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WHAT KINDS OF TEACHER-RELATED AND SCHOOL-RELATED
FACTORS FOSTER STUDENT RESILIENCY TO
SOCIOECONOMIC STATUS IN TURKEY?

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BY

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WHAT KINDS OF TEACHER-RELATED AND SCHOOL-RELATED FACTORS
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September 2016

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ABSTRACT

WHAT KINDS OF TEACHER-RELATED AND SCHOOL-RELATED FACTORS FOSTER STUDENT RESILIENCY TO SOCIOECONOMIC STATUS IN TURKEY?

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M.A., Program of Curriculum and Instruction

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This study investigated teacher- and school-related factors that could lead to literacy achievement differences among socioeconomically disadvantaged students in Turkey. Two discriminant analyses were conducted to examine the discriminating power of these factors over whether disadvantaged students become low-achievers or resilient. The sample data of PISA 2012 consisted of 4848 participants. To find out students' attitudes towards school regarding the learning activities and their outcomes and, students' perceptions about student-teacher relations and sense of belonging to school, four dimensions of PISA student questionnaire comprised of 22 items were utilized. The analyses revealed that becoming a resilient or a low-achieving student could be explained by examining some of these items. The results of this study offer an insight into designing policies to reinforce resilience of socioeconomically disadvantaged students.

Key words: academically resilient students, socioeconomic status, achievement, literacy

ÖZET

TÜRKİYE’DE OKUL VE ÖĞRETMEN İLE İLGİLİ HANGİ FAKTÖRLER SOSYOEKONOMİK DÜZEYE KARŞI OLUŞAN ÖĞRENCİ DİRENÇLİLİĞİNİ TEŞVİK EDER?

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Bu çalışmanın amacı, Türkiye’de sosyoekonomik açıdan dezavantajlı öğrencilerin okuryazarlık alanında başarılarını etkileyen öğretmen ve okulla ilgili etkenleri incelemektir. Bu amaçla, bu etkenlerin dezavantajlı öğrencilerin düşük ve üstün başarılı olmalarındaki ayırt edici gücünü saptamak için iki farklı diskriminant analiz uygulanarak iki farklı analiz elde edilmiştir. Örneklem, 2012’de uygulanmış olan PISA’nın Türkiye’den elde ettiği, 4848 katılımcıdan oluşan, veri kümesinden elde edilmiştir. Öğrencilerin okula ve okuldaki öğrenmeye karşı tutumlarını, öğretmenleri ile ilişkilerini ve okula karşı olan aidiyet hislerini belirlemek için PISA öğrenci anketine ait dört boyuttan 22 maddeye verdikleri yanıtlar çalışma bünyesinde kullanılmıştır. Analizlerin sonucunda, bu maddelerin bazılarının sosyoekonomik açıdan dezavantajlı öğrencilerin düşük ya da üstün başarılı olmalarında etkili olabileceği görülmüştür. Çalışmanın sonuçları sosyoekonomik açıdan dezavantajlı öğrencilerin akademik dirençliliğini arttıracak eğitim politikalarını planlamaya ışık tutacak bilgiler sunmaktadır.

Anahtar Kelimeler: akademik olarak dirençli öğrenciler, sosyoekonomik düzey, okuryazarlık, başarı

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CHAPTER 1: INTRODUCTION

Introduction

Throughout the life course, anyone is vulnerable to a world of risks (Zucker et al., 2011). Yet some children and adolescents are more unguarded and unprotected as they still have to learn and endeavor to adapt to unfavorable circumstances due to demographic, personal, family-related, or community-related stressors or challenges (Dryfoos, 1990). These challenges and stressors may occur when children and adolescents suffer from physical or mental diseases (Brown, 2015; Nabors, 2014), when they are psychologically, physically or sexually abused (Ross et al., 2015), when they are neglected by their parents, when they are placed in foster care (Davidson-Arad & Navaro-Bitton, 2015), when they witness maternal battering, when they are exposed to violent and hazardous environments or racism in the neighborhood or country they live in (Willis et al., 2010), when there is a life-changing natural disaster (Kousky, 2016), when their parents have low socioeconomic status (SES) (Lam, 2014; Stull, 2013; Wiederkehr et al., 2015), when there is parental mental or physical illness (Grove et al., 2015; Stoeckel et al., 2015), substance abusing (Brook et al., 2010), criminal activity (Dallaire & Wilson, 2010), divorce or separation (Gustavsen et al., 2015).

Among these stressors, low parental SES has a transgenerational continuity risk on academic achievement and quality of life (Garmezy, 1991; Jensen, 2009). SES is mainly measured based on a variety of different sociological variables, such as parental education and occupational status, and family income. SES is closely related to mental, psychological, and health status of the young people, be it children or

adolescents (Braveman et al., 2005; Singh & Ghandour, 2012). And a maladaptation to the adversities related to low SES may lead to serious consequences such as psychological distress and behavioral problems (Schoon & Bartley, 2008), substance abuse, teenage imprisonment (Palamar et al., 2015), child abuse (Font & Maguire-Jack, 2016), teen pregnancy (Mollborn et al., 2014), delinquency and school failure (Benard, 1997).

However, there is a chance of resilience despite all the odds of adversities. Resilience is a concept that depicts a set of qualities that encourage a procedure of effective adjustment and change despite adversities and risks (Garmezy, 1991). Children and adolescents usually diminish the impacts of low SES due to the positive attitudes of family, internal characteristics of the children and adolescents and external support they receive. Resilience is a broad term that is used in many different disciplines from science to medicine, nursing, psychology, sociology, education and to ecology and business. Academic resilience is a concept which defines the perseverance of students who perform high academic achievement despite negative circumstances (Masten & Obradovic, 2006).

Programme for International Student Assessment (PISA), as one of the most reputable and renowned international student assessment programs, has been focusing on the academic resilience of students, as well as students' achievement, in the OECD (Organization for Economic Co-operation and Development) countries and economies over the last 15 years. PISA was propounded in 1997 and was officially launched in 2000. According to the PISA results, Turkey has been having a progressive increase in the rate of academically resilient students between 2003 and 2012 by 4.4%. It brought Turkey to the top of OECD's list of the change between

2003 and 2012 in student resilience to SES, which on average had a falling trend with a -0.3 percentage (Organisation for Economic Co-operation and Development [OECD], 2013a).

Although achievement of Turkish students has not been high, Turkey has been among the top six countries that have been performing a steady increase, by more than one percent, in the rate of academically resilient students in the world (OECD, 2013a). Figure 1 indicates that the increase in the academic achievement in the bottom quarter of the SES grouping is much higher than the other quarters when the participants of PISA 2003 and 2012 are sorted out into two groups based on their SES in Turkey. The difference between the academic achievement level of the students at the bottom quarter and top quarter of socioeconomic status rank, which was 122 points in PISA 2003, decreased 36 points in PISA 2012. Furthermore, the academic achievement level of Turkish students at the bottom quarter also increased from 374 to 412. In the same time span, this regression dropped from 98 points to only 90 points in OECD average (Ministry of National Education [MoNE], 2013).

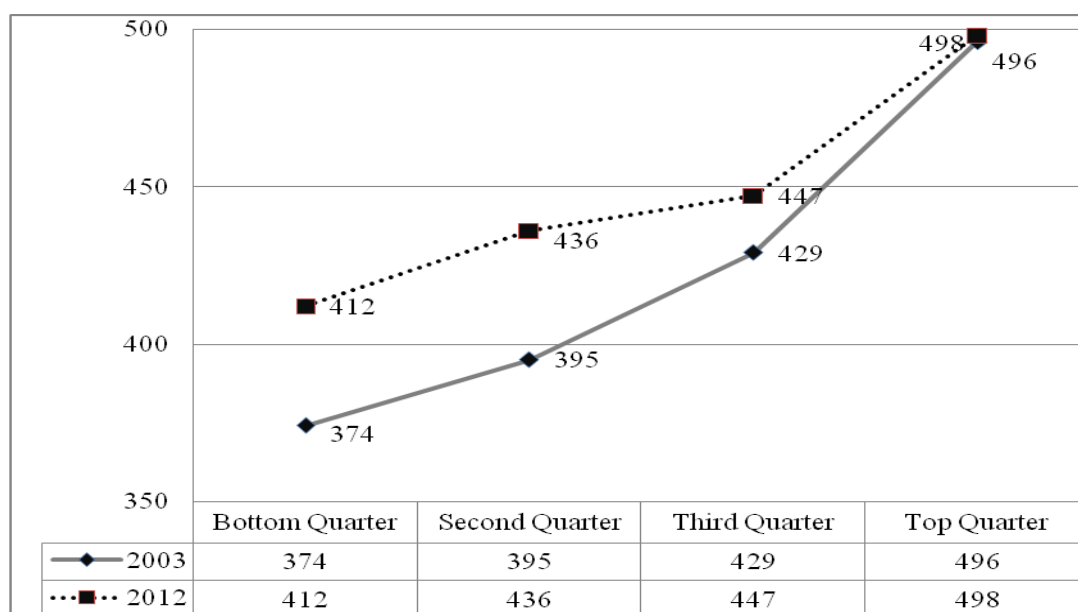


Figure 1. The average scores of students in Turkey in PISA 2003 and PISA 2012, accounting for their SES. (Adapted from MoNE, 2013)

From this hope-inspiring picture for the future of low SES students in Turkey, what roles should be inferred for the teachers and school communities, with whom and where an average student spends the most time, to foster resilience and even more?

Background

As Comber and Kamler (2005) stated, student achievement is highly dependent on teachers through their expectations for students, their implemented curriculum, and communication with students. Although every teacher has their methods and styles, they are still bound to an educational system, which might encourage them to advance the quality of their work or impede them due to several reasons. In educational research, two frequently encountered factors have been propounded to interchangeably affect the development of an educational system's quality: financial investment in education (Burja & Burja, 2013; Darvishan & Hakimzadeh, 2015; Fan et al., 2004) and cultural capital (Bourdieu, 1986; Hanushek & Woessmann, 2012).

While financial investments depend on a country's economic situation, the cultural capital, a term first used by Bourdieu (1986), consists of the perpetual state of mind and body, the cultural objects that an individual has such as books, paintings, and instruments, and the academic qualifications of an individual. Much of the forms of cultural capital are inherited from families, such as the objects owned or the state of mind and body. The institutionalized state, which is about the academic qualifications of an individual, has further opportunities to be improved beyond mere family influence (Bourdieu, 1986). In other words, to enhance the cultural capital of a person, the majority of what is needed depend on the habitus, the social surrounding that a person is in (Navarro, 2006). In educational settings, a student is

not only encompassed by the family but also the neighborhood, school, teachers and peers.

Cultural capital coincides with the PISA index of economic, social and cultural status (ESCS) that was used in this study as an indicator of SES. The components of ESCS included; “the international socioeconomic index of occupational status; the highest level of education of the student’s parents; the PISA index of family wealth (the properties of the family home); the PISA index of home educational resources, such as study desk, Internet access, computer; and the PISA index of possessions related to classical culture, for instance number of books and paintings in the family home” (OECD, 2013a).

According to the nearly 50 years research on resilience, which started with the initiative report called *Equality of Educational Opportunity* (Coleman et al., 1966), students with low SES have a much greater risk of lower academic achievement, dropping out of school or delinquencies. According to Jensen (2009), one of the possible reasons for this probable failure has its reasons starting from the pregnancy of mothers. Due to the high risk of low-quality care of the mother and the baby, the child might grow up without their social and emotional needs met by their caregivers, which causes communication and adaptation problems at school.

Unfortunately, these maladjusted behaviors may be misinterpreted by the teachers as disrespectful attitude. However, what teachers might neglect here is that these students with low SES have a higher disposition to be lacking some of the social and emotional skills, and they need caring and help (Jensen, 2009). Having a low SES has serious consequences such as, failures in school, school dropouts, poor health, unemployment and underemployment risks, which may endure from childhood to

adulthood and cause an intergenerational continuity (Birch & Gussow, 1970; Senia et al., 2015).

Families are the first access point for the emotional and physical support of students but due to the limited physical and emotional resources that low SES families may have, the teachers of the low SES students have a much more important role in their students' emotional and academic development (Olsson, 2009). Teachers undertake the role of surrogate parents, or they are attributed to that position by the students (Kumpfer & Summerhays, 2006). According to Bowlby's (1982) attachment theory, building strong relationships with a significant adult is particularly important, as the child will want to get compassion and caring from these significant adults as their secure bases while they explore the world outside. In parallel with this theory, having a supportive teacher/s can help students find a secure base at school and therefore improve their social and academic skills. As alternative caring adults, teachers become role models for students in many cases. A good role model teacher maintains caring relationships with the students, listens to the students, encourages them to challenge themselves on social, emotional and academic grounds, and has high expectations of their students (Gizir, 2004; Werner, 1995).

Although no research has been able to find the secret formula for the top teacher qualities, the literature revolves around some certain terms. Some of the most acknowledged ones are teacher's scores on professional tests / certification assessments (Goldhaber & Brewer, 2000), years of experience and scores on teaching-related tests (Clotfelter et al., 2007), formal professional development training (Harris & Sass, 2011), teacher's academic performance at undergraduate school (Kukla-Avecado, 2009), years of experience in teaching career (Rice, 2003).

These teacher credentials and qualities all seem to have a holistic influence on the quality of teaching.

Teacher-student relationships can be protective and predictive in a student's school life. Besides academic achievement gains, positive teacher-student relationships may prevent students from getting involved in health-wise risky behaviors of students such as smoking, alcohol or drug use, first sexual intercourse in adolescence, and violence through the use of weapons (Erickson et al., 2009; McNeely & Falci, 2004). Moreover, reverse conditions, where teacher-student relationships have a negative tendency might have atrocious consequences. For example, 14% of the Norwegian students' lower scores on reading literacy division of PISA 2000 were reported to be related to the negative teacher-student relationships (Huang, 2009). Apart from lower academic achievement, negative student-teacher relationship can result in other kinds of adversities, such as negative attitudes towards school, less attendance to school, asocial characteristics, social exclusion, and adaptation problems (McGrath & Van Bergen, 2015). Therefore, investigating the teacher-student relationships of the resilient students is vital in this study.

School as the second most prominent place for students after their home surroundings is as important as teachers. Most of the adolescents in Turkey spend more time at school than at home in an ordinary school day without an official holiday. They see, communicate, interact more with their friends and school staff than their families. This is the reason why, high expectations of not only teachers but also other school authorities, such as principal and vice principals, matter for the academic resilience of the low SES students. Schools that adopt an ethos to encourage high student academic progress, establish high expectations for every student, motivate students to take responsibility for their actions, reward to reinforce

good behavior and smooth resilient adaptation and fair sanctions to end misbehavior, construct well-built rapport between teachers and students in and outside of classroom, and outscore the other schools with same physical resources (Benard, 1995; Rutter & Maughan, 2002). Research show that even highly talented low SES students underachieve without taking an active place in support systems in schools, such as special programs, extracurricular activities, summer schools, honors classes and networks that bring academically successful students together (Reis et al., 2004). Tomlinson and Jarvis (2014) suggested some valuable school-wide supportive strategies that are adopted by academically successful low SES schools. Some of these are teacher visits to student homes in order to be more closely acquainted with them, adopting a common motto that every student can achieve or putting up banners of the school slogans to encourage students no matter how low their SES is.

