Socioeconomic Status and School Type as Predictors of Academic Achievement

Akademik Başarının Yordayıcıları: Sosyoekonomik Düzey ve Okul Türü

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ABSTRACT

We evaluated the effects of socioeconomic status and school type on academic achievement based on data from two million students over a 10 year period through three national transition systems in Turkey. Each of the three transition systems has its own national examination, and the data includes only students who took these exams. We used covariance analysis to compare the mean scores of public schools and private schools after controlling the effect of students' socioeconomic levels. We found that students in private schools, who were socioeconomically stronger, had significantly higher academic achievement levels in language, mathematics, and science tests, and this finding was valid across all three transition systems. These effects were further exuberated when all the students were tracked by means of a national exam and placed into different high schools. It was found that the negative impact of one's socioeconomic level on students' scores reached its maximum value when all students were placed into high schools by means of a national exam. In all systems, the mean scores of private school students decreased significantly when the socioeconomic level was controlled. Our research has important implications for school tracking policies, specifically indicating that it would be better to omit or at least delay their deployment to post high-school education.

Keywords: School tracking, socioeconomic status, academic achievement, school type, transition systems

ÖZ

Bu çalışmada sosyoekonomik düzey ve okul türünün akademik başarı üzerindeki etkisi Türkiye'de 10 yıldan uzun bir zaman aralığında uygulanan üç ulusal geçiş sistemi ve iki milyon öğrenciye ait verilerle değerlendirildi. Her bir geçiş sisteminin değerlendirilmesi, kendi kapsamındaki ulusal sınava katılan öğrencilere ait verilerle gerçekleştirildi. Öğrencilerin sosyoekonomik düzeylerinin etkisini kontrol ederek devlet okulları ve özel okullarda eğitim alan öğrencilerin puan ortalamalarını karşılaştırmak için

kovaryans analizi kullanıldı. Sosyoekonomik açıdan daha avantajlı okul türü olan özel okullardaki öğrencilerin her üç geçiş sisteminde de dil, matematik ve fen testlerinde diğer öğrencilerden anlamlı ölçüde daha yüksek performans gösterdiği bulgusuna ulaşıldı. Tüm öğrencilerin liselere yalnızca ulusal sınav sonuçlarına göre yerleştirildiği ulusal geçiş sisteminde bu farkın daha da arttığı gözlemlendi. Ayrıca, tüm öğrencilerin liselere sınav puanlarına göre yerleştirildiği geçiş sisteminde sosyoekonomik düzeyin öğrencilerin puanları üzerindeki olumsuz etkisinin de en yüksek düzeye ulaştığı belirlendi. Ulusal geçiş sistemlerinin her üçünde de sosyoekonomik düzeyin kontrol edilmesi durumunda özel okul öğrencilerinin puan ortalamalarının anlamlı ölçüde düştüğü gözlemlendi. Çalışma bulguları, öğrencilerin liseye geçişlerinde okul ayrıştırması uygulanmamasının ya da mümkün olduğunca ertelenmesinin daha yararlı olduğunu göstermekte ve ulusal okul ayrıştırma politikaları açısından önemli sonuçlar sağlamaktadır.
Anahtar Kelimeler: Okul ayrıştırması, sosyoekonomik düzey, akademik başarı, okul türü, geçiş sistemi

1. Introduction

Education systems around the world aim to equip students from various social backgrounds with the skills necessary to achieve their full potential in life. However, the OECD's Programme for International Student Assessment (PISA) shows that "students' backgrounds continue to influence their opportunities to benefit from education and develop their skills" in many countries (OECD, 2016, p. 6). Ensuring the gain of educational skills for all students is made possible by presenting the same educational experiences and sufficient opportunities for learning to all students across diverse educational institutions. Independent of structure and school types, increasing learning outcomes for all students supports the effectiveness of education and social equity (Ferreira, Gignoux & Aran, 2010; Lazenby, 2016; Singh, 2014). The Coleman Report (1966) was a pioneering comprehensive and empirical study that focused on the relationship between students' academic achievement, school types and environments, and student backgrounds. Results of the Coleman Report revealed that students' academic achievement was significantly impacted by particular school characteristics, and since then a remarkable number of studies have been conducted focusing on the relationship between school characteristics and students' academic achievement (Al Şensoy & Sağsöz, 2015; Çobanoğlu & Badavan, 2017; Demirtaş, 2010; Ma & Klinger, 2000; Mwiti, 2012; Sweetland & Hoy, 2000; Thiele et al., 2015; Yudd Moscoso, 2000).

The association between socioeconomic status and academic achievement is recognized in standardized tests, especially those exams that are used for stratification or the tracking of students into different schools or programs. Standardized tests are heavily used across PISA-participating countries. In about "five out of six school systems, more than one in two students are assessed at least once a year with mandatory standardized tests" (OECD, 2016, p. 18). The results of the international standardized tests also provide some clues about the impact of the school tracking on the academic achievements of students from different socioeconomic backgrounds (Hanushek & Woessman, 2006; Ozer, 2019a; Ozer &Perc, 2020). Although school tracking enriches the educational systems by separating rooms for different curriculums, for example vocational education in order to meet differentiating skills demands of the labor market, it attracts many more debates about its unintended consequences on the inequality of education and opportunity (Hanushek et al. , 2017; Müller & Shavit, 1998; Reichelt, Collischon & Eberl, 2019; Woessmann, 2009). Early tracking especially, makes the reproduction of social classes easier because of the fact that students' academic achievements at early ages are much more dependent on their socioeconomic status (Ozer & Perc, 2020; Ozer & Suna, 2020). The ratio of the number of students in vocational track compared to those in academic track might be considered to be an indicator of social stratification (Bertocchi & Spagat, 2004; Ozer, 2019b). A very recent study by Ozer and Perc (2020) investigated the intended and unintended consequences (dreams and realities) of the school tracking in terms of inequality of education and opportunity, and evaluated its strong negative effects on vocational education. Vocational education has a remarkable disadvantage caused by the clustering of students from low-socioeconomic level and lower academic achievement levels in many countries (Ozer & Suna, 2019; Neuman & Ziderman, 1991) In this context, there is ongoing discussion in many countries about the relationship between students' scores on standardized tests, students' socioeconomic status, and school characteristics (Waters et al., 2009). For countries like Turkey, students' transition to high school is almost completely dependent on national examination scores, thus there is considerable stratification in secondary schools. Since there is concern about whether tracking via standardized tests replicates socioeconomic disparities, the effects of stratification and tracking on student achievement are the subject of ongoing

debate in many educational systems (OECD, 2016), including in Turkey (Bölükbaş, 2018; MEB, 2018a; ÖSYM, 2018).

