

Teacher and School-Related Factors that Promote Achievement Differences among Students with Lower Socioeconomic Status

(Düşük Sosyo-ekonomik Düzeyli Öğrenciler arasındaki Başarı Farklılıkları Açıklayan Öğretmen
ve Okul ile İlişkili Faktörler)

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Abstract

The present study investigated factors related to school and teacher that could discriminate low-achieving disadvantaged and high-able (resilient) disadvantaged students, among which there is a large achievement difference. To this end, a discriminant analysis was conducted to check whether some selected teacher- and school-related factors from PISA 2012 could discriminate low-achievers and resilient students, both disadvantaged. Twenty-two items from 5 dimensions data set were included: Student-Teacher Relations (5 items), Sense of Belonging (9 items), Attitude towards Learning at School (4 items) and Attitude toward School (4 items). Results indicated that some items could be able to achievement differences between low-achievers and resilient students. The findings of the present may provide significant information as to increase rate of resilient students.

Keywords: student achievement, resilient students, discriminating socio-economic status

Özet

Bu çalışma dezavantajlı olup da düşük ve üstün başarılı öğrencileri birbirlerinden ayırt edebilen öğretmen ve okul ile ilişkili değişkenleri incelemiştir. Bu iki grup arasında önemli bir başarı farklılığı mevcuttur. Bu amaçla, PISA 2012 veri kümesinden seçilen bazı faktörlerin düşük ve üstün başarılı öğrencileri ayırt edip etmediklerini incelemek amacı ile discriminant analysis yöntemi kullanılmıştır. 5 farklı boyuttan 22 madde çalışmaya dahil edilmiştir: Öğrenci-öğretmen ilişkileri (5 madde), Aidiyet duygusu (9 madde), Okulda Öğrenilerle karşı tutum (4 madde) ve Okula karşı tutum (4 madde). Çalışma sonuçları bazı maddeleri düşük ve üstün başarılı öğrenciler ayırt edebildiğini ortaya koymuştur. Bu çalışmanın sonuçların üstün başarılı öğrenci oranının artırılmasında kullanılmak üzere önemli bilgiler sağlayacağı düşünülmektedir.

Anahtar Kelimeler: öğrenci başarısı, üstün başarılı öğrenciler, sosyo-ekonomik düzey

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INTRODUCTION

Education for youth, as the savior of individuals and states, has been the only key to complete independence and prosperity. While education can have a state-wide social mobility influence for a city country such as Singapore, where human capital was the only resource that the country had when it was established, and it could build an economy thanks to dramatic educational developments (OECD, 2011b), it can also touch on individuals' lives through better living conditions in some countries, such as Turkey. Even though income per capita has increased in Turkey 12 times more than 190 years ago, there is still a considerable inequality of income distribution (Pamuk, 2013). If the facts that education is indispensable for countries and economies' prosperity and welfare, and the students that are ready for their careers with more skills and knowledge could have a better chance to improve their social conditions in an upward mobility trend (Hout & Beller, 2006) are accepted, then the first step to take must be to overcome disadvantages that students might deal with.

These disadvantages can be grouped according to the reason why the student and their family are facing a difficulty as (a) within the family due to divorce, separation, remarriage, poverty, low socio-economic status, homelessness, violence, forced repatriation of family, parent's loss of a job or income, illegal, refugee status, migrant status, political detention, racial/cultural minority, alcoholic parent, abusive parent, criminally involved parents, (b) outside the family due to poor role models in neighbourhood, robberies, war, fire, earthquake, flood, car accident, violence at school, violence in school, murders in neighbourhood, moving of the family or friends, adverse economic conditions, property damage from storms, flood, cold, famine, drought, abuse by a non-relative, unstable government, and (c) health due to illness or parent or siblings, mental illness of a family member, death of parents and grandparents, murder of a family member, accident causing personal injuries, abandonment, suicide, fires causing personal injury, poor health or hospitalizations, disabled family member (Benard, 1993; Lee & Madyun, 2009; Zolkoski & Bullock, 2012).