The resilience of children and teenagers are fostered and enhanced based on some well-attested protective factors, which are mainly classified as internal, family related, and school and teacher related factors. Because there are few studies that highlight the significance of the teachers in the eyes of students in Turkey (Ceylan & Berberoglu, 2007; Kalender & Berberoglu, 2009), this study will focus on school-related and teacher-related factors that improve resilience among students with low SES in Turkey.

Problem

In PISA 2012, 15% of the variance in students' academic achievement stems from the difference in students' socioeconomic status. It is an unfortunate fact for the segment 15% of whose low-achievement is explained with low SES. However, if it is looked from the bright side this difference has a fully 10% decrease compared to

PISA 2003 results (MoNE, 2003). Fortunately, there are resilient students, who can break the odds of low SES and become academically resilient. These students demonstrate well adaptation to the school environment although they have socioeconomically disadvantageous background. They have high performances in tests, much less behavioral problems compared to their classmates, and well thoughts and plans for their future (Jensen, 2009). Throughout this study, the adversity of negative life conditions will be defined by family lower socioeconomic status.

According to OECD (2013), Turkey has an outstanding resiliency rate of low SES students, which has been an increasing trend in PISA since 2003 until 2012. On the other hand, the OECD average has been on a falling trend since 2003. The average of resilient students in PISA is relatively high in Turkey with 40%, in comparison to the 30% OECD average, and this percentage places the country in the top five of this special resilience rating (OECD, 2013a). Nonetheless, the existence of the low SES students' resiliency is not a consequence of specifically designed educational policies. If the current educational policy maintains neglecting to adopt a systematical approach toward these students to encourage their learning and further studies at school rather than letting them drop the school or fail, the future of resilient students in Turkey will remain uncertain.

The outstanding resilience rate of Turkey, which seems to be a happenstance in the educational system of Turkey's cap, is in fact arbitrary without resiliency-oriented policies. The school community with whom a high school student spends the most time is an ambiguous part of the picture because the influence of teachers and schools on low SES students' resilience is unknown.

Purpose

The primary aim of this study is to pinpoint the teacher-related and school-related factors that discriminate between low-achieving and resilient students, using the data sets of PISA 2012 reading literacy. A discriminant equation will be generated to find out the variables that are strongly associated with the achievement differences between the two groups of students in an attempt to guide educational stakeholders (educational policy makers, school administrators, and teachers) to distinguish potentially resilient and low-achieving students. With the help of this analysis and equation, the educational stakeholders will be able to develop a relevant strategy to consciously and systematically foster low SES students' academic resilience.

Research questions

This study will focus on the following question:

Which teacher and school related factors explain the differences between resilient and low achieving students in PISA 2012 data set for the reading literacy performance of the Turkish students?

The following sub-questions will be examined to answer this question:

1. What kinds of teacher behaviors or attitudes are associated with the probability of low SES students to become resilient?
2. What kinds of school related factors associated with the probability of low SES students to become resilient?
3. What is the expected efficiency of the discriminant function (power of correctly classifying low SES students) for future use?

Significance

The resilience has been proved to be more of a transactional process, which does not only rely on the students' personal characteristics but also the interaction between children and adolescents with their parents, teachers and other significant caring adults (Kumpfer, 2004). Therefore, to foster academic resilience, the negligent approach of accepting the problematic low SES students as they are with their possible academic failures will no longer be legitimate. Rather, the significance of the social agents in their community will be emphasized.

Through identifying the factors that evoke the highest mean difference among resilient and low-achieving students, the possible influence of teachers and schools on low SES students' resilience will be demonstrated. The educational stakeholders, such as educational policy makers, school administrators, and teachers will be able to develop preventive interventions. These factors can also be emphasized within the scope of teacher training programs so that teachers can be well aware of this problem and equipped with proper approaches and techniques. Curriculum designers may take the low SES students into consideration and provide opportunities for differentiation for the use of teachers.

As a result, as Werner and Johnson (2004, p.711) noted, the low SES students, who "in many cases, made school into a home away from home, a refuge from a troubled and disordered household", will hopefully ride out the storm and become resilient against the odds, thanks to the deliberate and well-planned approaches of their teachers and school communities.

Definition of key terms

ESCS: the PISA index of economic, social and cultural status.

Low-achiever: a student who is from a low socioeconomic background and performs poorly on PISA reading literacy test.

OECD: the Organisation for Economic Co-operation and Development.

PISA: Programme for International Student Assessment.

Academically resilient student: a student who is able to perform high scores on PISA reading literacy test although he/she is from a low socioeconomic background.

SES: socioeconomic status, which was defined by ESCS and employed in PISA as well as in this study. The following variables were employed to compute ESCS for PISA 2012: household possessions, which are comprised of items related to familial wealth; home educational resources, such as study desk, computer; cultural assets, such as the books and paintings at home; maximal parental occupation level; and maximal parental education level (OECD, 2013a).

CHAPTER 2: REVIEW OF RELATED LITERATURE

Introduction

The objective of this chapter is to establish a theoretical framework on the teacher-related or school-related factors which cause differences in reading literacy between low-achieving and resilient students from low SES backgrounds based on the data set of PISA 2012. The protective factors that shield the resilient students from lower academic performance due to various types of disadvantages, specifically the low SES, that challenge students mostly will be scrutinized.

The goals of this chapter are to emphasize the importance of cultural capital for students' academic achievement, and the crucial role of teachers and schools in motivating and encouraging the low SES young people through an extensive theoretical research on Turkey's specific position.

The role of education in social mobility

Researchers of inequality note the strong impact of educational attainment in favor of social mobility (Breen & Jonsson, 2005). According to social analysts, educational attainment for all on equal terms also induces the social fluidity due to the strong interrelation between education, economy and social mobility (Havighurst, 1958). And the reformatory power of education is not only prevalent in the countries such as Singapore, where the independence from British colonial power, was gained and in a very short period has become renowned for its high quality of human capital (OECD, 2011a); but education can also provide more chances for the individuals in developing countries like Turkey (Haveman & Smeeding, 2006; Ishida et al., 1995).

The relationship between educational investment and economic growth

In economic and educational research, the economic growth and educational investment have often been found interrelated. As Schlottmann (2010) states in his report, there is an important relationship between economic growth and quantitative and qualitative values of education. According to Hanushek and Woessmann (2010), there are three mechanisms related to education that might affect economic growth. The first one is the increase in human capital that is implicit in the labor force which could result in increase in labor productivity and transitional growth. The second one is the fact that education could enhance the innovative capacity of the economy through new technologies, processes, and products that lead to growth. Lastly, education enables dissemination of knowledge that is required to comprehend novel information that has been unprecedented in a country, thus apply new technologies developed by other countries. Therefore, this knowledge and technology adaptation process might contribute to economic growth (Hanushek & Woessmann, 2010).

A study that was conducted by Burja and Burja (2013) contains yearly observations of 180 countries, including the recent EU member countries, whose economic situations are similar to Turkey's, as follow; the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia, Slovakia, Bulgaria, and Romania hinged on particular educational benchmarks, such as the number of drop-outs from schools and people with middle school education attainment, and employment rate of people with post-secondary education for the period of 1997-2011. As a result of the study, it was detected that for economic development to increase the rates of GDP; there is a high dependence on the educational factors, such as the rate of people with middle school education attainment, the employment rate of people with post-secondary education, and growth labor productivity. In other

words, there is a positive correlation between the declining of a population segment that consists of labor force with lower educational degrees and economic growth (Burja & Burja, 2013).

Darvishan and Hakimzadeh's (2015) research on the relationship between human development indices and expenditure on education and economic growth, which are based on data obtained from UN's Human Development Reports and World Economic Outlook Database List of IMF on economic growth rate and educational expenditure of Iranian government for the period of 1999-2012, shows that there is a direct impact of educational expenditure on economic growth. Furthermore, according to a report by Colclough (1982), the United States of America owes the majority of its economic development to the increased human capital that it had at the beginning of the twentieth century. Similarly, there has been a dramatic fall in the poverty rates in China from 250 million people in the year 1978 to 30 million people in the year 2000 thanks to the educational reforms, investments in and promotion of equal access to education (Fan et al., 2004).

While the above-mentioned works emphasize the significance of educational investment and its effects on economic growth, the policy of incautiously investing in education might not lead to the expected economic growth rate, either. A similar problem occurred in Sub-Saharan Africa, where the poor progress in education overrode the economic development in the 1980s and 1990s (Glewwe et al., 2014). In fact, Hanushek and Woessmann (2012) refute the idea of blindfolded human capital investments to foster development without a spot-on policy, by comparing the countries with different economies via their scores on internationally comparable student achievement tests, such as First International Science Study (FISS), First International Mathematics Study (FIMS), First International Reading Study (FIRS),

Second International Mathematics Study (SIMS), Second International Reading Study (SIRS), Second International Science Study (SISS), Trends in International Mathematics and Science Study (TIMSS), and PISA, which were conducted between 1964 and 2009. These researchers claim that educational achievement, which is called as *cognitive skills* throughout their study, is the actual determinant power on the economic growth of a country. Therefore, the desultory investments in education or the schooling levels of a country will not necessarily result in thriving economic development. For instance, Latin American countries lag behind Middle Eastern, Sub-Saharan African and North African countries despite their schooling levels and their once higher rates of income per capita in the 1960s.

Cultural capital

Another theory that denies claims that educational expenditures are the intrinsic positive factors on the educational progress is the cultural capital that is inherited by our families and social backgrounds. Bourdieu (1986) acknowledges the economists to be partly right in investigating the correlation between economic gains and educational investments. However, the measurements of economic effectiveness that are used, such as the money equal to the time allocated for studying or the sources spent for schooling, are not adequately explicative. Besides, these data are unable to elucidate how much of and through whom the countries/economies' cultural and economic sources are dispensed and in which proportions they are allocated to different social classes. Moreover, the social agents that are involved in the course of education and the cultural capital that is inherited from children's parents are neglected. According to Bourdieu, the cultural capital consists of three forms. The first one is the form of perpetual state of mind and body, called embodied state. The second one is the form of cultural properties, which give hint about the intellectual

journey that one has been through, such as pictures, instruments, and books of an individual, and it is called the objectified state. The last one is the institutionalized state that is concretized in the form of academic qualifications. Although cultural capital is inherited from the family of an individual, it is also shaped by an individual's habitus, in other words, personal characteristics and the social class that the family belongs to (Bourdieu, 1986).

The effect of educational expenditure on the educational progression and therefore economic growth cannot be neglected considering both the theoreticians and the researcher economists that support their arguments thanks to the verifiable data of different countries provided in their studies. However, cultural capital is a social fact that could have the influence to promote upper social mobility at least as much as economic capital could because habitus of an individual alludes to the way of life, characteristics, values, expectations of the social environment that one belongs to and knowledge attained through daily life activities. It is attained through a social, as opposed to an individual procedure and despite its changeable nature over the time (Navarro, 2006). Hence, the significant social agents in an individual's habitus, such as their teachers or their school environment, could lead them into a higher institutionalized state via their academic achievement, and in this way, the individual could still have a chance to invest in their social mobility.

In Turkey's case, there is a consistent increase in educational expenditure, yet it has been criticized by independent educational researchers since it has been insufficient (Educational Reform Initiative, 2013). In 2014 there was an increase in the GDP share of the Ministry of National Education from 3.05% to 3.24%, its share in the central budget was raised from 13.27% to 14.42% compared to the year 2013, and the total expenditure was 24.495.962.586 Euro (Ministry of Finance, 2014; European

Commission, 2014). Although this rise cannot be underestimated and it implies positive progression of the education system in the country, it is still distant from meeting the needs of education system in Turkey. The needs of Turkish schools increase due to building new schools and the ones to be constructed, rising numbers of students and teachers, compulsory raises in education staff salaries, and, the services in special education and guidance (Educational Reform Initiative, 2013). Turkey ranked in the 44th place in the overall ranking, including mathematics, reading and science domains of PISA 2012 among the 65 participant economies (OECD, 2014). If Hanushek and Woessmann's (2012) theory is applied to Turkey's educational achievement rates, Turkey also lacks cognitive skills, in Bourdieu's (1986) terms 'cultural capital'.

The inequality of income distribution has not prospered despite the consistent rise in income per capita in Turkey, as much as 12 times compared to 190 years ago (Pamuk, 2013). This social inequality results in the unequal distribution of cultural capital in Turkey, which eventually decreases the possibilities of upper social mobility through cultural capital. The population segment which has the advantage of the highest cultural capital rate is the 18-49 age group, consisting of mainly professionals and managers in Turkey (Arun, 2012). This fact may also suggest that in a developing country like Turkey, there is a high potential for the younger generations who are able to increase their cultural capital levels thanks to their personal endeavor and family inheritance. The habitus they are raised in also depends on the neighborhood and schooling that the student is involved in, and significant social agents such as their teachers.

From the literature review until this point, one can infer that a balanced synthesis of educational expenditures and cultural capital is required to increase overall

educational achievement in a country. By providing the chances for the socioeconomically disadvantaged children and youth with more skills and knowledge to climb to a higher cultural capital level thus have better SES, this synthesis also conduces to an upward social mobility trend (Beller & Hout, 2006). Furthermore, this study will be investigating the ways in which schools and teachers affect socioeconomically disadvantaged students positively to elevate their institutionalized state as the prescribed social agents in Bourdieu's (1986) study.

Effects of socioeconomic status on student achievement

There are various risk factors that might be precluding children's and adolescents' school achievement; such as poverty and low SES (Parrett & Budge, 2011; Engle & Black, 2008, Aronowitz, 2005; Garnezy, 1993), violence (Murray Nettles et al., 2000; Osofsky, 1999), substance abuse (Werner, 1986), divorce of parents, health issues, political issues (Masten & Obradovic, 2006) within the family or the community. Moreover, unfortunately most of the time, disadvantaged case of a child is not due to a single factor (Rutter, 2002).

Low SES is one of the most irredeemable stressors as it has a tendency to endure through generations. The influence of poverty begins even before the baby is born. There is a significantly higher risk for low SES babies to be born prematurely, due to low quality living conditions of the mothers, such as high levels of stress, poor pregnancy care, malnutrition (Birch & Gussow, 1970; Garnezy, 1991; Jensen, 2009). When the babies grow up to become students at school, most of the low-SES students suffer from emotional and social instability. According to Jensen (2009), this is an outcome of the insufficiently sensitive responses they were given by their parents, especially mothers because the families in poverty have higher risks of teen

motherhood, depression, and insufficient social insurance. Under these circumstances the child may develop mistrust in the first year; shame and doubt from the first to the third year of their life, which lead to a feeling of insecurity in emotional and social scopes in the future and lower school performance and poor behavioral management (Erikson, 1968; Jensen, 2009). It is vital to have strong, healthy and caring relationships in the family so as to prepare the children for the independent life, in which they will have to maintain social relationships, pursue academic achievement and build effective behavioral and academic skills for the rest of their adult lives. Unfortunately, in the impoverished families these skills are mostly not properly developed. As a consequence, the students may form some social and emotional disorders such as getting easily frustrated by the school assignments and uncooperative attitudes in the group works, and these could eventually lead to casting of the low-SES students from the social environment at school, and poor academic performances. Teachers may misinterpret these students' unexpected social and emotional responses and judge them for being disrespectful due to their attitudes in the class and disinterest with school subjects (Jensen, 2009).