In this study, we investigated the impact of both socioeconomic status and school types on students' academic achievement in Turkey through different national examinations. The purpose of the study is twofold. Firstly, the relationship between socioeconomic status and academic achievement of students was investigated. The academic achievement differences between school types were analyzed and compared across the three transition systems implemented during the last decade in Turkey, while socioeconomic status is controlled statistically. The most recent three transition systems from middle to high schools in Turkey are called the Level Specifying Exam (LSE-2012), Transition from Middle School to High School Exam (TMSH-2015), and Transition to High School Exam (THE-2018). Secondly, the effect of socioeconomic status on academic achievement from diverse secondary school types were analyzed and compared in these transition systems.

The present study also has two original characteristics. Firstly, research that focuses on students' academic achievement differences was mostly conducted through international student achievement studies, or at the high school level in Turkey. The target population of the present study was middle school students in the 8th grade, and the study examined the high-volume national data from the LSE-2012, TMSH-2015 and THE-2018. Results of the current study yield insights about academic achievement differences across middle school types, as well as the role that socioeconomic status plays in these differences. Secondly, this is the first empirical study that focuses on the effect of socioeconomic status on academic achievement in diverse transition systems in a country. Turkey is an ideal and unique example for a quasi-empirical study in this area because of the three diverse transition systems applied in the country over the last 10 years. The findings will be beneficial for policy-making processes around educational transition systems in Turkey, as well as in other countries. In the present study, all students involved in the three transition systems, without missing values, were included in the analyses, so this research provides generalizable findings with high-volume data.

2. School Types and Transition Systems in Turkey

In the 2017-2018 academic year, 17,885,248 students received education in pre-school, elementary, middle, and high schools in Turkey (MEB, 2018b). There are several types of middle schools in Turkey: middle schools, imam hatip middle schools (public middle schools with religious elective courses), private middle schools, regional boarding middle schools (public middle schools with student pensions), special education middle schools, and music and ballet middle schools. Students in all middle school types take the same common and compulsory courses; however, depending on their school types, they may take different elective courses. In the 2017-2018 academic year, there were 4,263,370 students enrolled in middle schools, 723,108 in imam hatip middle schools, 321,779 in private middle schools, and 78,262 in regional boarding middle schools (MEB, 2018b).

The current Turkish educational system includes 12 years of compulsory education: four years of elementary school, four years of middle school, and four years of high school. Various transition systems from middle schools to high schools have been experimented with over the past decade. The Ministry of National Education (MoNE) places students in public elementary and middle schools according to their residential addresses. The transition from elementary to middle school is not dependent on any academic achievements. Since this transition in Turkey is independent from academic performance, it is relatively straightforward (Saracaloğlu, Yakar & Altay,

2014). However, the transition from middle school to certain high schools in Turkey has been dependent on academic performance since 1955 (Atılgan, 2018; Aykaç & Atar, 2014). Over time, the number of high schools admitting students via national examinations, and consequently the competition to enter a selective high school, have increased continuously (Gür, Çelik & Coşkun, 2013). The LSE-2012 included national examinations at 6th, 7th, and 8th grade, with a national exam score calculated from these test performances across the three years. The TMSH-2015 included several national examinations at 8th grade, with a placement score calculated from the students' performances at these examinations. As for the THE-2018, students took one national examination at the end of the 8th grade, with a national exam score calculated from the performance on this single test. After their national exam scores are calculated, students are placed based on their scores and their preferences of the schools where they want to continue their education. Across all of these transition systems, students' placements were determined by the MoNE according to the national exam score superiority. Within the scope of the LSE-2012 and THE-2018, high schools were clustered in two groups: high schools that accept students according to national exam scores *(central placement)* and high schools that accept students according to residential addresses *(local placement)*. However, in the TMSH-2015, all students were placed in high schools through their national exam scores, and this approach produced more consistent clustering of students in schools according to their academic performance in national examinations.

The OECD (2004) analyzed the data from PISA 2003 in terms of literacy level differences between and within the schools. The results showed that Turkey is the country with highest mean score differences in mathematics literacy between schools. Although the mean score difference between schools is 33.6% in OECD countries, the mean score difference between schools is above 60% in Turkey. The OECD determined that this remarkable score difference among schools arises from socioeconomic status differences among students (OECD, 2004). On the other hand, the mean score difference within schools was calculated as 67% in OECD countries, the mean score difference within schools was below 60% in Turkey. These two comparative ratios demonstrate that the mathematics literacy of students in Turkey are quite heterogeneous between different schools but relatively homogenous within schools. Results show that students are clustered in schools according to their academic performances, and that there is a limited diversity of students with different academic performances within schools in Turkey.

While the differences in academic achievement among high schools are well known in Turkey, some studies showed that there are also considerable achievement differences between middle schools in Turkey. Findings from previous and current national transition examinations confirm significant school differences between middle schools. National monitoring examinations (ÖBBS) at the 4th grade in Turkey indicated significant achievement differences across different schools and school types (TED, 2010). THE-2018results also showed significant achievement differences between schools and school types at the middle school level (MEB, 2018a).

Academic research focusing on differences in Turkish students' achievement levels and performance has also yielded similar results. Students at different types of high schools achieve different ranges of mean scores across most tests (ÖSYM, 2018). Berberoğlu and Kalender (2005) investigated academic achievement differences in university entrance examinations and PISA between 1999 and 2002, and found major differences in performance between public and private high schools. Additionally, they found that public high school types also have significant differences in entrance exam performance, especially between science high schools and vocational high schools. Alacacı and Erbaş (2010) analyzed PISA

2006 data and found that the academic achievement and the socioeconomic status differences of Turkish students across diverse high school types are statistically significant. Ceylan (2009) investigated diversifying characteristics of high- and low-performing schools in PISA 2006 science literacy. Results showed that socioeconomic status and attitudes towards science are the most important factors impacting school classification. According to Aşıcı, Baysal and Şahenk-Erkan (2012), there are significant differences in students' literacy levels according to high school type in PISA 2006 and 2009, and these differences are again the greatest between science high schools and vocational high schools. Gümüş and Atalmış (2012) found that these differences among school types have increased between PISA 2003 and 2009. PISA 2012 and 2015 results also confirmed the dramatic differences in test performance across high school types in Turkey (MEB, 2016; World Bank, 2013). Suna, Tanberkan and Ozer (2020) analyzed the distribution of students in a Turkish sample of basic and advance levels of proficiency by school types between PISA 2003 and PISA 2018. It was found that there are significant and remarkable differences in ratios of students who have a basic and advance level of proficiency between school types in all literacy areas.

3. Socioeconomic Status and Academic Achievement

Several studies focusing on academic achievement differences among students draw attention to differences in students' family related social and cultural capital. French sociologist Pierre Bourdieu emphasizes how, beyond traditional notions of economic capital, cultural and socialcapital also contribute to social reproduction. Bourdieu considers capital not just as money related meta, instead defining three types of capital: economic, social, and cultural capital:

> Capital can present itself in three fundamental guises: as *economic capital*, which is immediately and directly convertible into money and may be institutionalized in the forms of property rights; as *cultural capital*, which is convertible, on certain conditions, into economic capital and may be institutionalized in the forms of educational qualifications; and as *social capital*, made up of social obligations ('connections'), which is convertible, in certain conditions, into economic capital and may be institutionalized in the forms of a title of nobility (Bourdieu, 1986, p. 47).