These disadvantages have in most cases negative effect on a student's school achievement. For instance, neighborhood creates a far more influential adversity than many other disadvantages as the individual is not the only responsible one to change the status in it, therefore it puts adolescents and children under the risk of underdevelopment and low achievement at school context (Lee & Madyun, 2009). Among these factors, family's low socioeconomic status (SES) is one of the most discussed disadvantages. In Mueller and Parcel's (1981) definition socioeconomic status is an individual's stratum according to which an individual can attain certain prosperities such as wealth, power, and social status.

When Coleman wrote his report on *Equality of Educational Opportunity*, he stated that disadvantaged socioeconomic status is an obstacle in front of school achievement (Coleman et al, 1966). Since then little has changed that socio-economic background is still positively correlated with academic performance (OECD, 2011). However, there are some socioeconomically disadvantaged *resilient* students, who are able to break the odds of their lack of cultural capital or financial resources and attain high achievement at school despite those adversities in their lives.

Several researchers and authors state that there are certain key *protective factors*, which help disadvantaged students accomplish to be academically successful, and they are separated into two groups as internally, individuals' critical resilience skills which according to some researchers are developable personal attributes, and externally protective factors that exist at home, in school, neighborhood or other social environments of the students (Garmezy, 1996; Gore & Eckenrode, 1996).

One of the most recent and geographically and age-wise relevant study, in which data was obtained from schools in Ankara and the sample average age was around 14.3 years old, was conducted by Gizir and Aydin (2009). According to this research's findings, the internal factors; having positive self-perceptions about one's academic abilities, high educational aspirations, empathic understanding, an internal locus of control, and hope for the future, and the external factors; home high expectations, school caring relationships and high expectations, and peer caring relationships reinforce resilience in socioeconomically disadvantaged adolescents by counteracting the adversities that they have to cope with.

Apart from the significance of the role of the families in students' academic achievements, such as, being caring, sympathetic, compassionate, consistent and attentive to the child, the teachers' and schools' positive influence on student resiliency should not be underestimated (Goodman, 2008; Noddings, 1984; Oswald, Johnson & Howard, 2003). Werner and Smith's longitudinal study highlights the importance of a teacher as a significant other in the students' lives more than a person, who only supports students on academic purposes, as one of the resilience promoting role models (Werner & Smith, 1989). Moreover, Head of Early Childhood Education and Schools of OECD, Davidson states that the countries or economies where the quality of education at schools is attached particular attention by extending schools' autonomy and helping them have a collaborative learning environment, those countries have saliently bright results from PISA because of these opportunities' positive effects on teaching and learning practices, and he adds that quality of teaching staff is the key to obtain improvements in education (Davidson & Bangs, 2013).

In regard to resilient students, Turkey has a special position due to the increasing rate of resilient students, who overcome the socioeconomic disadvantages, in PISA (Programme for International Student Assessment) that was conducted in 2012, compared to the one in 2003 (OECD, 2013). The same resource suggests that in the year 2003, PISA results indicated 6.4% of the students in OECD countries as resilient, and in PISA 2012, this rate decreased to 6.1%. The average of high achieving socioeconomically disadvantaged students in PISA, compared to the OECD average which is 30%, is relatively high in Turkey with 40% that lists the country in one of the top five of this special resilience rating. While there is the slight fall of resilient students' share in all other OECD countries, only in Turkey and five other countries, the share of resilient students has an increasing trend by more than one percent. Moreover, despite Turkish students' overall low performance in PISA 2006 and 2009, Turkey was among the first eight countries which had the highest shares of resilient students to among disadvantaged students (Findik & Kavak, 2013).

Although PISA 2012 results indicate that in Turkey the need for qualified teachers has decreased relatively to the previous years, the country still requires more qualified teachers, who are specialized and well-trained in their own subject areas (MONE, 2013). For Turkey, especially the lack of qualified teachers constitutes a problem since it was shown that , instead of student-centered activities' having positive

correlation with the science achievement, teacher-centered activities impact science achievement positively (Ceylan & Berberoglu, 2007; Kalender & Berberoglu, 2009) probably due to the learning culture in Turkey. Moreover, according to the Varkey GEMS foundation's global teacher status index that examines attitudes to teachers around the world, teachers in Turkey have the greatest respect from people in their country after China and Greece with 68.0 index score (Dolton & Marcenaro-Gutierrez, 2013). Teachers' influence on students' achievement in Turkey led this study to further examine the significance of the teachers' approach toward the students and how crucial the teachers' role when it comes to resilient students' hanging on to them as trustworthy significant others in Turkey.