The consequences of having a low SES, such as, failures in school, school dropouts, poor health, unemployment and underemployment risks, may endure from childhood to adulthood and cause an intergenerational continuity (Garmezy, 1991; Jensen, 2009).

In Figure 2, Birch and Gussow (1970) illustrate the relations between the disadvantageous statuses because of poverty, how these statuses could be spread out in an individual's life and the potential vicious circle among the generations of family members suffering from impoverishment (as cited in Garmezy, 1991).

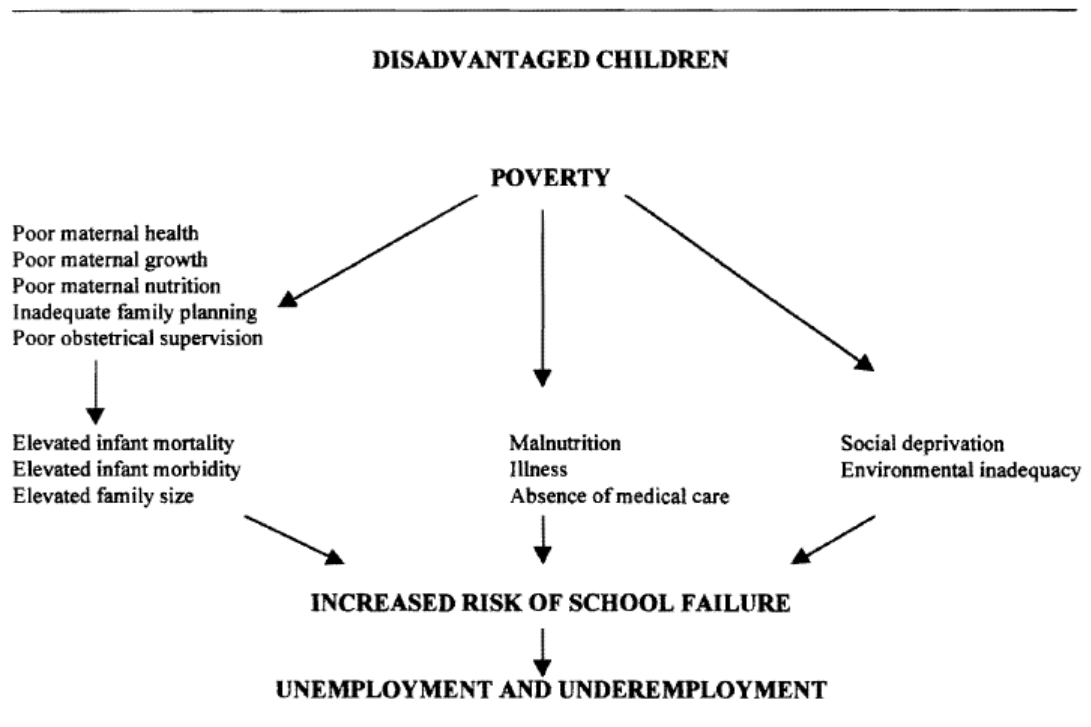


Figure 2. A transgenerational model of poverty: Its consequences and correlates.

From: Birch, H. G., Gussow, J. D. (1970). Disadvantaged children: Health, nutrition, and school failure.

The risks of not being able to surpass the adversities increase together as time passes because together with age the encountered difficulties in social life, assignments at school get more and more rigorous (Engle & Black, 2008; Jensen, 2009). While there is a quite pessimistic picture of the low SES students in educational research, still there are some students who, despite their socioeconomic disadvantages, are resilient and are capable of extricating themselves from the lack of cultural capital or financial resources disadvantages and obtain high achievement at school (Borman & Rachuba, 2001; Garmezy, 1991; Gizir, 2009; Jensen, 2009; OECD, 2011a).

The term resilience is used in many different disciplines of science, such as psychiatry, counseling and clinical psychology, traumatic stress studies, and anthropology; therefore it has many different interpretations. One of the most recent and comprehensive definitions of resilience is stated by Masten (2014):

“the capacity of a dynamic system to adapt successfully to disturbances that threaten system function, viability, or development. The concept can be applied to systems of many kinds at many interacting levels, both living and nonliving, such as a microorganism, a child, a family, a security system, an economy, a forest, or the global climate.” (p.6)

Masten (2014) underlines the diverse and extensive implications that this definition has to promote people to contemplate and ruminate about helping prepare people to cope with any kind of trauma that they might have to face sometime in their lives. The ability to cope should be able to adjust itself to different scenarios. Therefore, this definition could be used in different fields such as human behavior in different contexts; family, community and society (Southwick et al., 2014).

The first resilience research trend defining this concept in terms of the characteristics of resilient students has transformed into a trend that focuses on a more transactional process, which does not only rely on the students' characteristics but also the teachers', parents' and other significant caring adults in children's or adolescents' lives (Kumpfer, 2004). The reason why the works that are both conceptual and empirical are placed emphasis in resiliency research is to ascertain the factors contributing to students' resiliency (Padron et al., 2000). These factors could also explain and give clues about how some of the students who are at risk of academic failure due to their families' low socioeconomic status can surmount these obstacles and become resilient, while others that live under similar adverse circumstances cannot. Furthermore, thanks to the educational resiliency perspective, the focus of research is on the academic resilience instead of vulnerability to socioeconomic disadvantages (Padron et al., 2000). After the students at risk are identified, the resilience evoking, and failure preventive strategies could be developed (Doll &

Lyon, 1998; Masten & Reed, 2002). Accordingly, resilience has been a predetermined supplement to prevention research. Public health service providers, educators, school counselors, and social scientists all commit to developing, implementing, and evaluating preventive programs to diminish the future extent and prevalence of negative consequences for children and young people at risk.

To narrow down and focus on the educational resilience, Wang, Haertel, and Walberg's (1994) definition: "the heightened likelihood of success in school and other life accomplishments despite environmental adversities brought about by early traits, conditions, and experiences" coincides with this study's perception (as cited in Reis et al., 2004, p.111). The educationally resilient students demonstrate well adaptation to the school environment although they have socioeconomically disadvantageous background. They have high performances in tests, much less behavioral problems compared to their classmates, and well thoughts and plans for their future (Jensen, 2009).

The definition that this study used is the same as OECD's and based on the students' achievement on reading literacy test of PISA 2012 and their socioeconomic background, which is identified via the students' responses to the student questionnaire before taking the literacy tests. The students were classified as resilient if they were in the bottom quarter of the ESCS in Turkey and performed among the top quarter students internationally (OECD, 2013a). The following variables were employed to compute ESCS for PISA 2012: household possessions, which are comprised of items related to familial wealth; home educational resources, such as study desk, computer; cultural assets, such as the books and paintings at home; maximal parental occupation level; and maximal parental education level (OECD, 2013a).

Protective factors against low SES

The resilience of students despite low SES of their families have been explained through some fundamental protective factors such as the family characteristics, internal factors in other words student's individual characteristics; school community comprised of teachers, school administrators and peers; and environment outside of family and school, in which student takes part in (Garmezy, 1996; Gore & Eckenrode, 1996).

Kumpfer's (1999) resilience model represented in Figure 3, illustrates the possible parts of mechanism in the face of adversities and on which variables resiliency depend. It has four main areas of influence and two areas of transactional processes, which finally comprise six major predictors of resilience. The stimulus of the framework is an initiating event or a situation that is called a stressor or a challenge which means there is a disturbance in the individual's life or environment. It is also a starting point of the process of resilience reintegration in order to rehabilitate. The agents in the environmental context, which are family, culture, community, school and peers, could be risk or protective factors depending on the circumstances. Although the pattern of (non)resilience is charted, there are still two phases of the process that require active personal choices of either the child or his/her advocates to help the child to cope with the risk factors. There are five individual strengths that might facilitate resilience; cognitive, emotional, physical, spiritual, and behavioral strengths. The process of adaptation that has started with an initiating event ends in two possible ways either in a maladaptive or a resilient reintegration. Also, bidirectional arrows indicate the affectability of each item in the diagram in an interactional way. Therefore a healthy combination of these factors will be a formula for resilience (Kumpfer, 1999).

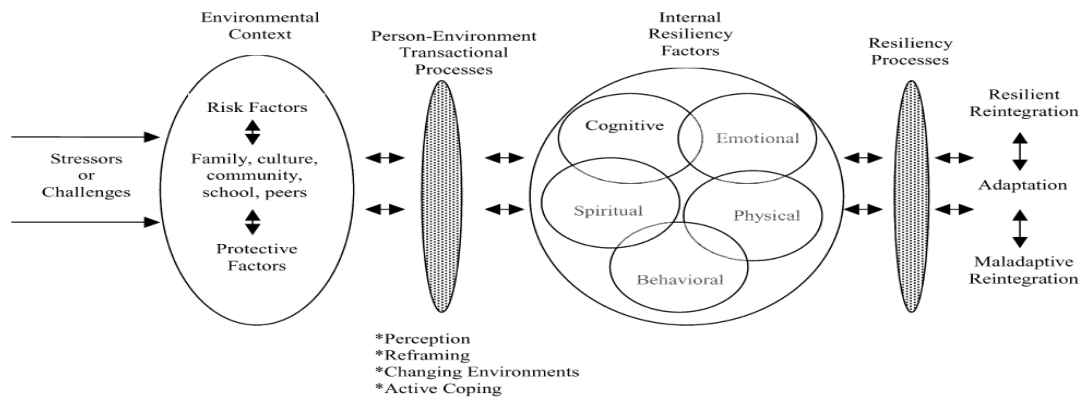


Figure 3. The resilience framework of Kumpfer (1999)

Internal protective factors

Through the resilience research several qualities that exist in most of the resilient students were determined. Endurance, high expectations about the future, perseverance, positive self-esteem and attitude toward others are some of the recurring distinct qualities of resilient students (Oswald et al., 2003). According to a relevant research that sought for the protective factors helping low SES students to thrive academic resilience are: higher self-esteem and some certain personality traits such as being able to establish relationships with people from other cultures, being autonomous and sensitive, and having a strong desire to accomplish (Reis et al., 2004).

In Werner's (1995) 32-year-long Kauai study, the sample, who were at high risk of academic failure and other forms of maladaptation, was observed from birth till the age of 40. The children who would become resilient in their adolescence and later in their adult lives were defined as 'active, affectionate, caring, sympathetic and easy to deal with' by their mothers. When they grew up, they were reported to have 'interests in different activities, impressive sociability qualities, and an internal locus of control, competence in communication skills in terms of language and reading, and at least average level of intelligence' by their teachers (Werner, 1995).

There have been similar findings about the internal protective factors of resilient students such as reflectiveness in a challenging situation, cognitive skills, positive attitudes toward others, being able to attemper the challenges or stressors via their agreeableness and tender-mindedness (Garmezy, 1991), and having a purpose in life and existential meaning (Kumpfer & Summerhays, 2006). The hope-inspiring part of these outcomes is that most of these qualities that are mentioned above, except for at least average level of intelligence, are all developable with sufficient guidance and help.

External protective factors

Role of the families

The significance of family support on students' educational resilience is irrefutable in the research of resilience (Bruner, 1975; Garmezy, 1991; Jensen, 2009; Sylva, 2014). Bruner (1975), whose research focus was on children under five years old, had claimed that by the age of schooling, the children of socioeconomically disadvantaged families are already cultivated with short-term goals such as survival. While having such simple and fundamental motives in life, it is hard to plan for the future with higher expectations, goals, and projects. Nonetheless, some families of resilient children facilitate their children's resilient reintegration by reading to their children, visiting the school, communicating with the school and teachers regularly on the progress of their children's school year (Jensen, 2009). In contrast to Bruner's theory, affectional ties within the family seem to be one of the most important determinants regarding the children's educational plans and pursuits (Wu et al., 2014). Apart from a parent, a close relationship with at least one psychologically healthy adult, who can respond to the child's needs, might have the same effect for

the resilient children, who cannot get the necessary support from their families (Werner, 1995).

Importance of teachers and schools

School is the second most prominent place for students after their home surroundings. The influence of family and home environment is irrefutable, however from a policy-maker point of view school environment is more convenient to be changed for the betterment of the low SES support systems (Kasımoğlu Demir & Kalender, 2014). Garmezy (1991) suggests that school can play the role of a shield for young people to overcome different stressors and adversities arising from alcoholic parents or poverty. In fact, student academic accomplishment is highly dependent on the teachers, who are the most important elements of schools.

Hanushek's (1992) research that was conducted on both teachers and students in India to determine the improvement in reading and vocabulary skills of students from kindergarten until middle school established the value of teachers by revealing the dramatic differences of academic attainments due to teaching quality disparities among teachers of the same school. As a result, students with almost same skills and knowledge levels ended up with different levels of academic achievement at the end of the study because of different teaching qualities. Similarly, in another research conducted in Chicago, U.S., the significance of teacher's effect on student achievement was proved in math skills as well. Aaronson et al. (2007) deduced that the gain of math score can differentiate 0.13 grade equivalent for a semester or 0.20 grade equivalent for a year as one standard deviation in consequence of different levels of teaching qualities.

Teachers, as the most important elements in a school, may have different levels of qualities and credentials, and according to a myriad of research as some of them mentioned above they have a tremendous impact on student achievement. For instance, according to research, whose data from six school years were collected from the state of Florida in the US, the first five years of experience in teaching profession is vital for a teacher to increase student achievement (Harris & Sass, 2011). Also, the way a teacher receives their licensure or certification to teach was found highly significant regarding the efficacy of teachers. The likelihood of having higher student achievement increases when teacher's certification is a standard one in their subject area instead of an irrelevant subject area or an emergency certification (Clotfelter et al., 2007; Goldhaber & Brewer, 2000). The teacher characteristics start taking their form even when teacher candidates are in college. GPA of the subject area and teaching related courses was diagnosed as another variable that is effective on teacher productivity (Kukla-Avecado, 2009).

Despite all that is accentuated about the importance of teacher credentials and qualities via academic studies, the schools located in low SES neighborhoods still benefit less from effective teaching practices due to less qualified, low-ranked teachers. It is eminently critical to assign highly qualified teachers based on their experience, undergraduate school performance, the way they received their teaching certificate and professional testing scores. A research based on a comprehensive sampling data consisting of students from grade 4 to 6 and their teachers, from 29 school districts in the U.S. inferred that there is a huge disparity on the level of teaching quality between low SES and non-low SES students are exposed to (Isenberg et.al, 2013).