Cultural capital includes social origin, the importance given to culture and education, language use, and other factors, such as available resources. English sociologist Basil Bernstein (1977; 2003) argues that academic achievements of students from diverse socioeconomic backgrounds are affected by language codes that are shaped by students' families. He explains that children from middle- and upper-class families use language codes that are more abstract than those used by children from working-class families. Bernstein's contention is that members of social classes speak in subtly different ways, and that schools reward only the speech patterns of the middle and upper classes (Bernstein, 1977, 2003; Davies &Guppy, 2010). Findings of several large-scale national and international studies on academic achievement confirm the significant relationship between socioeconomic status and academic achievement (Barry, 2006; Bhat, Joshi & Wani, 2016; Caro, McDonald & Willms, 2009; ERG, 2009; Sutton & Soderstrom, 1999; White, 1982; Yılmaz, Fındık & Kavak, 2013). An increase in socioeconomic status—which is described as a combination of parents' education level and working status, family income, home opportunities of students, and many other factors—prompts a positive change in educational outcomes. Parents with higher education levels also have higher academ-

ic expectations for their children (Abu Bakar, Mamat & Mudassir, 2017; Gooding, 2001), assign greater importance to education, likely have a higher family income and a greater possibility for presenting further opportunities for their children, and have the potential to increase their students' self-confidence through intellectual levels and sophisticated language use. In a meta-analysis of 74 studies, Şirin (2005) found that socioeconomic status is a key variable that has one of strongest relationships with students' academic achievement.

Beyond students' socioeconomic status, there are other various factors which affect students' and parents' school choices. There is a common opinion that private schools offer better education opportunities, and that students in these schools have higher exam scores that indicate their superior academic achievement (Figlio & Stone, 1997; OECD, 2004). From this perspective, students' academic targets and parents' academic expectations are key factors guiding school selection (Cengiz, Titrek & Akgün, 2007). Other factors that impact school selection include educational opportunities available, elective courses, the distance between the school and the student's residential address, and school and transportation facilities. Student academic achievement is the main focus across the various educational systems, so the schools are believed to have the greatest potential to increase students' academic achievements. However, educational equity becomes an issue in private school systems, where parents need to pay all or most of the students' tuition and fees. In these private school systems, students are generally from higher a socioeconomic status, therefore not all students have equal chances to select these schools. Accordingly, in most education systems, private schools are considered institutions that serve socioeconomically advantaged students (OECD, 2004).

4. The Effect of School Type on Academic Achievement

In many education systems, public and private schools are compared in terms of students' academic achievement levels (Lubienski & Lubienski, 2006). Studies conducted in the 1980s focused on this "school effect," and findings from these studies showed that private school students had significantly higher academic achievement levels compared with those of public school students (Coleman &Hoffer, 1987; Coleman, Hoffer & Kilgore, 1982). Education researchers have since critiqued the methodology of these studies, calling the role of students' demographic variables into question and encouraging further research on the school effect. Figlio and Stone (1997) emphasized that these early studies focusing on school effect did not randomly sample schools and students: a major methodological deficiency.

Researchers have also analyzed data from the National Educational Longitudinal Survey (NELS), which involved random sampling at different levels, and found that the difference between achievement levels of public and private school students is not statistically significant. Goldhaber (1996) found that there is no significant difference between public and private schools in terms of mathematics and reading comprehension skills when the socioeconomic status of students is controlled. Similarly, an analysis of the growth of mathematical skills of American students over two years also demonstrated that the difference between students' growth in mathematics at public and private schools is not significant (Scott et al., 1994). Lubienski and Lubienski (2006) analyzed academic achievement level differences between school types in the United States using data from the 2003 National Assessment of Educational Progress. Data collected from 190,000 4th grade students and 153,000 8thgrade students showed that the difference between public and private school students' academic levels was also not significant when the students' socioeconomic status was controlled.

5. Data and Methods

5.1. Sample

The sample for this study consisted of 2,380,015 students who participated in Turkish national examinations in the three transition systems between 2012 and 2018. The study sample includes 698,473 students who participated in the LSE in 2012, 977,813 students who participated the TMSH in 2015, and 703,729 students who participated in the THE in 2018. These examinations are standardized tests applied within the scope of the last three transition systems from middle-school to high school in Turkey. In addition to scores and academic performance information, personal information from students was also included in the analysis, including family income levels, and education levels of father and mother. 402,295 students out of the 2,380,015 who participated in these transition system examinations (LSE-2012, TMSH-2015 or THE-2018) were excluded from analysis due to the missing socioeconomic level data. In other words, data from 83% of students who participated in these three national examinations were included in the analysis. Students who were in the 8th grade at middle schools, imam hatip middle schools, private middle schools, and regional boarding middle schools in the years 2012, 2015, and 2018 are included in the sample. Due to the fact that imam hatip middle schools have accepted students since 2012, data is only available for students attending these schools in 2015 and 2018.

Distribution of the students according to socioeconomic variables and middleschool types is given in Table 1.

Table 1: Socioeconomic Status and Middle School Type Distributions of Students in Study Sample

		İmam Hatip Middle School (Public)		Middle School (Public)		Private Middle School		Regional Boarding Middle School (Public)		Total	
		n	%	n	%	n	%	n	%	n	%
Level Specifying Exam (LSE-2012)											
Education Level of Mother	Primary School	-	-	479,922	71.76	2,005	22.06	18,773	91.07	500,700	71.68
	Middle School	-	-	94,937	14.20	1,188	13.07	1,405	6.82	97,530	13.96
	High School	-	-	76,343	11.42	3,132	34.46	380	1.84	79,855	11.43
	Associate Degree or Undergraduate	-	-	16,324	2.44	2,493	27.43	47	0.23	18,864	2.70
	Graduate	-	-	1,246	0.19	270	2.97	8	0.04	1,524	0.22
Education Level of Father	Primary School	-	-	354,792	53.05	1,029	11.32	15,889	77.08	371,710	53.22
	Middle School	-	-	133,841	20.01	1,006	11.07	2,830	13.73	137,677	19.71
	High School	-	-	131,054	19.60	2,832	31.16	1,514	7.34	135,400	19.39
	Associate Degree or Undergraduate	-	-	46,332	6.93	3,688	40.58	361	1.75	50,381	7.21
	Graduate	-	-	2,753	0.41	533	5.86	19	0.09	3,305	0.47
Family Income Level	Primary School	-	-	20,813	3.11	15	0.17	956	4.64	21,784	3.12
	Middle School	-	-	160,812	24.05	188	2.07	7,567	36.71	168,567	24.13
	High School	-	-	313,421	46.87	2,102	23.13	8,610	41.77	324,133	46.41
	Associate Degree or Undergraduate	-	-	161,831	24.20	5,585	61.45	3,264	15.83	170,680	24.44
	Graduate	-	-	11,895	1.78	1,198	13.18	216	1.05	13,309	1.91