The present study investigate the teacher-related factors explaining differences in reading literacy between disadvantaged students who are (i) low-achievers and (ii) resilient based on the data set of PISA 2012. The findings of the research are expected to provide significant knowledge to increase the ratio of resilient students in Turkey, a socio-economically diverse country. To this end, teacher-related factors from PISA 2012 were used in a discriminant analysis to see whether they could explain differences between low-achievers (disadvantaged with low achievement levels) and resilient (disadvantaged with higher achievement levels) students in reading literacy. By this way, it was expected to find out the variables that distinguish two groups of students in reading literacy.

METHOD

PISA assesses 15-year-old students on reading, mathematics, science (with a focus on one of these domains in each cycle) in a way to find out how they can do with what they learned at school on unorthodox grounds (OECD, 2011). Students answer the items in three domains as well as several questionnaires which are used to obtain information about their backgrounds, experiences related to school and learning, etc. Results of the PISA provide governments, educational scientists, and other stakeholders with invaluable information which could be use develop educational policies, curriculums, etc. What PISA assesses in three domains is called literacy which is defined by PISA as the ability to able to use what students learn at school in daily-life. For example, reading literacy is defined as follows in PISA 2012 (OECD, 2013)

“Reading literacy is understanding, using, reflecting on and engaging with written texts, in order to achieve one’s goals.”

Number of students who participated to PISA 2012 is 4848 from 12 statistical regions and 13 school types in Turkey. Students were sampled using stratified systematic sample, with sampling probabilities proportional to the estimated number of 15-year-old students in the school based on grade enrolments. Based on these data, responses of students with lower socioeconomic status (i) low achievers and (ii) high achievers were compared to the questions related to the students' perception of their teachers. The students' answers on the literacy test in PISA 2012 were used to determine their achievement levels, while wealth variable of PISA 2012 was used to define students' socioeconomic status. To define groups of disadvantages students in PISA 2012, Economic, Social and Cultural Status) index (ESCS) was used (OECD, 2014). OECD estimates countries' ESCS index using the variables parental occupation, the highest level of parental education, and an index of home possessions related to family wealth, home educational resources and possessions related to “classical” culture in the family home. OECD also defines resilient students as those who are at the bottom

quarter of index of ESCS in respective country and scores at the top quarter across students from all countries after accounting for socio-economic background. The present study also used index of ESCS to select resilient students.

First, disadvantaged students were chosen as all of 1200 students at the bottom quarter based on ESCS index of Turkey were selected, out of 4848 students. Then, low-achievers and resilient students among disadvantages ones were taken as those who were at the lowest ($n=300$, $M_{\text{reading}} = 342.7374$, Proficiency Level = 1a) and highest quartiles ($n=300$, $M_{\text{reading}} = 538.6343$, Proficiency Level = 3) in reading literacy, respectively. After two groups of students were defined, a discriminant analysis was conducted to find out any subgroups, if exist, using teacher-related factors. The dependent variables which were included to the discriminant analysis were: Student-Teacher Relations (5 items), Sense of Belonging (9 items), Attitude towards Learning at School (4 items) and Attitude toward School (4 items). For all items, coding scheme was as follows: 1: Strongly agree, 2: Agree, 3: Disagree and 4: Strongly disagree. Independent variable was Plausible Value in Reading 1 (PV1READ).

RESULTS

Due to missing responses, discriminant analysis was conducted with 164 low-achiever and 196 resilient students. Eigenvalue of the discriminant function was .553. Explained variance by the independent variables was .356. Wilk's Lambda of .644 ($\chi^2 = 152,733$, $df = 22$, $p = .00$) was found to be statistically significant.

Table 1 presents Standardized Canonical Discriminant Function Coefficients and discriminant loadings (structure matrix). According to the results, 12 items were statistically different in reading literacy out of 22 items of 4 dimensions. These items were (i) Teachers Are Interested and Teachers Treat Students Fair from Student-Teacher Relationships, (ii) Feel Like Outsider, Belong at School, Feel Awkward at School, Feel Lonely at School and Things Are Ideal at School from Sense of Belonging, (iii) Does Little to Prepare Me for Life, Waste of Time and Gave Me Confidence from Attitude towards Learning at School and (iv) Prepare for College and Enjoy Good Grades from Attitude toward School.

