interest and care about animals and plants (he liked to

collect, classify, or read things about nature); appreciating doing outside activities like gardening, nature walks geared towards observing nature; moderate ability to realize his errors and correct them; love for handcrafts (advanced skills in this domain); interest in music activities: he learnt to recognize the symbols of simple rhythmic patterns and he was rhythmically accurate; rather comfortable in drama activities; interest in physical activities; moderate interest in the classroom library (he enjoyed “reading” a book by its illustrations); at “free choice time” he used to play in the blocks area, drama play area, and toys area; when he had to address difficult tasks he demonstrated insecurity or apathy.

In the first interview with mothers, Lucas’ mother confirmed this profile in its whole. Lucas’ mother and I came to agreement that Lucas had a calm, caring nature and showed concern for others. At the age of 19, Lucas’ mother confirmed anew her son’s profile. In her view, Lucas, in spite of the obstacles he experienced at school, found his way in life.

MARIA (she entered kindergarten 4,5 years old)

Openness-to-Experience: huge desire and interest in new knowledge and new experiences; amazed with new experiences; sensitivity to perceptual experiences; curious; creative and inventive; innovative; interest in art and aesthetically sensitive; free spirit; mental alertness; problem solver; ability to think outside of the norm; ability to think in symbols and to understand concepts and ideas.

Conscientiousness: responsible; persistent; well organized and efficient; self-disciplined; desire and goals for achievement (and did not deviate from them); dedicated and diligent in everything she did; striving for accuracy; attention to detail; lacking spontaneity.

Extraversion: moderate pleasure in social interaction; moderate sociability; displeasure in high intensity situations and conflicts; discreet; restrained but not solitary; a little enthusiastic; positive emotions; moderately talkative; a little stubborn; moderately energetic; shy when meeting new people.

Agreeableness: helpful; forgiving; compassionate; cooperative; modest; tolerant; considerate; not jealous; seldom assertive; not suspicious and not antagonistic towards others; not demanding.

Emotional Stability /Neuroticism: calm; decisive; sensitive; self-confident; no stress; emotionally stable; managing impulsivity; high self-concept; ability to cope with the unexpected.

School-Behaviors: love for school; obedient; never in a hurry to complete school tasks since she wanted every detail taken care of; sloppy regarding her personal stuff; no leadership tendencies; desire and effort for autonomy; ability to work independently; ability but not desire to work as part of a group; self-motivated; ability to inhibit behavior; responsible in following rules and procedures; devoted to any school activity.

School-Skills: high levels of school readiness; perceptive; high ability to sustain attention and to persist on school tasks despite distractions; concentrated and attentive; systematic; committed to school tasks; ability to follow instructions involving two or more steps; memorization ability; classification skills; comprehension skills; metacognition skills; she learnt to recognize and write numbers up to 10, she was able to count a set of objects up to 10, and she was able to solve simple addition and subtraction problems; she developed advanced reading skills (word decoding skills, understanding the letter-sound relationship, making inferences using cues) and writing skills; rich vocabulary; moderate interest in nature and sciences; she demonstrated ability to realize her errors and correct them; love for painting: advanced skills in this domain, strong concentration when drawing (her mother was an amateur painter); interest in music activities: she easily learnt to recognize the notes at the staff but she was unable to be rhythmically accurate; feeling uncomfortable in drama activities (unable to improvise); awkward in physical activities (poor balancing and gross-motor manipulative skills); ongoing interest in the classroom library; at "free choice time" she used to play in the art area, library area, and puzzles area.

In the first interview with mothers, Maria's mother confirmed this profile in its whole but she elucidated the fact that while Maria was cooperative and quiet in classroom she sometimes acted impulsively at home (often disputing with her younger sister). Maria's mother and I came to agreement that Maria was a promising student, in many domains, a student from whom great things could be expected (determination alongside with inquisitive and academic brilliance). At the age of 19, Maria's mother confirmed anew her daughter's profile. The only items she added was that her daughter became "emphatically perfectionist" yet "less resilient to pressure" throughout the period of her preparation for the university and she started showing some interest in physical activity. In Maria's mother's view, Maria had met her parents' academic expectations.

THEO (he entered kindergarten 4,8 years old)

Openness-to-Experience: moderate to low desire and interest in new knowledge and new experiences; selectively intrigued by new things; low curiosity; creative and inventive in moderate level; interest in art and aesthetically sensitive; difficulty in thinking in symbols and understanding concepts and ideas.