Transition from Middle School to High School Exam (TMSH-2015)

Education Level of Mother	Primary School	2,813	69.66	637,851	69.47	5,318	14.31	16,640	89.98	662,622	67.77
	Middle School	587	14.54	126,052	13.73	3,180	8.56	1,252	6.77	131,071	13.40
	High School	481	11.91	118,225	12.88	11,071	29.79	520	2.81	130,297	13.33
	Associate Degree or Undergraduate	151	3.74	34,086	3.71	15,786	42.48	76	0.41	50,099	5.12
	Graduate	6	0.15	1,904	0.21	1,808	4.87	6	0.03	3,724	0.38
Education Level of Father	Primary School	1,967	48.71	475,128	51.75	2,627	7.07	13,854	74.91	493,576	50.48
	Middle School	739	18.30	169,124	18.42	2,616	7.04	2,511	13.58	174,990	17.90
	High School	86	21.42	189,610	20.65	9,295	25.01	1,672	9.04	201,442	20.60
	Associate Degree or Undergraduate	447	11.07	79,436	8.65	19,376	52.14	436	2.36	99,695	10.20
	Graduate	20	0.50	4,820	0.52	3,249	8.74	21	0.11	8,110	0.83
Family Income Level	Primary School	167	4.14	30,063	3.27	64	0.17	903	4.88	31,197	3.19
	Middle School	1,057	26.18	240,192	26.16	683	1.84	6,969	37.68	248,901	25.45
	High School	1,934	47.89	418,339	45.56	9,515	25.60	7,408	40.06	437,196	44.71
	Associate Degree or Undergraduate	822	20.36	215,884	23.51	23,350	62.83	3,038	16.43	243,094	24.86
	Graduate	58	1.44	13,640	1.49	3,551	9.56	176	0.95	17,425	1.78

Transition to High School Exam (THE-2018)

Education Level of Mother	Primary School	55,485	64.48	350,237	61.3	6,396	17.29	7,887	84.2	420,005	59.68
	Middle School	14,994	17.42	94,544	16.55	4,079	11.03	976	10.42	114,593	16.28
	High School	11,971	13.91	94,886	16.61	11,880	32.12	411	4.39	119,148	16.93
	Associate Degree or Undergraduate	3,476	4.04	30,369	5.32	13,756	37.19	89	0.95	47,690	6.78
	Graduate	126	0.15	1,286	0.23	877	2.37	4	0.04	2,293	0.33
Education Level of Father	Primary School	35,067	40.75	249,975	43.75	3,600	9.73	6,094	65.06	294,736	41.88
	Middle School	17,036	19.8	114,419	20.03	3,535	9.56	1,730	18.47	136,720	19.43
	High School	22,398	26.03	144,139	25.23	11,377	30.76	1,228	13.11	179,142	25.46
	Associate Degree or Undergraduate	10,939	12.71	59,791	10.47	16,733	45.24	308	3.29	87,771	12.47
	Graduate	612	0.71	2,998	0.52	1,743	4.71	7	0.07	5,360	0.76
Family Income Level	Primary School	1,489	1.73	13,951	2.44	78	0.21	387	4.13	15,905	2.26
	Middle School	18,009	20.93	137,696	24.1	1,307	3.53	3,125	33.36	160,137	22.76
	High School	42,981	49.95	273,251	47.83	12,768	34.52	3,945	42.12	332,945	47.31
	Associate Degree or Undergraduate	22,307	25.92	138,475	24.24	20,686	55.93	1,782	19.02	183,250	26.04
	Graduate	1,266	1.47	7,949	1.39	2,149	5.81	128	1.37	11,492	1.63

Table 1 shows that the majority of the study sample consisted of students from public middle schools: 95.75% of the LSE-2012 participants, 93.90% of the TMSH-2015 participants, and 81.18% of the THE-2018 participants were enrolled in public middle schools. The average education level of parents and family income changed across the three transition periods. The level of students whose mother graduated with an associate degree or above is 2.92% in the LSE-2012, 5.50% in the TMSH-2015, and 7.11% in the THE-2018. This increasing trend also held true for the education levels of fathers, as the percentage of students' whose father graduated with an associate degree or above was 7.68% in the LSE-2012, 11.03% in the TMSH-2015, and 13.23% in the THE-2018.

There was also a slight increase in family income levels of students over time: the percentage of students whose family income was high or quite high was 26.35% for the LSE-2012, 26.64% for the TMSH-2015, and 27.67% for the THE-2018. The distribution of socioeconomic variables between middle school types shows that students from private middle schools were the most advantaged group in terms of socioeconomic status across all three of the transition systems. The percentage of private middle school students whose mother graduated with associate degree or higher was 64.87% in the LSE-2012, 71.68% in the TMSH-2015, and 77.13% in the THE-2018. In comparison, the percentages reported by regional boarding middleschool students, the most socioeconomically disadvantaged group, were 2.11%, 3.26% and 5.38%, respectively. Similarly, the percentage of private middleschool students whose father graduated with an associate degree or higher were 77.61% in the LSE-2012, 85.89% in the TMSH-2015, and 80.71% in the THE-2018. Related percentages for regional boarding middle school students were 9.19%, 11.51%, and 16.47%, respectively. Lastly, the proportion of private middle school students whose family income was high or quite high was 74.64% in the LSE-2012, 72.39% in the TMSH-2015, and 61.74% in the THE-2018; the levels from regional boarding middle schools were 16.88%, 17.38%, and 20.39%, respectively.

5.2. Data Collection

Data used in the present study is comprised of national examination scores and personal information from 8[th]grade students who participated in the LSE-2012, the TMSH-2015, and the THE-2018. The data of this research were shared with researchers and used with the official letter number of 65968543/622.01-E.7006237 of the MoNE Information Technology Department. Within the scope of the LSE-2012, students were asked 100 multiple-choice questions, including 23 language (Turkish), 20 mathematics, and 20 science questions. The TMSH-2015 has 100 multiple-choice questions, including 20 language (Turkish), 20 mathematics and 20 science questions. Students were asked 90 multiple-choice questions in THE-2018:20 language (Turkish), 20 mathematics, and 20 science questions. In the present study, language, mathematics, and science items were analyzed.

Inter-consistency coefficients (Kuder-Richardson 20) related to the language, mathematics, and science tests in the three transition systems analyzed in the current study are presented in Table 2.