Importance of the variables in discriminant function was assessed using standardized discriminant coefficients. Although discriminant function were formed using 22 items, the following 5 variables had relatively higher standardized discriminant coefficients, thus they can be considered to be more important: Things Are Ideal at School: 0.463, Waste of Time: 0.408, Teachers Help Students: 0.333, Teachers Treat Students Fair: -0.308, Enjoy Good Grades: -0.407. Furthermore, discriminant loadings (structure matrix) were also checked. The loadings for one variable, Teachers Help Students (0.139), indicated that this item may be considered of secondary importance due to its low correlation with discriminant function.

Table 1. Results of Discriminant Analysis

Dimensions	Items	Tests of Equality of Group Means					Standardized Discriminant Coefficients	Standardized Discriminant Coefficients (C = -3,589)	Discriminant Loadings
		Wilks' Lambda	F	df1	df2	Sig.			
Student-Teacher Relationships	Get Along with Teachers	0,996	1,560	1	358	0,213	-0,226	-0,325	-0,089
	Teachers Are Interested	0,989	4,080	1	358	0,044	0,150	0,185	0,144
	Teachers Listen to Students	1,000	0,030	1	358	0,864	-0,190	-0,253	0,012
	Teachers Help Students	0,989	3,800	1	358	0,052	0,333	0,383	0,139
	Teachers Treat Students Fair	0,968	11,800	1	358	0,001	-0,308	-0,343	-0,244
Sense of Belonging	Feel Like Outsider	0,943	21,600	1	358	0,000	0,089	0,098	0,330
	Make Friends Easily	1,000	0,050	1	358	0,822	0,058	0,075	-0,016
	Belong at School	0,985	5,570	1	358	0,019	-0,114	-0,143	-0,168
	Feel Awkward at School	0,898	40,500	1	358	0,000	0,147	0,172	0,452
	Liked by Other Students	1,000	0,080	1	358	0,784	0,057	0,081	0,020
	Feel Lonely at School	0,930	26,900	1	358	0,000	0,150	0,175	0,368
	Feel Happy at School	0,995	1,730	1	358	0,189	0,233	0,285	0,093
	Things Are Ideal at School	0,948	19,800	1	358	0,000	0,463	0,530	0,316
	Satisfied at School	0,994	2,030	1	358	0,155	0,139	0,160	0,101
Attitude towards Learning at School	Does Little to Prepare Me for Life	0,951	18,400	1	358	0,000	0,205	0,219	0,304
	Waste of Time	0,876	50,700	1	358	0,000	0,408	0,509	0,506
	Gave Me Confidence	0,986	5,170	1	358	0,024	-0,252	-0,336	-0,162
	Useful for Job	0,998	0,840	1	358	0,361	0,036	0,048	-0,065
Attitude toward School	Helps to Get a Job	0,997	1,150	1	358	0,285	0,050	0,069	-0,076
	Prepare for College	0,974	9,540	1	358	0,002	-0,027	-0,040	-0,219
	Enjoy Good Grades	0,897	41,000	1	358	0,000	-0,407	-0,697	-0,455
	Trying Hard is Important	0,989	3,840	1	358	0,051	0,052	0,075	-0,139

Group means (Centroids) estimated by the discriminant function were found to be -0.811 and .678 for low-achievers and resilient students, respectively. Discriminant function defined to discriminate between low-achievers and resilient students were able to correctly classify 82% of the students. Based on the results of discriminant analysis, it was observed 22 items were produced a highly-discriminating function for students who are low-achievers and resilient (both disadvantaged).

Figure 1 to 4 presents means of responses given for 4 teacher-related dimensions by students. When the means were combined with the results in Table 1, profiles for disadvantages and resilient students could be defined.

Resilient students could be defined as those who gave (i) higher scores for “things are ideal school”, (ii) higher scores for “school is waste of time”, (iii) lower scores for “teachers treat students fair” and (iv) lower scores for “enjoy good grades”, than those who are low-achievers. In other words, resilient students think that things at school are ideal to some degree; they believe school is not waste of time; they have more positive attitude toward fairness of teacher; and they become happier when they get good grades.