Literature remains in the dark in terms of the relationship between Turkish teachers' qualities and credentials and the socioeconomic status of the students or the schools. Therefore, the efficacy of teachers appointed by the state through the Civil Servant Selection Examination (KPSS) is unknown. Yet the teachers with lowest scores on KPSS tests get to be appointed in the Southeastern and Eastern cities, where the highest poverty rate (46.6) exists compared to the rest of Turkey (Saatci & Akpınar, 2007). For example, 10 out of 15 teachers, who got the lowest scores on KPSS test among the 29.615 appointed teachers in February, 2016 by the Ministry of National Education, were appointed to work in Southeastern and Eastern cities; Diyarbakır, Kahramanmaraş, Adıyaman, Hatay, Mardin, Elazığ, and Gaziantep (MoNE, 2016).

Alternative ways were suggested to ensure achievement gains such as class size reduction as a deduction of Project STAR, a longitudinal study conducted in Tennessee aiming to find the relations between class size and students' scores on tests like ACT or SAT (Krueger & Whitmore, 2001). The class size reduction is claimed to have been benefited most by disadvantaged minority students. As much as reasonable it sounds, it might be quite costly in a country like Turkey that has a population of 79 million people. The total gross primary school enrollment rate across Turkey is 95.8%. For male students, this rate is 99.6% and for female students it is about 92%. The regional enrollment rates in Eastern and Southeastern Anatolia Region of Turkey is below the average with 85.6% and 93.2% respectively. In addition, there are 38 students per teacher (in the cities: 47 and in the villages: 25). With class size of 53 students on average, 53 in cities, and 41 in villages, Turkey's most populous classes are located in Southeast (Kurmus, 2006).

Fortunately, there is a cost effective method to increase student achievement gains. Acquirement and improvement of literacy skills have been attested to be mainly

dependent on teacher-student relationship (Biermann, 2015). In fact, by employing more qualified teachers school quality can result in better consequences than minimizing the class size. According to Rivkin et al.'s (2005) study, scaling up teacher's qualifications one standard deviation renders more student achievement gains than minimizing the class size by ten students.

At times, top-down programs designed by governments may be an effective way to overcome the disparities emerging due to socioeconomic disadvantages, as long as the major objectives and implementation techniques are internalized by teachers. For example, in Nali Kali project, which aimed to eliminate the gaps in achievement gains among low SES and non-low SES students in Karnataka, India, teachers placed their trust in the motives of the project and were properly trained. Therefore the positive outcomes of Nali Kali project have been promising for governments with the same intentions (Raj et al., 2015).

Because of the limited physical and emotional resources that low SES families could offer, the teachers of the low SES students have a greater significance in their students' emotional and academic development (Olsson, 2009). It was also propounded in resiliency studies that the children and adolescents surmounted the odds by deputizing an adult to become their "surrogate parents" in order to grow up as healthy and resilient individuals (Kumpfer & Summerhays, 2006). In Kauai study, it was revealed that both protective factors within the individual such as self-confidence and interaction with caring adults, like teachers, play a major role in fostering the resilience of children or adolescents at risk (Werner & Johnson, 2004). A caring and educationally concerned adult figure has not only been exclusive to forty-year-long Kauai study's and Nali Kali project's results. Wang and Gordon (1994) also highlighted the fact that most of the resilient children get support from an

adult outside of family thanks to whom children avoid the risks related to family discord. “In many cases, resilient students made school into a home away from home, a refuge from a troubled and disordered household” noted Werner and Johnson (2004, p.711).

Favorite teachers have usually been perceived as positive role models by resilient young people. Cognitive competence of children and adolescents develop together with maturation and acquisition of new knowledge. Teachers also help students through equipping them with knowledge and setting an example of themselves as role models (Benard, 1995). For the resilient students, their teachers are also their counselors and confidants who raise their self-esteem and touch their lives in a favorable way (Werner & Johnson, 2004). A teacher can facilitate an adolescent’s life by helping them see their relation to the world’s needs and determine a personal purpose in life. Teacher’s guidance can illuminate student about the possible coexistence of the student’s own distinct disposition and the way the student can contribute to the community (Follett, 1970).

The critical role of teachers in the resilience of disadvantaged students has been demonstrated in numerous research. Teachers, who are caregivers beyond being merely instructors in the classroom and who show their sympathy toward students by paying attention to the problems of their students and being supportive and positive role models, are proved to be the source of resilience for disadvantaged students (Werner, 1995). The main features of these teachers are listening to the children, challenging them and encouraging them enthusiastically no matter in which grade or school they are in (Werner, 1995). Furthermore, Baker et al.’s (2008) study, which was conducted on urban American elementary school students, the level of closeness and conflict in teacher-student relationships were found to have predictability on

children's academic achievement. The children, who had warmth, trust and lower levels of negativity in their teacher-student relationships, had more withstand despite the stressors. Eliminating behavioral disturbance in school via healthy relationships with students can lead to increasing social and scholastic competence of students as well (Rutter, 1979). By the age of ten, the children's cognitive competence is related to the support they receive from their teachers and other significant people in their life circles, and the cognitive competence reached at this age builds the base of the self-efficacy levels, including self-esteem and internal locus of control at age 18 (Werner & Johnson, 2004). It seems that the teacher-student relationships starting from the elementary school till university has striking influences on students for the rest of their lives.

Engin-Demir (2009) reveals the dramatic effects of perceptions of students in Turkey about their teachers on their academic achievement in her research. Impressively, resilience of a student has been strongly correlated with; the positive descriptions about their teachers' attitude toward themselves and the number of friends a student has at school (Engin-Demir, 2009). Gizir's (2004) research on the students in Turkey at the age of 14 has also revealed the vital role of teachers and schools through high expectations for and caring relationships with students in their resilient reintegration. In addition to academic achievement gains, positive teacher-student relationships may lead to decrease in health-wise risky behaviors of students such as smoking, alcohol or drug use, first sexual intercourse in adolescence, and violence due to use of weapons (Erickson et al., 2009; McNeely & Falci, 2004). On the other hand, under reverse conditions, where students receive little support from their teachers, students tend to undergo more physical and psychological problems (Conner et al., 2014). One can conclude from the resilience research that teacher-student

relationship can be protective and predictive. However, in the case of negative student-teacher relations severe outcomes may emerge. For instance, according to PISA 2000 results 14% of the Norwegian students, who had lower scores on reading literacy division, had below the average teacher-student relationships (Huang, 2009). In addition to lower academic achievement, there are broad outcomes of encountering a negative student-teacher relationship, such as, negative attitudes towards school, less attendance to school, asocial characteristics, social exclusion, and adaptation problems. Regardless of the prior negative relationships, when a student builds a positive bond with their teacher, problems of adaptation to the school environment and attitude toward school are smoothed down (McGrath & Van Bergen, 2015).

Teachers and school authorities' high expectations for students also play a major role in students' educational resilience. Schools, which adopt an ethos to promote high student academic progress, establish high expectations for every student, prompt students to take responsibility for their actions, rewards to reinforce good behavior and facilitate resilient adaptation and fair sanctions to end misbehavior, and well-built rapport between teachers and students in and outside of classroom, outscore the other schools with same physical resources (Benard, 1995; Rutter & Maughan, 2002). Follet (1970) compares teaching metaphorically with freeing of the students' mind, by enhancing their range of thought and power of control. Dewey (2012) stresses the cruciality of supporting systems to increase educational achievement, in Follet's words 'freedom', by uttering these words:

“No man and no mind was ever emancipated merely by being left alone.

Removal of formal limitations is but a negative condition; positive freedom is

not a state but an act which involves methods and instrumentalities for control of conditions.”(p.120)

Positive connections with adults at school that enhance motivation and meet students’ needs for relatedness are significant determinants of students’ sense of belonging and may be the key to understand students’ disaffection toward school (Klem & Connell, 2004; Murdock et al., 2000). The guidance and assistance provided by teachers and other adults in the school environment are sources of support that some students may not have available in other aspects of their lives and they have the potential to alter educational trajectories (Lee & Croninger, 2001). However, such relationships do not occur in isolation, and are influenced by school policies and organizational practices (Baker et al., 2008). Positive relationships with teachers lead to an increase in student sense of belonging and rehabilitate the student attitudes toward school and learning (Klem & Connell, 2004). Nevertheless, these kinds of supportive teacher-student relationships do not take place randomly, even if they do, it means that they are independent from the school mechanism and cannot aim to reach out to larger groups of students. They should be directed by deliberate school approaches and systematic decisions made by school authorities. In other words, deliberate and systematic approaches are needed to cultivate supportive relationships at school in order to build student sense of belonging to school, improve their attitude toward school and learning, and as a consequence enhance their academic achievement.

Reis et al.’s (2004) research has shown that even the highly talented socioeconomically disadvantaged students underachieved without taking active place in support systems in schools. For instance, special programs, extracurricular activities, summer schools, honors classes and networks that bring academically

successful students together, and support from family members and other significant adults such as their teachers. In a research performed on three low SES schools in the U.S., considerable school-wide supportive strategies have been suggested to promote student engagement and success. Some of these strategies were teacher visits to student homes in order to be more closely acquainted with them, adopting a common motto that every student can achieve or putting up banners of the school slogans to encourage students no matter how low their SES is (Tomlinson & Jarvis, 2014).

Resiliency in Turkey

Turkey has a rising resiliency trend among socioeconomically disadvantaged students in its PISA performances since PISA 2003. Whereas the OECD average resiliency rates fell from 6.4% to 6.1%, Turkey has ranked as the top country in PISA that had an outstanding performance with 4.4 percent of the increase in the resiliency rate of the country (OECD, 2013a). Turkey is followed by Mexico and Poland with only 2.5 percentage of growth in the rates of resilient students since 2003. An apparent progression can be inferred from the rates of resiliency in Turkey since Turkey was only among the top eight countries in terms of its resiliency rates in preceding assessments, PISA 2006 and 2009. In addition, Turkey's resilient students, who succeeded to enter the top quartile of the country based on their overall achievement is ten percent more than the OECD average, which is 40% (Findik & Kavak, 2013).

Furthermore, as stated in the global teacher status index executed by Varkey Foundation, a not-for-profit organization that conducts independent, global educational research, Turkish teachers get the highest score, 68 points, of the level of

respect from their public compared to the other countries after China and Greece (Dolton & Marcenaro-Gutierrez, 2013).

The critical role of teachers and their impression over their students that have been revealed in the aforementioned theoretical and empirical research conducted in Turkey has been a prompt for this study to investigate further these people and their schools, and how they could foster resilience among their low SES students.

Reading literacy

Out of four domains applied in Turkey; mathematics, problem solving, reading literacy, scientific literacy, in PISA 2012, the focus area of this study is reading literacy skills of socioeconomically disadvantaged students.

The abridged descriptions of the seven levels of reading literacy that are determined by PISA are listed in Table 1. Level 6 is the highest and Level 1b is the lowest described level of competence. This scale could be beneficial for the countries that seek to find out the capabilities of their students who performed at the bottom level and the top level through PISA cycles. In PISA 2009 reading literacy was the major domain, so as to maintain the same elaboration and difficulty level in this term as well, the assessment scale of PISA 2012 was based on 2009 (OECD, 2013b).

Table 1
Abridged descriptions for the seven levels of proficiency in reading in PISA 2012
(Adapted from OECD, 2013b)

Level	Lower Score Limit	OECD Cumulative Percentage	Characteristics of tasks
6	698	0.8%	Making elaborate and different inferences, comparisons and contrasts are expected. Showing a full and definite comprehension of more than one text through unfamiliar ideas is also needed. Abstract and critical thinking and evaluation of a complex text about an unfamiliar topic, considering various criteria and perspectives are among the requisites of these tasks.
5	626	7.6%	Finding and arranging bits of profoundly hidden information and construing with appropriate inferences are expected. Likewise, basic assessment and a full and definite perception of new content are among the essentials of these tasks.
4	553	28.3%	Spotting and organizing a few bits of hidden information are expected. Also commenting on subtleties of language through using public knowledge to critically comment on the text is among the requisites of these tasks.
3	480	57.2%	Identifying the main idea of a text, finding and noticing the relationship between a few bits of information through comparing, contrasting or categorizing is expected for these tasks.
2	407	81.2%	Spotting a few bits of information and sometimes inferring conclusions from them are expected. Also noticing the gist of a text, inferring meaning from a certain part of the text, make comparisons, contrasts or draw low level conclusions from them are among the requisites of these tasks.
1a	335	94.3%	Spotting openly expressed information, finding out the main theme or author's motivation in a text on a familiar theme or making basic connections between text and reader's knowledge on a well-known subject are among the requisites of these tasks.
1b	262	98.9%	Finding openly expressed information in a short, linguistically basic content with a recognizable connection, such as a simple narrative or a list is expected for these tasks. The text usually helps the reader through repetition of information, pictures or symbols.

PISA does not name this section of the test as 'reading', which is restricted to decoding letters. This section is called as 'reading literacy' because it assesses students skills in "understanding, using, reflecting on and engaging with written texts, in order to achieve one's goals, develop one's knowledge and potential, and participate in society" (OECD, 2013b, p.61). In addition to the other longitudinal

research (Kush et al., 2005; Walberg & Tsai, 1983), the predictor quality of reading attitude and reading comprehension skills on academic achievement has been reapproved in Bastug's (2004) study on 1028 fourth and fifth-grade students from elementary schools in Turkey. The achievement in reading literacy does not only positively influence the school life of students, but its foreshadowing the micro-prosperity of individuals in their adulthood was proved in Smith et al.(2000) and Sparks et al.'s(2014) longitudinal studies. This link between achievement in reading literacy and its contribution to the students' expected overall school and adult life success brings us to the very beginning of this study, cultural capital.

CHAPTER 3: METHOD

Introduction

In this chapter, the explanation of research design, the details of sampling, instrumentation, data collection and analysis will be presented. It provides information about how discriminant analysis could be conducted to help researchers define academically resilient students. Finally, what was undertaken in each step of data collection from PISA's database and analysis will be elucidated.

Research design

The main purpose of this study was to examine the effect how school-related and teacher-related factors discriminate socioeconomically disadvantaged students and resilient students based on PISA 2012 data set. In this study, comparative design was used as it allows researchers to investigate the differences among pre-existing groups without any manipulation. The objective of this study is to search for how the reading literacy scores of different groups of low SES students differ based on a group of variables. Basically, the results of this study reflect the group differences.

Context

Many countries participate PISA around the world. In the last PISA cycle in 2012, the number of participant students was 510.000 students from 34 OECD member countries and 31 partner countries and economies (OECD, 2014). Participating countries and participants in PISA covers a broad range of socio-economic statuses, educational systems, etc. Thus each year member countries of OECD and some

partner economies around the world assess their 15-year-old students in reading, mathematics, and science domains through PISA to find out what they learned at school and how they can use these on unfamiliar or unusual grounds (OECD, 2011b). Besides the items answered in these three domains, students are also bound to respond to some questionnaires which aim to obtain information about students' backgrounds, experiences related to school and learning.

Governments, educational scientists, and other stakeholders gain invaluable insight into their contemporary status on educational grounds compared to the other participant countries. PISA describes its main objective in assessment as detecting the students' literacy which is defined as the ability to utilize what they learned at school to easily deal with their challenges in real life.