Table 2: Kuder-Richardson 20 Coefficients of Language, Mathematics and Science Tests in Turkish Transition Systems

Transition System	Test	Number of Questions	KR-20 Coefficient
LSE-2012	Language	23	0.878
	Mathematics	20	0.909
	Science	20	0.880
TMSH-2015	Language	20	0.853
	Mathematics	20	0.814
	Science	20	0.877
THE-2018	Language	20	0.839
	Mathematics	20	0.711
	Science	20	0.822

Inter-consistency coefficients (Kuder-Richardson 20) for the language tests are between 0.839–0.878, between 0.711–0.909 for the mathematics tests, and between 0.822–0.880 for the science tests. Assessment tools which have inter-consistency coefficients of 0.70 or higher are

considered to be adequate (Cronbach, 1951; Kuder & Richardson, 1937), and these tests yield consistent and reliable scores. The results of the analyses presented in Table 2 demonstrate that the three tests have sufficient levels of inter-consistency across all of the transition systems.

To provide information on the validity of the assessment tools used in the present study, confirmatory factor analysis (CFA) was conducted and the results of this CFA are presented in Table 3.

Table 3: Confirmatory Factor Analysis Results of Language, Mathematics and Science Tests in Transition Systems: One Factor Model

Transition System	Test	RMSEA	CFI	TLI	SRMR
LSE-2012	Language	0.016	0.997	0.996	0.023
	Mathematics	0.018	0.999	0.998	0.022
	Science	0.024	0.995	0.994	0.032
TMSH-2015	Language	0.025	0.991	0.990	0.038
	Mathematics	0.023	0.991	0.990	0.035
	Science	0.017	0.997	0.997	0.021
THE-2018	Language	0.019	0.995	0.994	0.031
	Mathematics	0.017	0.918	0.908	0.027
	Science	0.023	0.992	0.991	0.032

Table 3 shows that the RMSEA coefficients for the language, mathematics, and science tests used in the transition systems were between 0.016–0.025, and that the SRMR coefficients of these three tests were between 0.021–0.038. The CFI and TLI coefficients related to these tests were between 0.918–0.999 and 0.908–0.998, respectively. For RMSEA and SRMR indexes, coefficients below 0.06 and 0.08 are considered as a good fit (Hu & Bentler, 1999; Schreiber et al., 2006). Additionally, CFI and TLI coefficients which are equal to or greater than 0.90 are accepted as an adequate fit (Hu & Bentler, 1999; Schreiber et al., 2006). The results in Table 3 indicate that these three tests in all transition systems had one dominant factor, and that the items in these tests are loaded in related dominant factors. So, the total scores of the three domain tests in these transition systems could be obtained through all the items in the related tests, and all items in these tests exhibited significant correlation with the related latent dominant factor.

5.3. Data Analysis

To provide evidence on validity, CFA of the three tests in all transition systems was performed with the *lavaan* package, which enables factor analysis with binary data in R statistics. A reliability analysis was performed with SPSS in terms of the inter-consistency of items.

A variance analysis (ANOVA) was used to compare the language, mathematics, and science mean scores related to the different types of middle schools being analyzed. According to the significant differences obtained by the ANOVA, peer comparisons were also performed using Scheffe post-hoc tests.

Covariance analysis (ANCOVA) was used to calculate the language, mathematics, and science mean scores, while students' socioeconomic status was controlled. The corrected mean scores of different middle school types were also compared with ANCOVA. ANCOVA was selected intentionally here, because it is typically used to control a variable or variables in the cases of determining the effect of one variable on another variable (Tabachnick & Fidell, 2013). In the

present study, the socioeconomic status of students were statistically controlled, while differences in the mean scores from different middle school types were analyzed.

Significant differences between mean scores can be attributed to the volume of data for this study: as a sample size grows larger, both the statistical power of tests and the possibility of small differences becoming significant increase at the same time (Filho et al., 2013; Kaplan, Chambers & Glasgow, 2014). Effect sizes are also calculated and presented in this study to overcome this issue. Significant differences between the mean scores of middle school types are given and interpreted with effect sizes.

Defining the socioeconomic status of students is a complex process, and consequently the number and variety of characteristics may change in the research area. NCES (2012) suggests using family income, parents' level of education, and parents' working status to define socioeconomic status. In the present study, family income and parents' education level were used together. Principal component analysis (PCA) is a method that is frequently used to construct a composite socioeconomic status variable from singular variables. In this process, the selected variables are analyzed in PCA, and those variables can be weighted with factor loading on the dominant factor (NCES, 2012; Vyas & Kumaranayake, 2006). Accordingly, the mothers' education level (w=0.828), fathers' education level (w=0.845), and family income (w=0.653) variables were analyzed with PCA, and these variables were weighted with factor loadings on the dominant factor.

6. Results

The language, mathematics, and science mean scores of students from diverse middleschools in the three transition systems were calculated and compared with the mean scores using ANOVA. These results are presented in Table 4.

Table 4: One-Way ANOVA Results of Language, Mathematics, and Science Tests in Three Transition Systems

Level Specifying Exam (LSE-2012)								
Test	Variance Source	Sum of Squares	df	Mean Squares	F	p	η^2	Post-hoc
Language	Between Groups	219145.6	2	109572.8	4545.5	0.00	0.01	SS-PSS, SS-RBSS, PSS-RBSS
	Within Groups	16837142.5	698470	24.1				
	Total	17056288.1	698472					
Mathematics	Between Groups	163834.3	2	81917.2	5958.8	0.00	0.02	SS-PSS, SS-RBSS, PSS-RBSS
	Within Groups	9602114.7	698470	13.7				
	Total	9765949.0	698472					
Science	Between Groups	114202.0	2	57101.0	3895.4	0.00	0.01	SS-PSS, SS-RBSS, PSS-RBSS
	Within Groups	10238499.3	698470	14.7				
	Total	10352701.3	698472					
Transition from Middle School to High School Exam (TMSH -2015)								
Language	Between Groups	772155.1	3	257385.0	12499.2	0.00	0.04	SS-PSS, SS-RBSS, PSS-RBSS, İHSS-PSS, İHSS-RBSS
	Within Groups	20135097.6	977809	20.6				
	Total	20907252.7	977812					

Mathematics	Between Groups	1428918.2	3	476306.1	25297.5	0.00	0.07	SS-PSS, SS-RBSS, PSS-RBSS, İHSS-PSS, İHSS-SS, İHSS-RBSS
	Within Groups	18410370.4	977809	18.8				
	Total	19839288.6	977812					
Science	Between Groups	1467888.6	3	489296.2	17629.5	0.00	0.05	SS-PSS, SS-RBSS, PSS-RBSS, İHSS-PSS, İHSS-RBSS
	Within Groups	27138497.8	977809	27.8				
	Total	28606386.4	977812					
Transition to High School Exam (THE-2018)								
Language	Between Groups	443106.75	3	147702.25	8962.23	0.00	0.04	SS-PSS, SS-RBSS, PSS-RBSS, İHSS-PSS, İHSS-SS, İHSS-RBSS
	Within Groups	11597753.98	703725	16.48				
	Total	12040860.73	703728					
Mathematics	Between Groups	144308.44	3	48102.81	6387.94	0.00	0.03	SS-PSS, SS-RBSS, PSS-RBSS, İHSS-PSS, İHSS-SS, İHSS-RBSS
	Within Groups	5299226.14	703725	7.53				
	Total	5443534.58	703728					
Science	Between Groups	440849.73	3	146949.91	9864.92	0.00	0.04	SS-PSS, SS-RBSS, PSS-RBSS, İHSS-PSS, İHSS-SS, İHSS-RBSS
	Within Groups	10482834.69	703725	14.90				
	Total	10923684.42	703728					