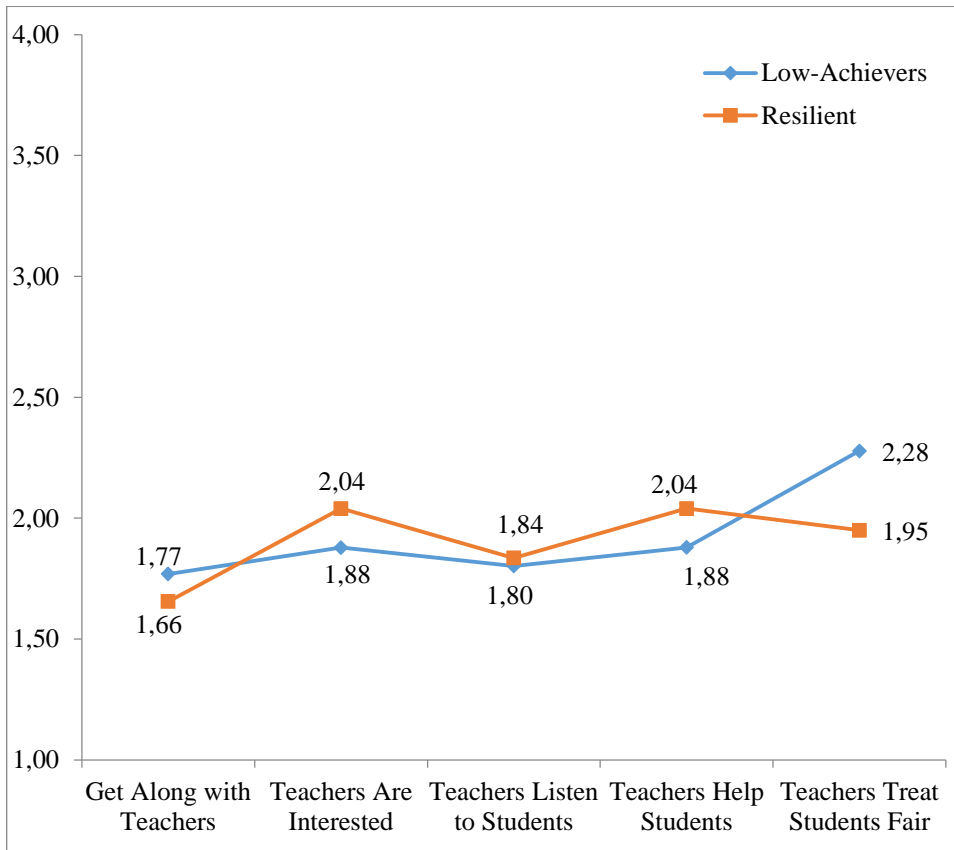


Figure 1. Means of Responses given to Items of Student-Teacher Relations

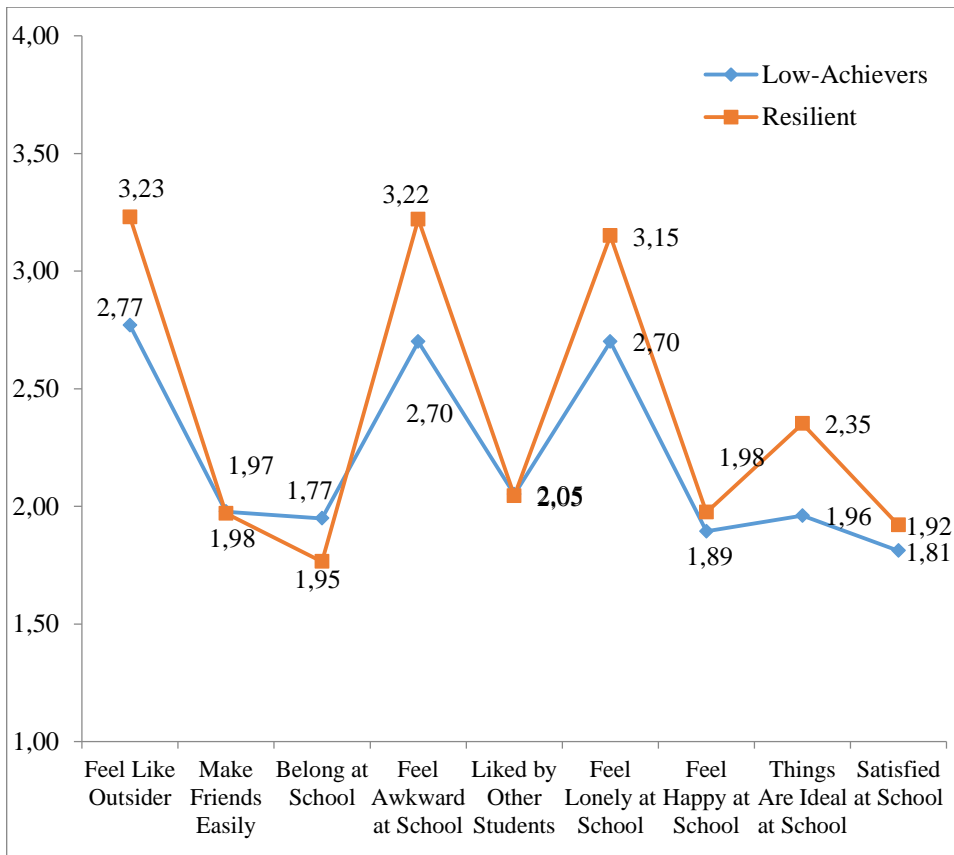