Sampling

The students that have gone through no less than six years of formal school education and whose age range fluctuates from 15 years and three months to 16 years and two months old, constitute the sample of PISA. The participant students were selected in such an elaborate way that aimed to portray the population coverage of 15-year-old students enrolled in the schools as realistically as possible in order to provide valid projection of student achievement and characteristics (OECD, 2014).

A stratified systematic sample design was used in PISA 2012. After a two-stage sampling process the samples were determined: the sample of schools were drawn in the former stage and in the latter one the sample of students from the sample of schools were drawn. PISA consortiums, who are the PISA's responsible contractors for design and implementation of it internationally, drew the sample of schools for each country (Kelly et al., 2013).

PISA 2012 Turkey sample was leveled according to the school types. It was randomly and proportionately selected from 12 statistical regions (Istanbul, West Marmara, Aegean, East Marmara, West Anatolia, Mediterranean, Central Anatolia, West Black Sea, East Black Sea, Northeast Anatolia, Central East Anatolia, and Southeast Anatolia) and 56 cities. The 13 school types that took place in PISA 2012 sample were as listed: primary school, general high school, Anatolian high school, science high school, Anatolian teacher training high school, fine arts high school, vocational high school, Anatolian vocational high school, technical high school, Anatolian technical high school, social sciences high school, police college, and multi-program high schools (MoNE, 2013). As a result, final sample of PISA 2012 consisted of 4848 15-year-old students.

This study's focused sample is not all of the participants of PISA 2012, but only the resilient and low-achieving students with low SES that took the test. Therefore, a definition was required to distinguish these two groups of students. To define the socioeconomic levels of the students and identify the ones with lower socioeconomic background ESCS (Index of Economic, Social and Cultural Status) was employed. These three different indexes; economic, social and cultural indexes, provided by PISA are combined in defining ESCS index. Items that were linked to wealth, cultural possessions, educational resources, the number of books that the families of students owned at home; also to detect families' socio-cultural level the highest parental education and the highest parental occupation were counted in for the computation of ESCS for PISA 2012 (OECD, 2013a).

The students' answers on the literacy test in PISA 2012 were utilized to estimate their literacy levels. Their responses to the student background questionnaire were used to define their SES in the light of ESCS. To determine the resilient students, the

students at the bottom quarter based on their ESCS were selected. Then the ones, who had scores in the top quarter in the literacy test in Turkey, were selected and identified as the resilient students. The same method to identify the resilient students in a country was employed by OECD (OECD, 2011a).

Two groups of students were defined as resilient and low-achieving based on the following process. Firstly, the low SES students were selected as the 1200 out of 4848 students remaining at the bottom quarter based on ESCS. In other words, these 1200 students out of 4848 were from the lowest quartile in Turkey. In the second phase, they were separated into four quartiles based on their reading literacy scores. The number of participants in the lowest quartile group was 300. They were named as the low-achieving students throughout this study. Their mean score in reading literacy section was 342.74, and their proficiency level was '1a'. The number of participants in the highest quartile group was 300 as well. They were named as the resilient students throughout this study. Their mean score in reading literacy section was 538.63, and their proficiency level was at least '3'. Figure 4 illustrates the sampling design of the study.

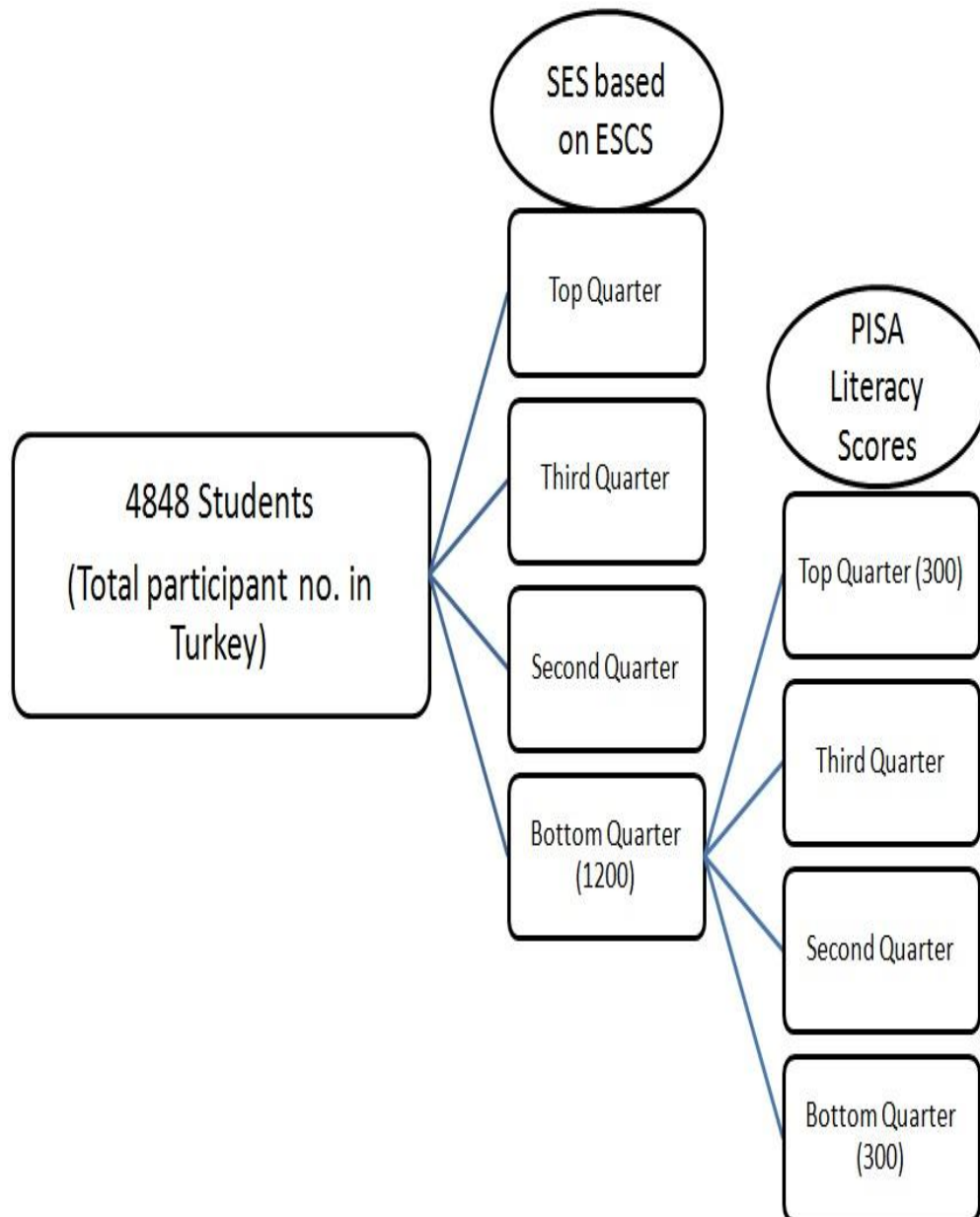


Figure 4. Sampling design of the study

91% of the resilient students' scores are above the OECD average score, which is 500 points. Low-achiever students managed to get in only at Level 1 while all resilient students were at or above Level 3. At Level 3, the resilient students in Turkey managed to get 2.5 times better than the OECD average, which was 28.9% for reading literacy (OECD, 2013b). On the other hand, as indicated in Table 2, low-

achiever socioeconomically disadvantaged students could not even exceed Level 1 and worse still 5% of them were not even able to reach bottom level, Level 1b.

Table 2
Levels of proficiency at PISA 2012 in Turkey

Level	Low-Achiever Students (%)	Resilient Students (%)
Below 1b	5.0	-
1b	30.0	-
1a	65.0	-
2	-	-
3	-	73.7
4	-	23.6
5	-	2.0
6	-	0.7

As it is also illustrated in Table 3, means of the two groups are dramatically different, while the mean of the low-achievers' is only 342.74 points, the resilient students' mean score is 538.63 points. While the minimum score of the low-achievers is only 197, which is even lower than Level 1b according to PISA's scale of proficiency in reading literacy; in resilient students' group, the minimum score is 497, which is almost OECD average. The gap between these groups persists in the maximum scores as well; the low-achievers' maximum score 393 is nearly doubled by the resilient students' maximum score, 749.99 points, which is also much higher than below limit of PISA's top level of proficiency that is 698 points and almost the top point, 750.

Table 3
Descriptives of the two groups

	Low-Achievers	Resilient Students
Number of Students	300	300
Mean	342.74	538.63
Median	352.84	528.90
Mode	313.54	497.40
Std. Deviation	39.88	38.30
Minimum	197.90	497.40
Maximum	393.59	749.99

Figure 5a, the bar chart of scores of the low-achiever socioeconomically disadvantaged students is illustrated. Figure 5b, which shows the scores of the resilient students, is skewed right. The distribution of the scores of the low-achievers group is almost symmetrical (skewness: -1.0), on the other hand, the skewness of the scores of the resilient students is substantial (skewness: 1.8), which means that the distribution is far from symmetrical.

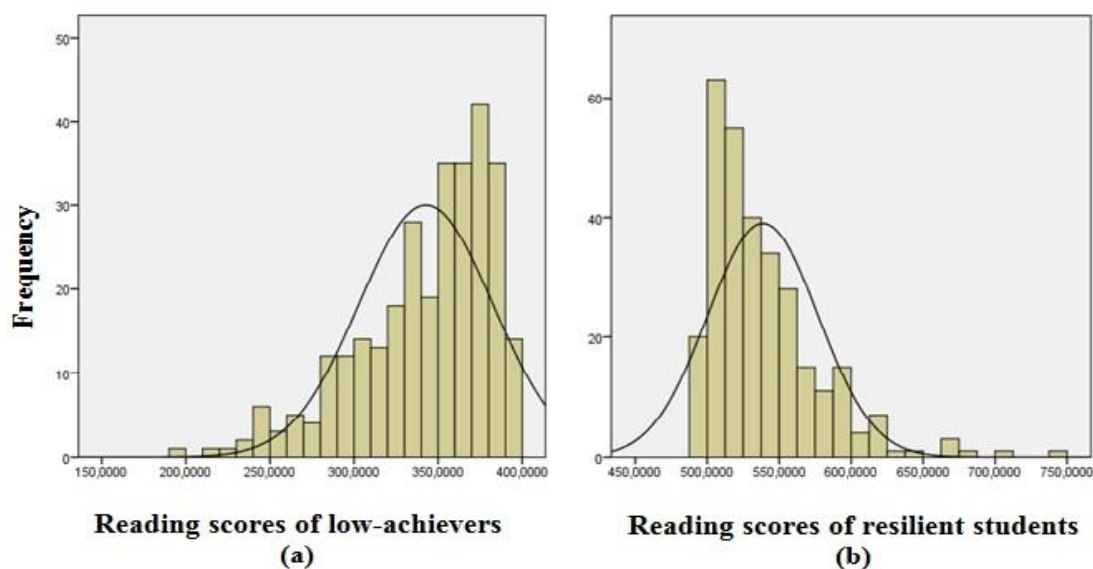


Figure 5a and 5b. Reading scores of socio-economically disadvantaged low-achieving and resilient students in PISA 2012.

Instrumentation

PISA has been assessing the competence and knowledge acquired from schools in mathematical, scientific and reading literacy by 15-year-old students in every three years since 2000. The duration of the test is roughly two hours, and open-ended and multiple-choice question types are employed. One target of this assessment is to figure out how prepared the students are for the future. Consequently, despite the familiar question types, the contents are unexpected for the majority of the students since the problems or reading texts are based on real-life situations.

Upon completing the test, the students, teachers, and school administrators answer questionnaires created specifically for each group to provide information about the students' backgrounds, the schools' functioning and administering profile. Beyond just providing commensurate data about the academic level of participating countries' 15-year-old students', thanks to these questionnaires, PISA also illuminate the crucial sociological matters in a comparable pattern. Moreover, one of the most critical concerns of its reports, which is declared after the results are announced, is the resilience of the socioeconomically disadvantaged students. For this reason, students' responses to the background questionnaire items that were linked to students' points of view on school and their teachers were used as variables of this study. The focused dimensions on classroom and school climate were about student-teacher relations, attitude toward learning at school, attitude toward school, and sense of belonging.

In order to ensure comparability between PISA cycles in terms of the performance of a country and to be able to reflect changes in literacy, the same instruments were used in the PISA assessments. Furthermore, the instructions given to the students and

the data gathering procedures had to be equal among all participant countries. To accomplish the task, the people who take part in data collection chain, such as, the Test Administrators, School Coordinators, and school associates, have received the same instructions and information. Each participating country had to undergo identical procedures of data collection and each student taking place in this assessment should be given the same instructions (OECD, 2013b).

In Turkey, the instruments that were used in PISA 2012 consist of the mathematics, reading, science and problem-solving literacy tests, student background questionnaire, parent questionnaire, and school questionnaire. In addition to these, there was an optional questionnaire information communication technology familiarity to be filled out by students (OECD, 2013c).

The items were organized in open constructed response, closed constructed response, short response, multiple choice, and complex multiple choice forms. Also providing a short or extended written response or choosing a response from a list is among the item types (OECD, 2013b). As for the student background questionnaire, the responses were given through a four-level Likert-type scale. The students were supposed to select the numbers 1 to 4 depending on how strongly they agree with the given statements: 1 standing for strongly agree, 2 standing for agree, 3 standing for disagree, and 4 standing for strongly disagree. The ultimate goal of this questionnaire was to dissect the students' socio-economic statuses, extracurricular activities and the cognitive strategies that they utilize (OECD, 2014). The items of the background questionnaire that comprise ESCS were employed as instruments besides the reading literacy test scores of the students.

The main objective of this study was to explore the differences between the low achieving and resilient low SES students in terms of the selected teacher- and school-related variables. Therefore, the disadvantaged students' responses to the student questionnaires, which were related to their opinions about and attitudes toward their teachers and schools, were used. The variables selected for this study were grouped as Student-Teacher Relations (5 items), Sense of Belonging to School(9 items), Attitude towards School: Learning Activities(4 items) and Attitude towards School: Learning Outcomes (4 items). The items corresponding to these dimensions are listed in Table 4. The codes of items are also given in square brackets“[]” (See Appendix 1 for the abridged names of the items).

Table 4
Focused dimensions on classroom and school climate

Dimensions	Items
Student-Teacher Relationship	Students get along well with most teachers [ST86Q01]
	Most teachers are interested in students' well-being [ST86Q02]
	Most of my teachers really listen to what I have to say [ST86Q03]
	If I need extra help, I will receive it from my teachers [ST86Q04]
	Most of my teachers treat me fairly [ST86Q05]
Sense of Belonging to School	I feel like an outsider (or left out of things) at school [ST87Q01]
	I make friends easily at school [ST87Q02]
	I feel like I belong at school [ST87Q03]
	I feel awkward and out of place in my school [ST87Q04]
	Other students seem to like me [ST87Q05]
	I feel lonely at school [ST87Q06]
	I feel happy at school [ST87Q07]
	Things are ideal in my school [ST87Q08]
	I am satisfied with my school [ST87Q09]
Attitude towards School: Learning Outcomes	School has done little to prepare me for adult life when I leave school [ST88Q01]
	School has been a waste of time [ST88Q02]
	School has helped give me confidence to make decisions [ST88Q03]
	School has taught me things which could be useful in a job [ST88Q04]
Attitude towards School: Learning Activities	Trying hard at school will help me get a good job [ST89Q01]
	Trying hard at school will help me get into a good college [ST89Q02]
	I enjoy receiving good grades [ST89Q03]
	Trying hard at school is important [ST89Q04]

Method of data collection

There were a total of 13 groups of items in the main evaluation assessment that took place in Turkey, which were comprised of mathematics, reading and science skills as seven, three and three item clusters, respectively. Testing time for every cluster was appointed as 30 minutes, and totally 390 minutes. In each cycle one of these domains were focused and in PISA 2012 cycle the focus was on mathematics domain, this explains the reading and science domains being outnumbered by mathematics by four extra clusters (OECD, 2014).