Table 4 indicates significant differences in the mean scores of students from different middle school types in THE-2018 language (F(3; 703728)=8962.23, $p<0.05$, $\eta^2 =0.04$), THE-2018 mathematics (F(3; 703728)=6387.94, $p<0.05$, $\eta^2 =0.03$), and THE-2018 science tests (F(3; 703728)=9864.92, $p<0.05$, $\eta^2 =0.04$). Similarly, significant differences in the mean scores of students from different middle school types were identified in TMSH-2015 language (F(3; 977812)=12499.2, $p<0.05$, $\eta^2 =0.04$), TMSH-2015 mathematics (F(3; 977812)=25297.5, $p<0.05$, $\eta^2 =0.07$), and TMSH-2015 science tests (F(3; 977812)=17629.5, $p<0.05$, $\eta^2 =0.05$). Lastly, the LSE-2012 tests were analyzed and significant differences in the mean scores of students from different middle school types were found in LSE-2012 language (F(2; 698472)=4545.5, $p<0.05$, $\eta^2 =0.01$), LSE-2012 mathematics (F(2; 698472)=5958.8, $p<0.05$, $\eta^2 =0.02$), and LSE-2012 science tests (F(2; 698472)=3895.4, $p<0.05$, $\eta^2 =0.01$).

The effects size coefficients presented in Table 4 illustrate that the type of middle school has a low effect on students' mean scores in language, mathematics, and science tests. Without controlling socioeconomic status, the highest effect size coefficient was calculated in TMSH-2015, so the effect of middle school type on the mean scores of language, mathematics, and science tests reached its maximum value in TMSH-2015. Results of post-hoc analyses indicated that there was a significant difference between the mean scores of all middle school types within the scope of the THE-2018 and LSE-2012—students from private middle schools had the highest mean scores and students from regional boarding schools had the lowest mean scores across all of these tests. Significant differences were also observed in the language, mathematics, and science tests of the

TMSH-2015, but there was a particular peer comparison (between public middle schools and public imam hatip middle schools) that did not yield significant differences in mathematics and science tests. The findings in Table 4 indicate that the mean language, mathematics, and science scores across different middle school types had significant differences in nearly all cases; and that private middle schools showed the highest performance, while regional boarding schools had the lowest mean scores with their current socioeconomic status.

It should be also noted that some significant differences were found between the mean scores of public middle school types, despite the fact that their mean scores were quite close in other comparisons. These significant differences can be attributed to the volume of data for this study: as the sample size grows larger, both the statistical power of tests and the possibility of small differences becoming significant increase at same time (Filho et al, 2013; Kaplan, Chambers & Glasgow, 2014).

Table 5 provides the corrected mean language, mathematics, and science scores of different middle school types, as well as the results of ANCOVA when the socioeconomic status of students was controlled.

Table 5: ANCOVA Results of Language, Mathematics, and Science Tests When Socioeconomic Status is Controlled

	n	M	SD	Corrected M	%95 Confidence Interval	Difference between Means	SE
Level Specifying Exam (LSE-2012)							
Language							
Middle School (SS)	668,772	13.07	4.93	13.08	13.07 – 13.09	0.01	0.01
Private SS (PSS)	9,088	17.40	3.87	14.65	14.55 – 14.75	-2.75	0.05
Regional Boarding SS (RBSS)	20,613	11.54	4.84	12.38	12.32 – 12.45	0.84	0.03
Peer Comparisons							
SS-PSS						-1.56*	0.05
SS-RBSS						0.70*	0.03
PSS-RBSS						2.26*	0.06
Mathematics							
Middle School (SS)	668,772	6.06	3.71	6.07	6.06 – 6.08	0.01	0.01
Private SS (PSS)	9,088	10.05	4.56	8.22	8.14 – 8.29	-1.83	0.04
Regional Boarding SS (RBSS)	20,613	5.09	3.31	5.65	5.60 – 5.70	0.56	0.03
Peer Comparisons							
SS-PSS						-2.15*	0.04
SS-RBSS						0.42*	0.03
PSS-RBSS						2.56*	0.05
Science							
Middle School (SS)	668,772	8.10	3.83	8.11	8.10 – 8.12	0.01	0.01
Private SS (PSS)	9,088	11.55	3.69	9.67	9.59 – 9.74	-1.88	0.04
Regional Boarding SS (RBSS)	20,613	7.54	3.85	8.12	8.07 – 8.17	0.58	0.03
Peer Comparisons							
SS-PSS						-1.56*	0.04
SS-RBSS						-0.01	0.03
PSS-RBSS						-1.54*	0.05

Transition from Middle School to High School Exam (TMSH-2015)

Language

İmam Hatip SS (İHSS)	4,038	13.50	4.48	13.59	13.46 – 13.72	0.09	0.07
Middle School (SS)	918,118	13.30	4.60	13.42	13.41 – 13.42	0.12	0.01
Private SS (PSS)	37,163	17.89	2.66	14.61	14.56 – 14.65	-3.28	0.02
Regional Boarding SS (RBSS)	18,494	12.38	4.53	13.39	13.33 – 13.46	1.01	0.03

Peer Comparisons

İHSS-SS						0.17	0.07
İHSS-PSS						-1.02*	0.07
İHSS-RBSS						0.19	0.07
SS-PSS						-1.19*	0.02
SS-RBSS						0.02	0.03
PSS-RBSS						1.21*	0.04

Mathematics

İmam Hatip SS (İHSS)	4,038	8.91	4.40	8.99	8.87 – 9.11	0.08	0.06
Middle School (SS)	918,118	8.53	4.35	8.63	8.63 – 8.64	0.1	0.01
Private SS (PSS)	37,163	14.82	4.35	11.68	11.63 – 11.72	-3.14	0.02
Regional Boarding SS (RBSS)	18,494	7.91	3.97	8.88	8.82 – 8.94	0.97	0.03

Peer Comparisons

İHSS-SS						0.36*	0.06
İHSS-PSS						-2.69*	0.07
İHSS-RBSS						0.11	0.07
SS-PSS						-3.04*	0.02
SS-RBSS						-0.25*	0.03
PSS-RBSS						2.80*	0.04