Figure 2. Means of Responses given to Items of Sense of Belonging

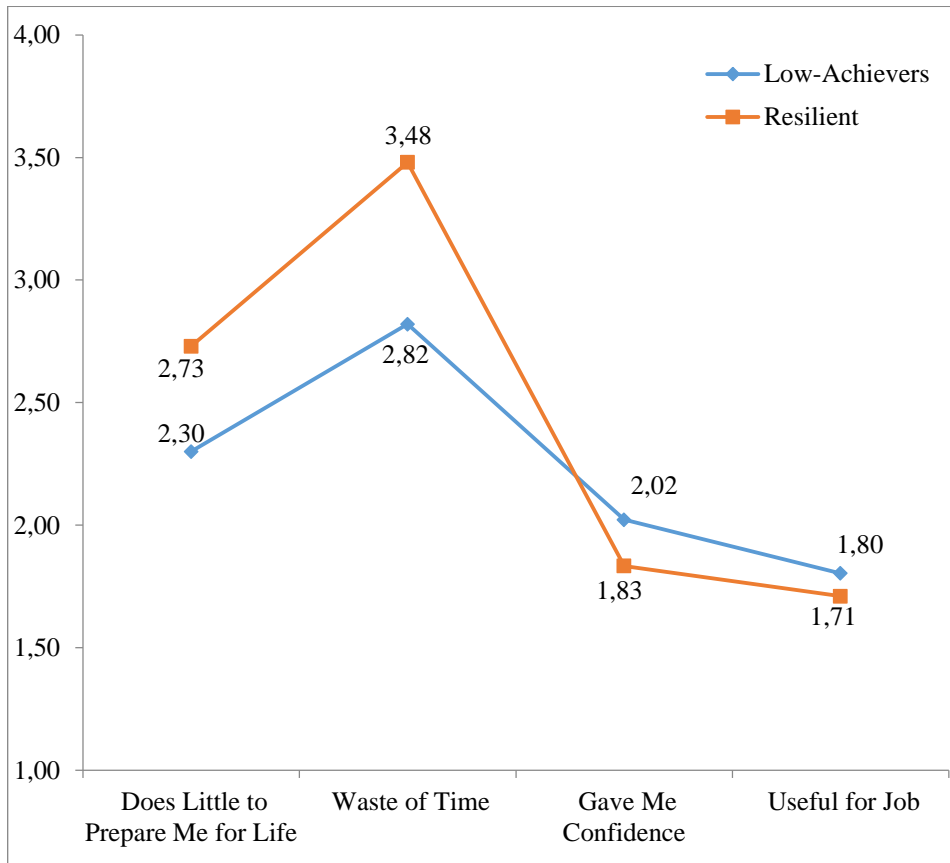


Figure 3. Means of Responses given to Items of Attitude toward Learning at School