Students responded to the background questionnaire, for which another 30-minutes was allocated, upon taking the achievement test. Students took a break in the first half of the achievement tests session and before they started answering the background questionnaire.

After the achievement test session and background questionnaire session were over, the booklets were recollected for scoring. They were sent to National Project Manager appointed by PISA which was, Department of Educational Research and Development (EARGED). EARGED was later closed down in 2013 and YEGITEK (Directorate General for Innovation and Education) assumed the task of conducting PISA in Turkey. Common technical and administrative procedures were ensured and carried out by EARGED which were bearing essential importance regarding the accomplishment and validation of these multinational evaluation and assessment tools. So, with the help of those tools, PISA could be applied soundly and provide highly satisfying results (OECD, 2013b). In this study, the results of the reading literacy achievement test and student background questionnaires were examined.

Method of data analysis

After two groups of students were defined, as low-achievers and resilient students, two discriminant analyses were conducted using school- and teacher-related factors to find out how these variables discriminate the two groups. The first analysis was conducted on a factor level in order to assess the attitudes of students in latent variables. In this analysis, there were four independent factors consisting of students' attitudes towards school: learning outcomes, students' attitudes towards school: learning activities, sense of belonging to school and teacher-student relations dimensions.

The second analysis was created on item level to have more elaborate results and examine the ideas of students based on their responses to each item. There were totally 22 items as shown in Table 4.

Discriminant analysis is a statistical technique that gives researchers the chance to investigate the differences between two or more groups of entities on the basis of several variables synchronously (Klecka, 1980). As Grimm and Yarnold (1995) report, there are two types of discriminant analysis techniques, one of them allows identification of the variables or attributes that best distinguish members of two or more groups from one another, and it is called descriptive discriminant analysis. The other one is predictive discriminant analysis that helps to predict the group membership status of subjects or observations or cases or entities of whose group status is unknown (Grimm & Yarnold, 1995). This study conducted a descriptive discriminant analysis because the students from low SES students are already known as low-achievers and the resilient ones at the very beginning, so the purpose of this research is to describe how these two groups differ based on different dimensions of difference.

There are basic assumptions to make use of discriminant analysis. Primarily, the sample should be determined via random selection process in this type of analysis. The data samples should be originated from at least two exclusive groups. It is vital to classify the dependent variables correctly. In order to differentiate groups from each other, each group should be clearly defined (Burns & Burns, 2008).

Discriminating variables are basically the characteristics that present differences and distinguish groups from each other. In this study, the discriminating variables are the responses of students to the background questionnaire of PISA 2012, and the groups are the low-achiever socioeconomically disadvantaged students and the resilient

students who had the same risk of academic failure like the first group, due to the socioeconomic status of their families.

Additionally, predictor variables are required to be normally distributed. According to the null hypothesis, the model is not statistically significant, and as for H_1 , the model is statistically significant. The null hypothesis was rejected for both of the tests based on Kolmogorov-Smirnov test which resulted in $p > .05$. Therefore the models were statistically significant, and each set had multivariate normal distribution on the differential variables.

Another assumption to carry out a discriminant analysis is that variance-covariance matrices should be equal for each group. If they are not equal, two groups are combined and quadratic discriminant analysis is conducted. H_0 : Covariance matrices of the groups are equal. H_1 : Covariance matrices of the groups are not equal. Table 5 and Table 6 show the Box's M test results, which were used to test the assumption of equal covariance. Since Box's M was 39.670 for the first analysis and 143.842 for the second analysis, and p value was lower than .05 for both dimension-level and item-level analyses, the null hypothesis was rejected for both.

Table 5 Box's test results for factor-level analysis		
Box's M		39.670
F	Approx.	3.922
	df1	10
	df2	666170
	Sig.	0

Table 6 Box's test results for item-level analysis		
Box's M		143.842
F	Approx.	3.901
	df1	36
	df2	404474
	Sig.	0

According to these results, covariance matrices were not found as equal. However, due to the large sample of this study, this kind of a slight problem may be neglected (Anderson, 2006).

Regression analyses were conducted to check multicollinearity, which emerges in the case of a correlation among some of the predictor variables in the model, because high levels of multicollienarity may increase the variance of the coefficients and destabilize them. Variance inflation factors (VIF) and tolerance levels were checked for both of the groups to examine how much the variance of the regression coefficient increases if predictors are correlated. As all the VIFs were about 1, there was not any multicollinearity. And because Tolerance values were higher than 0.1, the two analyses, dimension-level and item-level, were assured that there was not excessive variation, either.

The test of significance that is applied in discriminant analysis is Wilks' lambda. The input of an independent variable to the discriminant function is inversely proportional with lambda. In other words, the small value of lambda could be interpreted as an independent variable's high significance in the discriminant analysis. Lambda values range from zero to one; the closer lambda gets to 0 the more

that variable can differentiate groups, and the higher lambda value gets toward one the less that variable can differentiate the groups (Poulsen & French, 2008). The other important components of discriminant analysis are the eigenvalues of and canonical correlations for the discriminant functions. As the eigenvalue gets larger, the amount of variance that is shared with a linear combination of variables increases. On the other hand, the canonical correlation coefficient for each function is explained through canonical correlation. It is the r value between each group and the discriminant scores on the function, and it reveals the significance of each discriminant function (Ünsal, 2000).

CHAPTER 4: RESULTS

Introduction

The purpose of this study was to explore the school-related and teacher-related factors on the resilience of socioeconomically disadvantaged students who took PISA 2012. The socioeconomic statuses of the participant students' families were determined via ESCS, index defined by PISA by OECD. Then they were divided into two groups as resilient and low-achiever students, who achieved highest scores and lowest scores on reading literacy test, respectively.

In this chapter, students' responses to the background questionnaire's items in the classroom and school climate section were compared to define resilient and low-achiever students. It also presents the results of the discriminant analysis and gives descriptive details of the tables and figures.

Discriminant analysis

Therefore, both dimension-level and item level discriminant analyses of this study were conducted with 300 low-achievers and 300 resilient students. 164 low-achiever and 196 resilient students were included in the analyses due to missing values.

Dimension-level discriminant analysis

The eigenvalues and canonical correlation are displayed in Table 7. The eigenvalue of the canonical discriminant function was found to be 0.10. This function can account for 100% of the discriminating ability of the discriminating variables and the canonical correlation value it has is 0.313. Canonical correlation measures the

relationship between the discriminant scores and groups and reveals the total explained variance. The value of 0.313 is quite high. Also, there is only one canonical linear discriminant function, whose number is equal to number one that is one less than the number of levels in the group variables, the resilient and low-achiever low SES students in this case.

Table 7
Eigenvalues table for factor-level analysis

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	0.109	100	100	.313

In other words, the function's power of the discriminant gets better as much as the Eigenvalue increases. Whereas with Wilks' λ , whose values are used to test the discriminating power of predictors and identify relative significance of them, it is vice versa. According to Table 8, 90.2% of the entire variance could not be explained by the differences between groups. Since $p < .05$, the null hypothesis was rejected and the model was found to be statistically significant.

Table 8
Wilks' Lambda table factor-level analysis

Wilks' Lambda	χ^2	df	P
0.902	38.736	4	.000

Table 9 presents the relative significance of the predictors in the structure matrix table. According to this structure matrix, the students' attitudes towards school about learning outcomes and their attitudes towards school about learning activities had a distinctive predictive value on the resilience of students from low SES backgrounds.

Especially, the students' attitudes towards school about learning outcomes had a statistically significant predictive value.

Table 9
Structure matrix for factor-level analysis

Factors	Discriminant Loadings
Attitude towards School: Learning Outcomes	.918
Attitude towards School: Learning Activities	.649
Sense of Belonging to School	.463
Teacher-Student Relations	.056

On unstandardized canonical discriminant function coefficients table (Table 10), the unstandardized coefficients were used to generate a discriminant function (equation) for the dimension-level discriminant analysis.

$$D = (-0.274 \times \text{Teacher-Student Relations}) + (0.853 \times \text{Attitude towards School: Learning Outcomes}) + (0.411 \times \text{Attitude towards School: Learning Activities}) + (-0.018 \times \text{Sense of Belonging to School}) + .046.$$

Table 10
Unstandardized canonical discriminant function coefficients for factor-level analysis

Factors	Function 1
Teacher-Student Relations	-0.274
Attitude towards School: Learning Outcomes	0.853
Attitude towards School: Learning Activities	0.411
Sense of Belonging to School	-0.018
(Constant)	0.046

The relative contribution of each variable to the discriminate function controlling for every single other variable in the equation was shown on the unstandardized canonical discriminant function coefficients table (Table 10). Such an equation also

highlighted the significance of each variable compared to the other ones in the equation.

As it is presented in Table 11, group means (centroids) estimated by the discriminant function were found to be -0.346 and 0.312 for low-achievers and resilient students, respectively. As the difference between functions at group centroids gets larger, the power of the canonical discriminant function on predicting the resilience of students from low SES backgrounds gets better. Since the centroids of two groups had opposite sign discriminating the score, the predictive power of the function could be interpreted as strong.

Table 11
Functions at group centroids for factor-level analysis

Groups	Function
	1
Low-achievers	-0.346
Resilient students	0.312

The classification results (Table 12) reveal that 62.6% of respondents were classified correctly into the groups of “resilient students” and “low achievers” based on cross validated analysis. Low-achiever students were classified with a slightly higher accuracy (65%) than resilient students (60.5%) based on this equation.

Table 12
Classification results for factor-level analysis

		Predicted Group Membership		Total
		Low-achievers	Resilient students	
Original	Count			
	Low-achievers	118	62	180
	Resilient students	77	123	200
	Ungrouped cases	141	265	406
	%			
	Low-achievers	65.6	34.4	100
	Resilient students	38.5	61.5	100
	Ungrouped cases	34.7	65.3	100

Cross-validated	Count	Low-achievers	117	63	180
		Resilient students	79	121	200
	%	Low-achievers	65.0	35.0	100
		Resilient students	39.5	60.5	100

Item-level discriminant analysis

The eigenvalues and canonical correlation are displayed in Table 13. The eigenvalue of the canonical discriminant function was found to be 0.48. This function can account for 100% of the discriminating ability of the discriminating variables and the canonical correlation value it has is 0.571. The correlation value is higher than the one calculated in factor-level discriminant analysis.

Table 13
Eigenvalues table for item-level analysis

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	0.483	100	100	.571

According to Table 14, 67.4% of the entire variance could not be explained by the differences between groups. Since $p < .05$, the null hypothesis was rejected and the model was found to be statistically significant.

Table 14
Wilks' Lambda table for item-level analysis

Wilks' Lambda	χ^2	df	p
0.674	139.377	8	< .001

The extents of the coefficients listed in Table 15 demonstrate how powerfully the discriminating variables influence the discriminant score as indicated by unstandardized canonical discriminant function coefficients. The (-) sign suggests the direction in favor of the resilient group. For example, for the variable “Things are ideal in my school” the means of responses increase, connotating disagreement with

the statement in this questionnaire, as resilience increases, and decreases as low-achiever profile becomes more dominant. The same but a weaker relation is also pertinent to “I feel happy at school” and “If I need extra help, I will receive it from my teachers” statements.

Table 15
Structure matrix for item-level analysis

Items	Discriminant Loadings
<u>Student-Teacher Relationship</u>	
Teachers Help Students	-.148
Teachers Treat Students Fairly	.261
<u>Sense of Belonging to School</u>	
Feel Awkward at School	.484
Feel Happy at School	-.100
Things Are Ideal at School	-.338
<u>Attitude towards School: Learning Outcomes</u>	
Waste of Time	.541
Gave Me Confidence	.173
<u>Attitude towards School: Learning Activities</u>	
Enjoy Good Grades	.487

According to the discriminant function obtained from the structure matrix in Table 15, the students’ perception of school as being a waste of time or a precious time had a distinctive predictive value on the resilience of students from low SES backgrounds. Respectively, ‘School has been a waste of time (.541)’, ‘I enjoy receiving good grades (.487)’, ‘I feel awkward and out of place in my school (.484)’, ‘Most of my teachers treat me fairly (.261)’, and ‘School has helped give me confidence to make decisions (.173)’ were positively correlated variables with resilience. And ‘Things are ideal in my school (-.338)’, ‘If I need extra help, I will

receive it from my teachers (-148)’ and ‘I feel happy in my school (-100)’ were negatively correlated variables with resilience

The unstandardized coefficients were used to generate the discriminant function (equation) on unstandardized canonical discriminant function coefficients table (Table 16). Accordingly, enjoying good grades had the strongest power on becoming a resilient student while receiving help from teachers was the weakest predictor.

$$D = (-0.313 \times \text{Teachers Help Students}) + (0.395 \times \text{Teachers Treat Students Fairly}) + (0.373 \times \text{Feel Awkward at School}) + (-0.334 \times \text{Feel Happy at School}) + (-0.562 \times \text{Things Are Ideal at School}) + (0.593 \times \text{Waste of Time}) + (0.337 \times \text{Gave Me Confidence}) + (0.766 \times \text{Enjoy Good Grades}) - 1.857.$$

Table 16
Unstandardized canonical discriminant function coefficients for item-level analysis

Items	Function
	1
Teachers Help Students	-0.313
Teachers Treat Students Fairly	0.395
Feel Awkward at School	0.373
Feel Happy at School	-0.334
Things Are Ideal at School	-0.562
Waste of Time	0.593
Gave Me Confidence	0.337
Enjoy Good Grades	0.766
(Constant)	-1.857

Table 17 presents group means (centroids) as 0.758 and -0.634 for low-achievers and resilient students, respectively. As the difference between functions at group centroids gets larger, the power of the canonical discriminant function on predicting the resilience of students from low SES backgrounds gets better. Since the centroids of two groups had opposite sign discriminating the score, the predictive power of the function could be interpreted as strong.

Table 17
Functions at group centroids for item-level analysis

Groups	Function
	1
Low-achievers	0.758
Resilient students	-0.634

The classification results (Table 18) reveal that 76.5% of respondents were classified correctly into the groups of “resilient students” and “low-achievers” based on cross-validated grouped cases classification. Resilient students were classified with a much higher accuracy (90.3%) than low-achievers (42.7%).