Science

İmam Hatip SS (İHSS)	4.038	10.81	5.25	10.90	10.75 – 11.05	0.09	0.08
Middle School (SS)	918.118	10.64	5.32	10.76	10.75 – 10.77	0.12	0.01
Private SS (PSS)	37.163	17.04	4.00	13.26	13.21 – 13.32	-3.78	0.03
Regional Boarding SS (RBSS)	18.494	10.36	5.19	11.53	11.46 – 11.60	1.17	0.04

Peer Comparisons

İHSS-SS						0.14	0.08
İHSS-PSS						-2.36*	0.08
İHSS-RBSS						-0.63*	0.08
SS-PSS						-2.50*	0.03
SS-RBSS						-0.77*	0.04
PSS-RBSS						1.73*	0.05

Transition to High School Exam (THE-2018)

Language

İmam Hatip SS (İHSS)	86.052	12.79	3.93	12.86	12.84 - 12.88	0.07	
Middle School (SS)	571.322	12.53	4.12	12.63	12.62 - 12.64	0.10	
Private SS (PSS)	36.988	16.02	3.27	14.00	13.97 - 14.05	-2.02	
Regional Boarding SS (RBSS)	9.367	11.32	4.13	12.18	12.10 - 12.26	0.87	

Peer Comparisons

İHSS-SS						0.23*	0.01
İHSS-PSS						-1.14*	0.02
İHSS-RBSS						0.68*	0.04
SS-PSS						-1.37*	0.02
SS-RBSS						0.45*	0.04
PSS-RBSS						1.82*	0.04

Mathematics

İmam Hatip SS (İHSS)	86.052	4.54	2.66	4.57	4.55 - 4.59	0.03	

Middle School (SS)	571.322	4.76	2.71	4.80	4.79 - 4.81	0.04	
Private SS (PSS)	36.988	6.70	3.43	5.90	5.87 - 5.93	-0.81	
Regional Boarding SS (RBSS)	9.367	4.16	2.45	4.50	4.45 - 4.56	0.35	
Peer Comparisons							
İHSS-SS						-0.23*	0.01
İHSS-PSS						-1.33*	0.02
İHSS-RBSS						0.07	0.03
SS-PSS						-1.10*	0.02
SS-RBSS						0.30*	0.03
PSS-RBSS						1.40*	0.03
Science							
İmam Hatip SS (İHSS)	86.052	9.03	3.78	9.09	9.07 - 9.12	0.06	
Middle School (SS)	571.322	9.12	3.87	9.22	9.21 - 9.23	0.1	
Private SS (PSS)	36.988	12.62	3.86	10.78	10.74 - 10.82	-1.84	
Regional Boarding SS (RBSS)	9.367	8.37	3.74	9.16	9.08 - 9.23	0.79	
Peer Comparisons							
İHSS-SS						-0.13*	0.01
İHSS-PSS						-1.69*	0.02
İHSS-RBSS						0.06	0.04
SS-PSS						-1.56*	0.02
SS-RBSS						0.06	0.04
PSS-RBSS						1.63*	0.04

*p<0.05

Table 5 shows that significant changes were observed in language, mathematics, and science mean scores related to middle school types when students' socioeconomic status was controlled. In this case, the mean language, mathematics, and science scores of private middle schools—which included the most socioeconomically advantaged students—decreased remarkably across all three transition systems. By contrast, the mean language, mathematics, and science scores of all public middle schools increased in differing proportions across the three transition systems.

The common finding in Table 5 was that the gaps between the mean language, mathematics, and science scores of all the middle school types were further closed after control of the students' socio-economic status. As a result, the significant differences within the scope of THE-2018 between the mean mathematics and science scores of imam hatip middle schools and regional boarding schools, as well as between the mean science scores of imam hatip middle schools and public middle schools disappeared after control of the students' socioeconomic status. The same circumstances were also valid for the TMSH-2015, with significant differences between the mean language and mathematics scores of imam hatip middle schools and regional boarding schools disappearing.

Figure 1 demonstrates the effect-sizes of socioeconomic status on meanlanguage, mathematics, and science scores within the three transition systems.
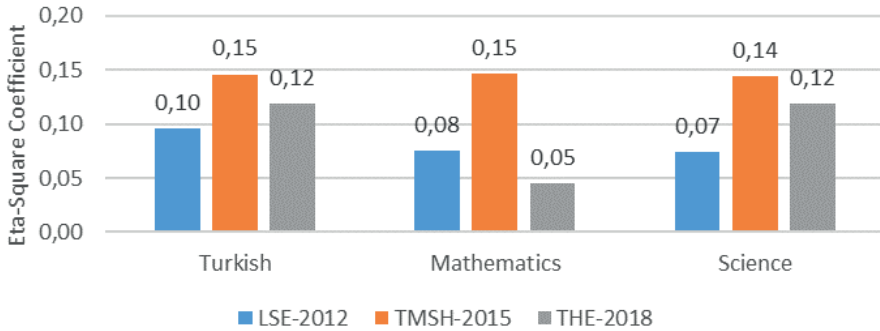
Figure 1: Eta-Square Coefficients of Socioeconomic Status of Students' on Mean Language, Mathematics, and Science Scores in Transition Systems.

The coefficients in Figure1 indicate that the effect of students' socioeconomic status on mean scores in language, mathematics, and science reached their maximum values in the TMSH-2015. The effect-sizes of student socioeconomic status on the mean scores are medium-level in TMSH-2015, and low-level in both LSE-2012 and THE-2018. For the language and science tests, the effect-sizes of socioeconomic status are relatively lower in LSE-2012, and for the mathematics test, it is comparatively lower in THE-2018.

Figure 2 demonstrates the proportional changes in mean language, mathematics, and science scores of different middle school types when students' socioeconomic status is controlled.
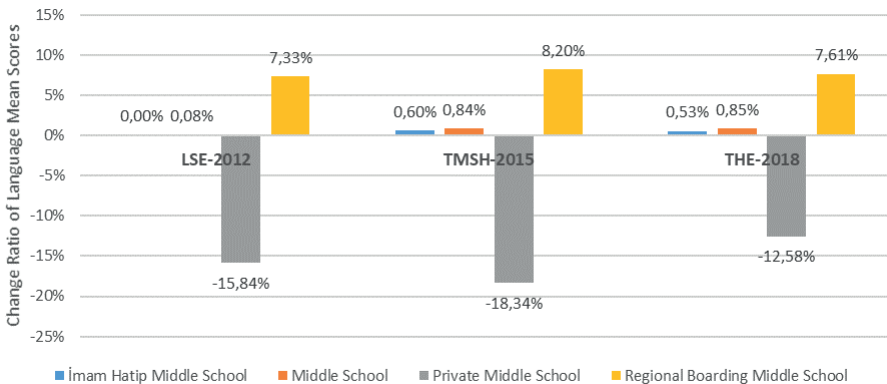
Figure 2: Proportional Changes in Language, Mathematics and Science Mean Scores When Students' Socioeconomic Status is Controlled.