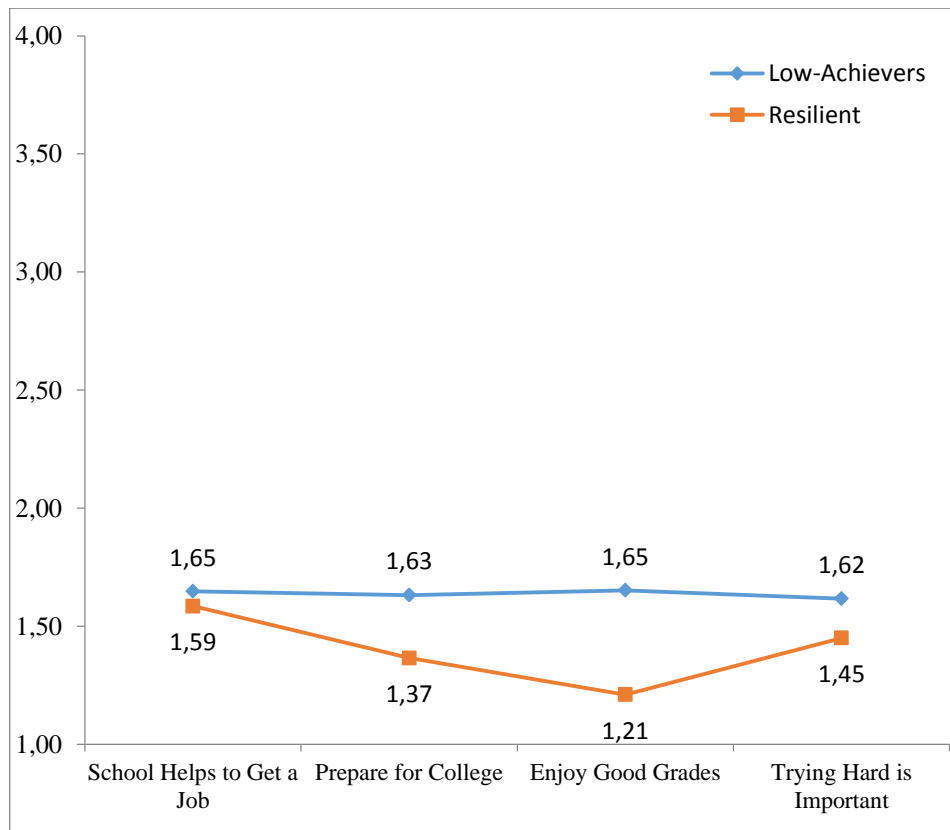


Figure 4. Means of Responses given to Items of Attitude toward School

DISCUSSION AND CONCLUSION

Results of the present study indicated that literacy differences between low-achieving and resilient students, both disadvantaged, could be explained by teacher-related factors to some degree. The discriminant function was able to differentiate the two groups of students with a curacy rate of 82%.

For each dimension included in the present study (Student-Teacher Relations, Sense of Belonging, Attitude toward Learning at School and Attitude toward School) one variable (Things Are Ideal at School, Waste of Time, Teachers Treat Students Fair and Enjoy Good Grades) was identified with higher importance level in discriminant function. Providing some increase in these variables seemed to result in an increase reading literacy level of students from proficiency level of 1a to proficiency level of 3, in average.

Although strong positive effect teachers' instructional practices on student achievement has been shown by several researchers (Ceylan & Berberoglu, 2007; Kalender & Berberoglu, 2009), the present study also provided findings as to teachers' role in development of students' positive attitudes toward school and teachers and overcome the negative effects of being disadvantaged which is known as a variable having strong relationship with student achievement (OECD, 2011a). And the results highlight once again the importance of teacher and school in Turkey content as well as in other ones (Oswald, Johnson & Howard, 2003).

The findings obtained in the present study provided a supporting evidence for the statement by Wang, Haertel, and Wahlberg (1994) that the academic resilience can be developed by several interventions such as good learning opportunities.

Based on the findings of the present study, it can be concluded that teacher- and school-related factors could explain differences between low-achievers and resilient, at least to some degree. And that underlines the importance of teachers a key actor to help student overcome their disadvantages, especially for countries like Turkey, which have large discrepancies in socio-economic status of students. Results received are expected to be used in policy-making studies since they showed that disadvantages of students can be overcome by improving their teacher- and/or school-related factors, although it may be difficult to create a significant change in students' conditions which make them disadvantaged (Alva, 1991).

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