Table 18
Classification results for item-level analysis

		Predicted Group Membership			
		Low-achievers	Resilient students	Total	
Original	Count	Achievement			
		Low-achievers	133	167	300
		Resilient students	28	272	300
	Ungrouped cases	141	459	600	
	%	Low-achievers	44.3	55.7	100.0
		Resilient students	9.3	90.7	100.0
Ungrouped cases		23.5	76.5	100.0	
Cross-validated	Count	Low-achievers	128	172	300
		Resilient students	29	271	300
	%	Low-achievers	42.7	57.3	100.0
		Resilient students	9.7	90.3	100.0

Below means of responses that were given for the focused dimensions on classroom and school climate are presented on Figures 6 to 10. The responses of PISA 2012 Student Background Questionnaire were given through a four-level Likert-type scale, so students were supposed to select the numbers 1 to 4 depending on how strongly they agree with the given statements: 1 stood for ‘Strongly Agree’, 2 stood for ‘Agree’, 3 stood for ‘Disagree’, and 4 stood for ‘Strongly Disagree’.

On Figure 6, means of students' responses to the attribute of student-teacher relationships were illustrated. Only two variables were included in the discriminant function from this dimension. The mean of response to the statement that students will receive extra help from their teachers was higher in the resilient students' group compared to the low-achievers. Moreover, low-achiever students' mean of response to the statement that most of the teachers treated them fairly was significantly higher than the resilient students', which indicated that resilient students had a better picture of teachers' fairness than the low-achievers.

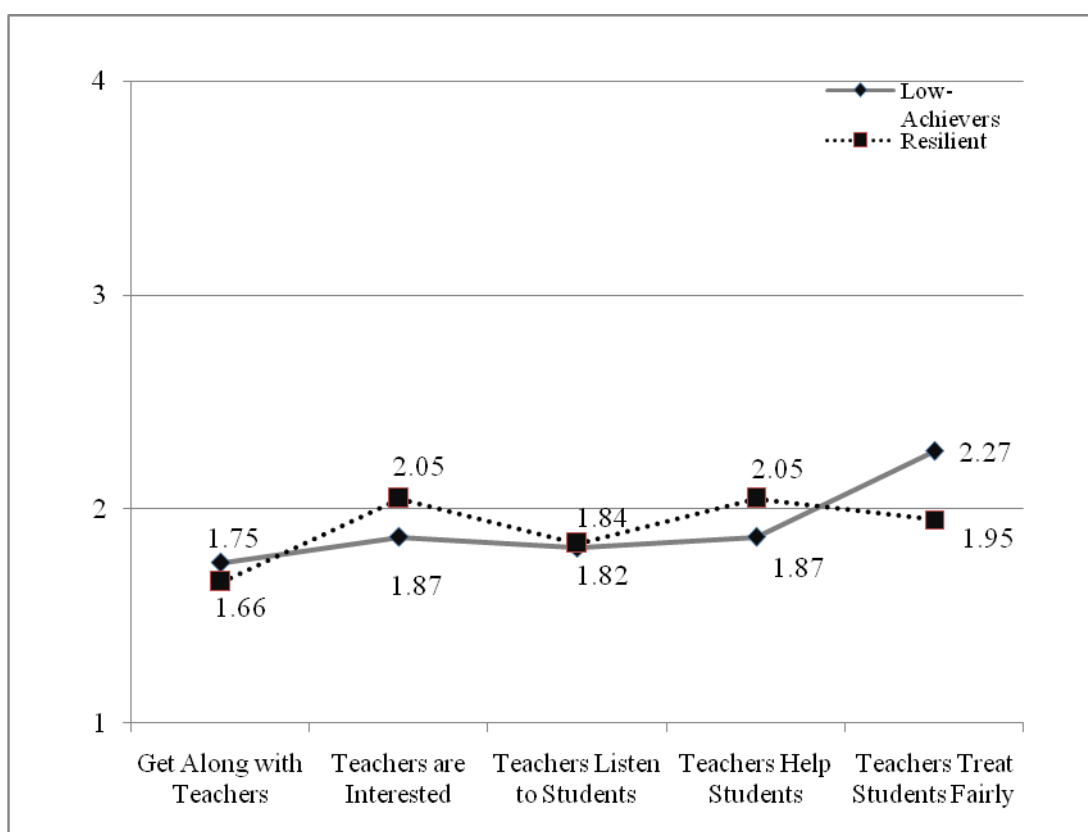


Figure 6. Means of responses given to items of student-teacher relations

The resilient students thought that they got along well with most of their teachers, however this situation was not much different in the case of the low-achievers, and their responses differed only slightly toward disagreement, as indicated by nonsignificant mean differences between two groups. Most of the resilient seemed to

agree with the teachers' interest in the well-being of students whereas the low-achiever students agreed with the statement a little more with a .16 difference. Both of the groups had somewhat the same thought about the teachers' listening to what the students have to say, and their responses were close to the agreement level.

Figure 7 presented the means of responses that were given by students for the items related to the students' sense of belonging to the school. The resilient students had a statistically significant tendency to feel awkward and out of place at school, while the low-achievers students mostly disagreed with this statement. Moreover, the low-achiever students agreed much more strongly with the statement that things were ideal at school than the resilient students. Also, low-achievers significantly felt happier than the resilient students.

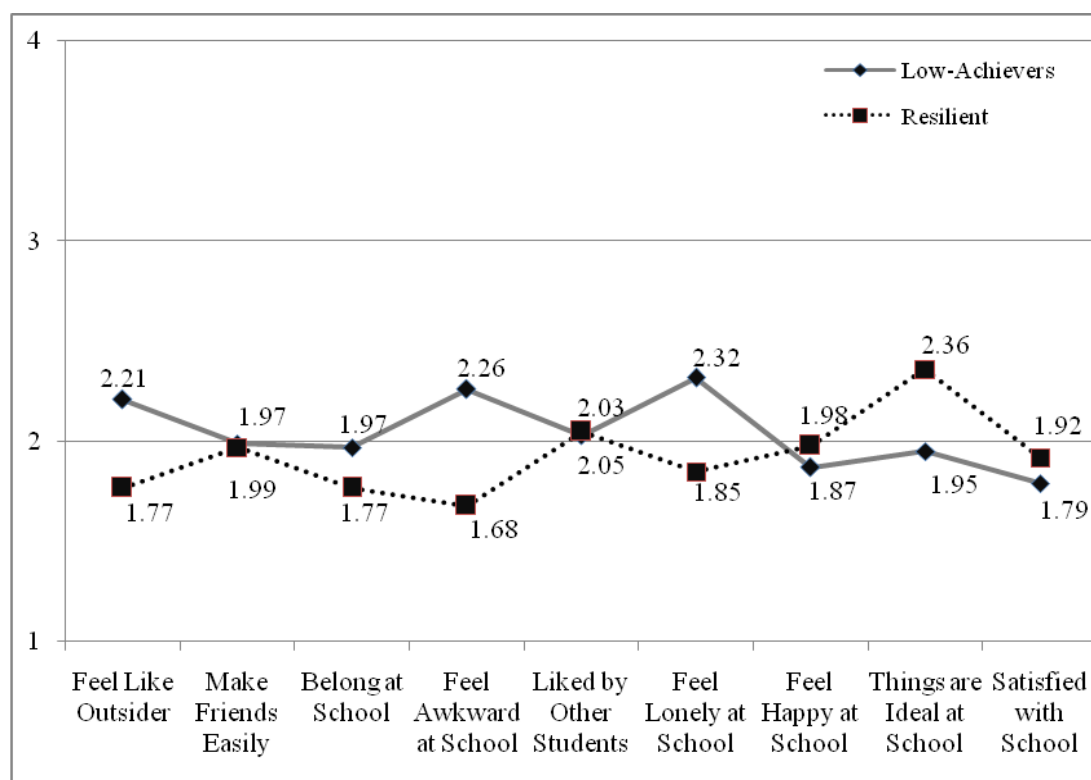


Figure 7. Means of responses given to items of sense of belonging

Most of the low-achievers did not feel like outsiders or lonely at school, on the other hand, the resilient students had a stronger view about feeling like an outsider and lonely at school. Although these variables seemed to be significant predictors due to the visual illustration of the figure, they were not discriminant coefficients. Therefore they were nonsignificant. The figure still provides the tendencies of the two groups, which is resilient students tend to feel lonely and like outsiders at their schools. For ‘I make friends easily’ and ‘Other students seem to like me’ statements, the differences among the responses of the resilient and the disadvantaged students were hardly noticeable, which indicated that both of the groups thought that they could make friends easily and liked by others. There was not a statistically significant difference among the two groups of students regarding being satisfied with their schools or belonging at school, either.

In Figure 8, means of responses that were given on the students’ attitude toward learning at school were shown. As it was mentioned above in Table 10, there was a statistically significant difference between the perceptions of students about its being a waste of time. While most of the resilient students strongly agreed with it, the mean of low-achiever students was closer to the mild agreement level. Moreover, most of the resilient students thought that school had provided them enough support to build their confidence in order to make decisions for themselves whereas the low-achievers gave a higher point to this item, which means low-achievers did not feel as confident as the resilient students due to school’s contributions.

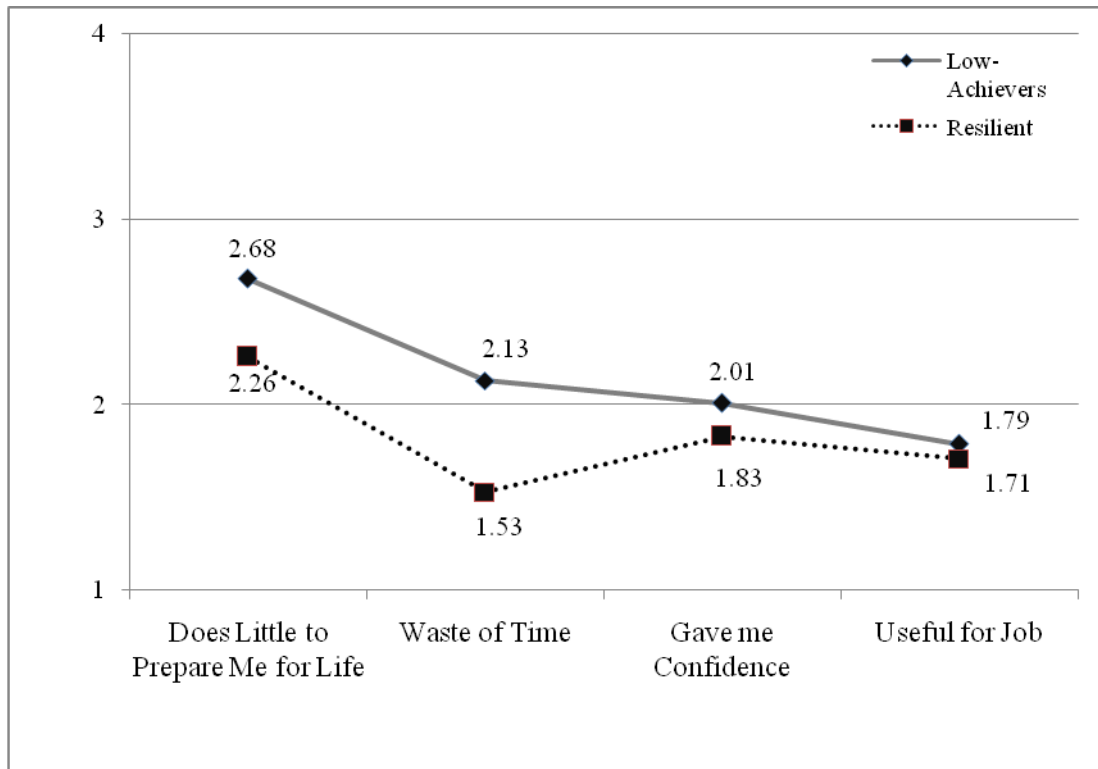


Figure 8. Means of responses given to items of attitude toward learning at school

The resilient students seemed to agree less with the statement that ‘the school does little for them’ than the low-achiever students. Even though the means of response scores given by resilient students faintly surpass the low-achievers’, it seems that both of the groups thought that education they acquired at school would be useful for them to find a job when they leave the school.

Figure 9 is an illustration of the means of responses that were given for items related to students’ attitude toward school. There was a statistically significant gap between these two groups regarding their responses to the items stating that they enjoy receiving good grades because almost all of the resilient students strongly agreed with it (1.21), while low-achievers scored this item with higher points (1.61).

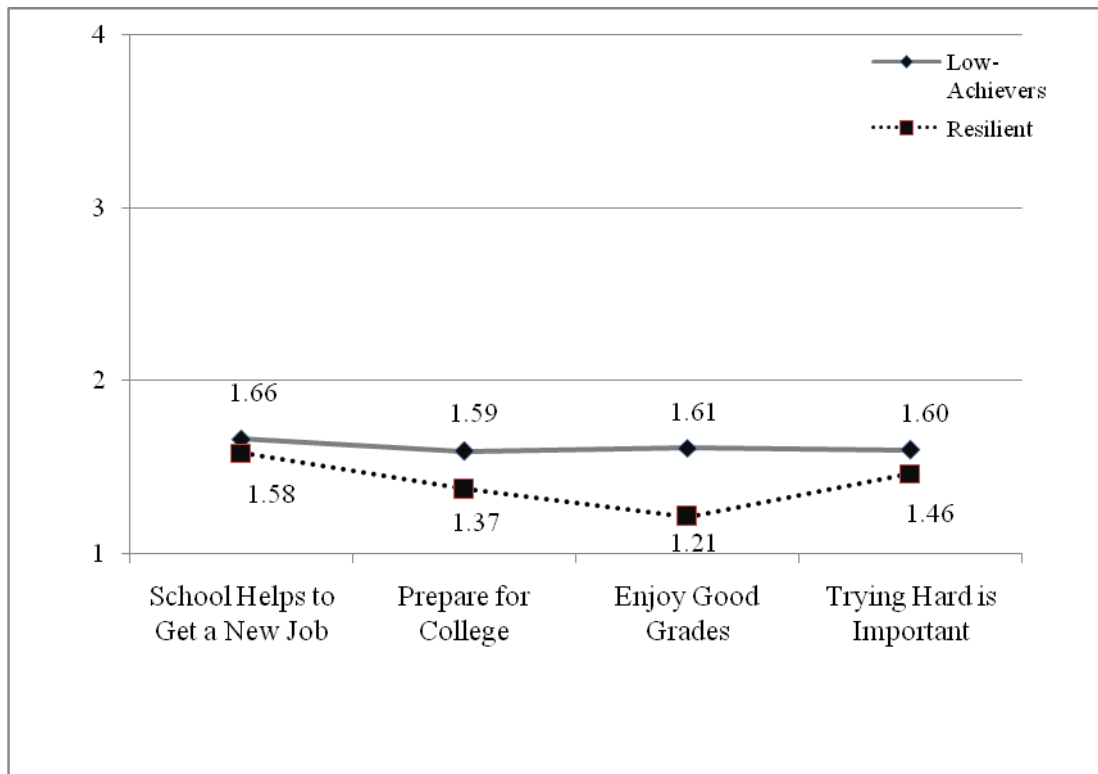


Figure 9. Means of responses given to items of attitude toward school

While both resilient students and the disadvantaged students seemed to strongly think that school would help them get a good job after they graduate, the low-achiever students' points were slightly lower than the disadvantaged students. There was a similar situation with responses to the items stating that school prepares them for college and trying hard was important, only with a bigger difference between resilient and low-achiever students.