Figure 2 shows that there are significant differences in the ratios of change across all tests within the three transition systems. The ratios of change reach their maximum values in the language, mathematics, and science tests in the TMSH-2015. After controlling the students' socioeconomic status, the minimum ratio of change could be observed in the language, mathematics, and science tests of THE-2018.

7. Discussion and Conclusion

The present study investigated the predictive role of socioeconomic status on academic achievement in three transition systems in Turkey. It also investigated students' academic achievements in diverse middleschool types within these three systems. For the purposes of this study, a composite socioeconomic status variable is composed of parents' education level and family income. Subsequently, the mean language, mathematics, and science scores of students were calculated and compared in the three transition systems according to the current socioeconomic status, as well as after control of socioeconomic status.

The education levels of parents in the sample, as well as their family income distributions indicated that there were significant differences in socioeconomic status between students from different middleschool types. With regard to socioeconomic status, students from private middle schools are the most advantaged, while students from regional boarding middleschools are the most disadvantaged group in all three transition systems. ANOVA results showed that there were significant differences in mean language, mathematics, and science scores of students in diverse middle school types within the three transition systems. According to eta-square coefficients, the effect of socioeconomic status on mean language, mathematics, and science scores reached maximum values, which were present at a medium-level, in the TMSH-2015 transition system. However, the effect of socioeconomic status on scores was low in both LSE-2012 and THE-2018. Eta-square coefficients show that the effect of socioeconomic status on scores was relatively lower in the language and science tests within the THE-2018.

Common findings from all transition systems showed that the meanlanguage, mathematics, and science scores of private middleschool students decreased significantly when students' socioeconomic status was controlled, while those mean scores of public middle schools increased at varying ratios in the same case. Public middleschool students' scores were compared in detail and showed that while these middle schools' mean language, mathematics, and science scores increased slightly after control of socioeconomic status (0.08%–1.26 %), the highest increase was observed in the language, mathematics, and science scores of regional boarding schools (7.33%–12.32%). Private middle schools had higher mean scores in language, mathematics, and science tests, and public middle schools had similar mean scores on those tests. This finding was consistent with previous findings published by the MoNE (MEB, 2018). It is also noteworthy that the changes in the mean scores on mathematics and science tests were relatively higher, so it is reasonable to assert that differences in socioeconomic status had a greater effect on mathematics and science test scores in these three transition systems. Due to the decrease in the difference between mean language, mathematics, and science scores between middle school types when socioeconomic status is controlled, these differences in academic achievement levels can be partially explained by socioeconomic status.

The findings of the present study were consistent with those of previous studies focusing on the differences in students' academic achievement and socioeconomic status (Berberoğlu & Kalender, 2005; ERG, 2009; Ferreira, Gignoux & Aran, 2010; OECD, 2004; Önder & Güçlü, 2014). Also, the findings indicated that socioeconomic status had a measurable and significant impact on the academic performance of students at the middle school level, and that there was a significant difference between middle school types in terms of socioeconomic status distribution. Increasing socioeconomic differences between school types can lead to academic achievement disparities in the long term (Perry & McConney, 2010). As mentioned earlier (OECD, 2004), one of the fundamental reasons why Turkey is the country with the largest differences in mean school achievement is that students are clustered in high schools according to socioeconomic status (Çelik et al.,2017; Ozer, 2018). The results of the present study revealed that differences in academic achievement between school types began to arise at the middle school level, and that socioeconomic differences served an important function in that process. Since the tracking into different secondary school types through the transition systems worsens the disadvantageous positions of low performing students already at the middle school level, the inequality deepens systematically (Ozer & Perc, 2020). The transition system called TMSH in Turkey resulted in the strongest inequality of opportunity.

The Matthew effect seems to provide an important tool for understanding the long-term negative consequences of the early tracking (Ozer & Perc, 2020). It explains the underlying mecha-

nism leading to cumulative advantage where advantage breeds advantage so that advantage tends to beget further advantage (Merton, 1968; Perc, 2014). On the other hand, socioeconomic disadvantage also augments the disadvantageous conditions, eventually increase the inequality of education and opportunity (Ozer & Perc, 2020).

One underlying reason for the considerable differences in academic achievement between schools is the structure of the transition systems between middle and high school. When all students are placed into schools according to their academic performance, it can lead to a clustering of students in schools by socioeconomic levels. The findings regarding the TMSH-2015 is an obvious example of this phenomenon, since the effects of school type and socioeconomic status of students on test scores reached their maximum values in this transition system. Thus, testing all students in order to track them into different high schools creates a discriminative effect on the students, even before they entered into this transition system. On the other hand, when all students are tracked into different school types based on their academic achievements, it leads to homogenous classes, eventually decreasing the positive contributions of the peer effects. In the heterogeneous classes, low performing students may have better opportunities to increase their performances through more efficient group discussions and motivation based on interactions among students of different academic achievement levels (Hanushek & Woessmann, 2006; Ozer & Perc, 2020).The homogeneity leads to low performing students to be deprived of this opportunity (Ozer & Suna, 2020; Zimmer, 2003).

On the other hand, the recently established THE system allows students not to take part in the national exam to have a seat in high schools. In other words, the national exam score is not mandatory in THE while it was mandatory in TMSH. Almost 90% of the 8th grade students were allocated to schools without the national exam scores in THE system (MEB, 2018a). Within the scope of THE-2018, the effect of school types and the socioeconomic status of students on mean test scores seems to be relatively lower. The effects of socioeconomic status on academic achievement in the national high-stakes exams unfortunately increases when almost all students are tracked into different school types based on their exam scores (i.e., TMSH-2015).

Findings that show significant differences in academic achievement and socioeconomic status between school types at the middle school level are quite important for educational policymakers. As emphasized by the OECD (2004), two common characteristics of high performing countries in PISA are low academic achievement differences between schools and high student heterogeneity within schools. In order to decrease the academic achievement differences between schools, positive discrimination in the allocation of financial sources and the appointment of more qualified and more experienced teachers and school administrators in disadvantaged schools are of great importance (Ozer, 2020). In line with this purpose, financial and human resources should be directed to institutions that have development needs, support programs should be developed and applied in these institutions, and the process of student placement in educational institutions needs to be revised to encourage placement of students from diverse socioeconomic and academic achievement levels in the same schools (Gür et al., 2018; Önder & Güçlü, 2014).

In addition, since national placement exams track students into different schools and study programs with varying academic content, a policy response to increase equity in student learning opportunities can also reduce or delay student tracking practices (OECD, 2016), such as ability grouping via national exams. The results of this study provide supporting evidence for this recommendation. A complementary policy is to adopt robust and shared curricular standards for all students, no matter which high school type they attend, and regardless of socio-economic status.

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