Conscientiousness: responsible in selected tasks; not persistent; not organized; self-disciplined, desire and goals for achievement, occasionally diligent; not striving for accuracy; little attention to detail; lacking spontaneity.

Extraversion: introverted; moderate pleasure in social interaction; moderate sociability; displeasure in high intensity situations and conflicts; restrained but not solitary; a little enthusiastic; reserved; discreet; not talkative; need for praise; a little stubborn; rather timid; moderately energetic (sometimes passive); stressed when meeting new people.

Agreeableness: friendly; helpful; forgiving; compassionate; not-trusting nature; enjoying team participation; modest; tolerant; considerate; not jealous; sometimes suspicious towards others; not antagonistic towards others; not assertive; good at picking up on nonverbal communication; not demanding.

Emotional Stability /Neuroticism: anxiety symptoms (prone to anxiety under pressure); highly sensitive; not ambitious; hesitant; low self-confidence; emotionally stable, managing impulsivity; low self-concept; nervous presenting self or his own ideas; displaying distress with new and unexpected situations.

School-Behaviors: love for school; obedient (at school but less in home); occasionally in a hurry to complete school tasks; reliant on others for help with completing work; sloppy regarding his personal stuff; no leadership tendencies; strong sense of justice; difficulties to work independently; ability to work as part of a group; not self-motivated; responsible in following rules and procedures; devoted only to selected school activities; easily distracted.

School-Skills: low levels of school readiness; inability to sustain attention and to persist on school tasks due to distractions; not systematic; less committed to school tasks; tendency to copy practices and answers from other students; inability to follow instructions involving two or more steps; rather low memorization ability; poor classification skills; poor comprehension skills; he learnt to recognize and write some numbers (1-10)

and to count a set of objects up to 10; low ability to math problem solving (simple addition and subtraction items); he developed limited reading and writing skills (he learnt to write his name and the names of his friends as well); difficulties in understanding the letter-sound relationship and the rhyming of words (poor phonological awareness skills); rather poor vocabulary; moderate interest in sciences; interest and care about animals and plants; appreciating doing outside activities like gardening, nature walks geared towards observing nature; low ability to realize his errors and correct them; moderate interest in painting and music activities; rhythmically inaccurate; feeling uncomfortable in drama activities (unable to improvise); rather competent in physical activities; low interest in the classroom library; at "free choice time" he used to play in the toys area and blocks area.

Theo had a stuttering problem, which was present before he set foot in kindergarten. Occasionally, but not very often, the flow of his speech was disturbed (pauses, blocks, or repetition of words). His difficulty was not stigmatized by his classmates, on the one hand because it was manifested in a rather smooth manner, and on the other hand because we had a friendly climate in the classroom. Yet it resulted in anxiety and nervousness, particularly across certain activities. Theo's parents, following my advice, asked help from a certified speech-language pathologist. After only a few sessions, Theo had managed to control his speech.

In the first interview with mothers, Theo's mother confirmed this profile in its whole but she underscored her son's inability to handle challenging situations. Theo's mother and I came to agreement that Theo was a caring nature and was concerned for others. At the age of 19, Theo's mother confirmed anew her son's profile and emphasized his need to be with others and to make friends.

May Kokkidou

What is the aim of school? Is it the whole child development? Is it to help children become independent learners? Is it to facilitate children to find their own path and achieve their own potential; to realize who they are and who they can become? Is it to help students transfer what they have learned in school to everyday settings (home, community and workplace)? Is it to serve culturally diverse students with varied abilities and motivations for learning? Why do some children fare better academically than others? Can we identify the factors, both inside and outside the school environment, which influence a student's either academic failure or success?

To address the above and other relevant questions I designed and conducted a 15years' intensive case study research (from September 1998 to June 2013). The participants were a group of seven kindergarten children. The qualitative design employed participants' observation, informal discussions with the participants across all school years, and in depth interview with their parents. The present work documents the interdependent influences of multiple endogenous and exogenous factors on participants' life trajectories, such as personal characteristics, home environment, school environment, and preschool life experiences.

In this work, I report on the results and discuss the findings of this study. The results indicate that there is a variety of factors which operate symbiotically and determine one's school progress. One of the most significant findings is that children as young as 5 years old reveal traits that influence later academic progress. Children's individual characteristics and prior experiences are dominant factors that influence mostly their academic gains. The results suggest that we need much more knowledge than is presently available with respect to the role of individual characteristics in one student's academic achievement and life progress. Major efforts must be undertaken in order to find causal relations between early attainment /capacities and later achievement.

The ideological and philosophical concept which underlies this work is that posing questions is more crucial than seeking easy answers.