As Figure 10 indicates, resilient students could be classified as the ones who disagreed with the statements (rated higher scores for the items) 'Things are ideal in my school', 'If I need extra help, I will receive it from my teachers', 'I feel awkward and out of place in my school', and 'I feel happy at school'; and agreed with the statements (rated lower scores for the items) 'School has been a waste of time', 'I enjoy receiving good grades', 'Most of my teachers treat me fairly' and 'School has

helped give me the confidence to make decisions’. Thus, the resilient students could be defined as the ones who did not think that things were ideal in their schools to some extent, furthermore thought the school was a waste of time, either. They were the ones who rejoiced over the good grades they received at school, and they also had a positive attitude toward teachers’ fairness. Although they had a somewhat critical attitude toward school about school’s idealness and felt more awkward and out of place and less happy at school than the low-achievers, they appreciated school because they thought that school helped give them the confidence to make decisions.

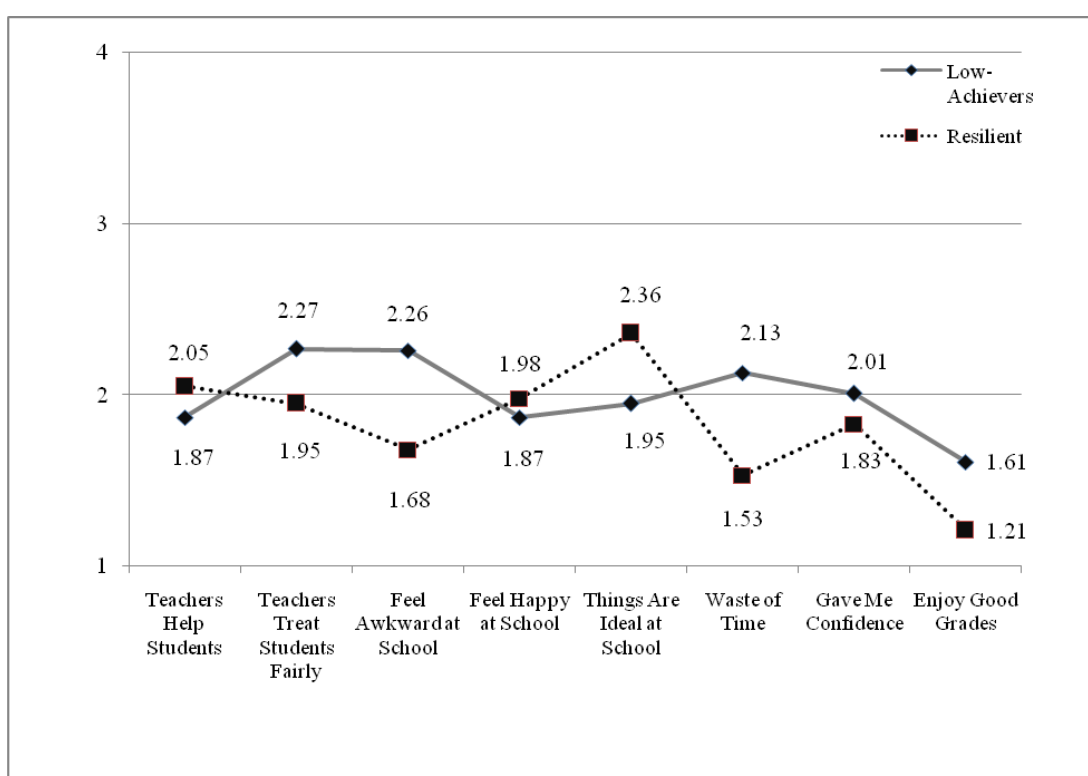


Figure 10. Means of discriminating items

Summary

Two discriminant analyses were conducted to identify and predict the school-related and teacher-related factors on the resilience of a student from low SES background. In the first analysis, which was a factor-level analysis, predictor variables were four dimensions from PISA student background questionnaire. These were students’

attitudes towards school: learning outcomes, students' attitudes towards school: learning activities, sense of belonging to school and teacher-student relations factors. Significant mean differences were found for all of the predictors on the discriminant variety. Structure matrix of the analysis underscores three of the significant predictors, consisted of attitudes towards school: learning outcomes (.918), students' attitudes towards school: learning activities (.649), and sense of belonging to school (.463) dimensions. According to the cross validated classification, 62.6% of students were correctly classified.

In the second analysis, which was an item-level analysis, predictor variables were five items from student-teacher relations, nine items from sense of belonging, four items from the attitude toward learning at school and four items from the attitude toward school dimensions. On the discriminant variety, significant mean differences were found for eight of the predictors. The discriminate function revealed a significant association between groups and eight of the predictors, accounting for 67.4% of between group variability. Closer analysis of the structure matrix highlighted four of the significant predictors, namely 'School has been a waste of time' (.541), 'I enjoy receiving good grades' (.487), 'I feel awkward and out of place at school' (.484) and 'Things are ideal at school' (-.338), with 'Most of my teachers treat me fairly', 'School has given me confidence', 'If I need extra help, I will receive it from my teachers', 'If I need extra help, I will receive it from my teachers' and 'I feel happy at school' weaker predictors. The cross validated classification revealed that overall 67.5% were correctly classified. And resilient students were correctly classified with a dramatically high rate of accuracy (90.3%).

CHAPTER 5: DISCUSSION

Introduction

This chapter starts with an overview of the study including the aims of the research and then discusses the results of the study by comparing it to previously conducted research on the influence of teacher- and school-related factors on low SES students' academic achievement. It also provides implications for practice and future studies. Finally, the possible limitations and how they might have influenced this study are elaborated.

Overview of study

The main aim of this study was to determine the teacher related and school related factors that explain differences in academic performance among students of low SES in Turkey based on PISA 2012 results.

The study also addressed the following sub-questions:

- What kinds of teacher behaviors or attitudes are associated with the probability of low SES students to become resilient?
- What kinds of school related factors associated with the probability of low SES students to become resilient?
- What is the expected efficiency of the discriminant function (power of correctly classifying low SES students) for future use?

Two discriminant, a factor-level and an item-level, analyses were conducted to examine the discriminating power of these factors over the socioeconomically disadvantaged students that become low-achiever or resilient.

Major findings

In the dimension-level analysis students were classified as low-achievers and resilient students 62.6% correctly, while in the item-level analysis students were classified 76.5% correctly, with a statistically significant accuracy rate in classifying the resilient students (90.3%). Therefore, the results underscored the high distinguishing nature of the items used in the background test. According to the responses of students, resilient students could be differentiated from low-achievers by their perspectives on the researched dimensions. First of all, resilient students have a critical point of view when it came to how ideal their schools are, they think the school has been a waste of time for them, and they feel awkward and like an outsider at school. They absolutely enjoy good grades, but they are not completely satisfied with the help and attention they got from their teachers. Unlike low-achievers, the resilient students claim that most of their teachers treat them fairly, and the school has helped give them the confidence to make decisions.

Findings related to attitude toward student-teacher relations:

It is evident from the current study that resilient students are not satisfied with the help they receive from their teachers. Moreover, getting along well with teachers or the amount of attention paid by teachers to students or how much teachers listen to students when they have something to say do not have a distinguishing influence on the resilience of students. This means that maintaining positive teacher-student relationships do not necessarily result in student resilience.

This was a staggering portrait compared to the previous research. According to Biermann's (2015) study, acquirement and improvement of literacy skills depend largely on a student's relationship with their teacher. Werner (1995) highlights a

caring teacher's influence by calling them as students' power of resilience through listening to the students and challenging them enthusiastically. Olsson (2009) claims that teachers of the low SES students have a wider influence on students' academic achievement than their families do. And Kumpfer and Summerhays (2006) take this claim even further and state that low SES students overcome the adversities by considering their teachers as their surrogate parents. However, the participants of this study that represented a highly realistic portion of the low SES 15-year-old students in Turkey did not seem to get much teacher support and caring. One concludes that the caregivers of these resilient students were not their teachers. If there were better teacher-student relationships and if teachers were more caring and supportive towards the low SES students by providing them extra help when they needed, listening to what students had to say and being more caring, there could have been much higher rates of resilience overall in Turkey.

Nevertheless, resilient students appreciate one aspect of their relationship with their teachers, their teachers' fairness. Yet it is not a striking result for the resilient students to have such an opinion. The concept of fairness at school is a combination of relations among the content of the assessment task and the student, and the relations between teacher's intentions and objectives for the lesson (Buchan, 1993). As they are already the ones with higher academic achievement, they do not have problems with the assessment approaches and techniques of their teachers.

Findings related to students' sense of belonging to school

Regarding the sense of belonging dimension, unexpectedly the resilient students statistically feel awkward and out of place at the school. While the low-achievers feel happy at school, the trend of resilience increases as students feel less happy at

school. The same inverse proportion goes for finding the things ideal at school. Resilient students are inclined to find the learning outcomes and activities at their schools not quite ideal, while this is vice versa for the low-achievers. The lack of self-belonging is associated with the teacher-student relations according to some studies. As opposed to Klem and Connell (2004), and Murdock et al's (2000) studies that claim positive connections with teachers increase motivation and as a result increase students' sense of belonging, resilient students in the current study maintained their sense of belonging although they did not evince the existence of a supportive and caring attitude by their teachers.

Evidently, resilient students had higher expectations from school. Without special support systems for the resilient students at schools, which lack in the Turkish educational system, such as special programs, extracurricular activities, honors classes and networks and summer schools, the risk of student underachievement rises (Reis et al., 2004).

Both of the groups thought that they could make friends easily at school, and they are liked by other students, so these were not distinguishing factors. The study also contradicts with Engin-Demir's (2009) study in this respect, as she relates students' number of friends to academic achievement.

Findings related to attitude towards learning at school: learning outcomes

The study also revealed that the resilient students have a much more different attitude toward learning at school than the low-achiever students. They are aware that school gives them enough confidence to make decisions. However, they think that school has been a waste of time to make them reach their future goals. These results emphasize how conscious the resilient students are toward learning at school.

They are aware of how the school has contributed into their self-confidence, but they are still not fully contented with the gains school has provided.

Therefore this finding can be explained by Reis et al.'s (2004) study that resilient students have some certain personality traits such as being autonomous and having a strong desire to accomplish. Even if these traits are directly related to students' personalities, it is possible to reinforce these characteristics among low SES students. The final outcome that stands out through the analysis of these items is that either schools do not convey the idea that their very existence emerges to prepare students for adult life when they leave school or resilient students have higher expectations from their schools, and they have not been fulfilled by their school authorities or teachers.

Findings related to attitude towards school: learning activities

One of the most notable results of this dimension is that resilient students enjoyed receiving good grades at school whereas low-achiever students seemed not to care as much as the resilient students. However, this item should be interpreted with caution because low-achiever students might not be that indifferent to receiving good grades but they might have given up trying to get better grades or never tried to get out of their comfort zones.

On the other hand, both of the groups are aware of the fact that trying hard at school is important, and it will help them get a good job and get into a good college. Werner (1995) described resilient students as the ones that have an internal locus of control and Kumpfer and Summerhays (2006) distinguish resilient students by the purposes in life and existential meaning they have. Yet they were not discriminant factors in our case because both resilient and low-achiever students had quite similar scores,

except for the item about enjoying good grades at school, which is an indicator of their strong desire to accomplish.

Implications for practice

Upon the completion of this study, the results suggest a major addition into Turkish educational policies towards low SES students because there is not a distinct policy to support them and reinforce their academic achievement positively. First of all, the teachers as the adults that high school students see most often after their family members should be more caring, supportive and interested in these students' well-being. Nevertheless, the positive attitudes of teachers towards low SES students as individuals that are already taking initiatives are not moot points, but the point at issue is the lack of a systematic approach. Therefore, the change needs to start from the way teachers are trained at education faculties of the universities, and the importance of supporting the low SES students must be highlighted throughout their university curriculum.

Also, school-wide supportive strategies could be adopted to enhance the resilience of students and strengthen the already resilient students through special programs, extracurricular activities, social clubs that aim at bringing academically successful students, teacher visits to get to know families of students and have closer relationships with students.

Implications for further research

The analysis reported in this research can be seen as an initial study in understanding the teacher- and school-related protective factors that promote academic achievement differences among low SES students in Turkey based on quantitative methodology.

Further research can be conducted using qualitative data to build on the findings of this research. Interviews with low SES students and their teachers may be held to get more extensive information about their current status.

Limitations

PISA is an exceptionally reliable international survey. Having such a broad sample scope renders its representativeness of the whole population quite unquestionable. Nonetheless, it is likely to find faults in the interpretation of the statistical data via other studies. For instance, 33% of the child labor, who was between the ages of 15 to 17 when PISA 2012 took place, was not enrolled in school (TUIK, 2013). Moreover, this ratio does not even include the highly possible informal employment rates of students who were registered to school at the time but had extreme absence rates due to work. Thus, although statistical data provided by PISA is trustworthy and its target population is only comprised of the students that are 15 years old and enrolled in full-time educational institutes, it does not reflect the whole truth of Turkey, where students drop out to provide for their families. Moreover, the student background questionnaire is limited to the questions that were considered as appropriate by PISA.

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APPENDICES

APPENDIX 1: PISA 2012 student background questionnaire items

Student Questionnaire Code (STQ)	Original Names of the Items	Abridged Names of the Items
ST86Q01	Students get along well with most teachers	Get along with teachers
ST86Q02	Most teachers are interested in students' well-being	Teachers are interested
ST86Q03	Most of my teachers really listen to what I have to say	Teachers listen to students
ST86Q04	If I need extra help, I will receive it from my teachers	Teachers help students
ST86Q05	Most of my teachers treat me fairly	Teachers treat students fairly
ST87Q01	I feel like an outsider (or left out of things) at school	Feel like outsider
ST87Q02	I make friends easily at school	Make friends easily
ST87Q03	I feel like I belong at school	Belong at school
ST87Q04	I feel awkward and out of place in my school	Feel awkward in school
ST87Q05	Other students seem to like me	Liked by other students
ST87Q06	I feel lonely at school	Feel lonely at school
ST87Q07	I feel happy at school	Feel happy at school
ST87Q08	Things are ideal in my school	Things are ideal at school
ST87Q09	I am satisfied with my school	Satisfied with school
ST88Q01	School has done little to prepare me for adult life when I leave school	Does little to prepare me for life
ST88Q02	School has been a waste of time	Waste of time
ST88Q03	School has helped give me confidence to make decisions	Gave me confidence
ST88Q04	School has taught me things which could be useful in a job	Useful for job
ST89Q01	Trying hard at school will help me get a good job	School helps to get a job
ST89Q02	Trying hard at school will help me get into a good college	Prepare for college
ST89Q03	I enjoy receiving good grades	Enjoy good grades
ST89Q04	Trying hard at school is important	Trying hard is important