



Exploring the Relationship between Socioeconomic Status and Identification of Gifted in Turkey through Critical Systems Thinking*

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ABSTRACT

This correlational study examines the relationship between identification as gifted and various indicators of socioeconomic status (SES) among high school students living in Turkey. The relatively large and representative sample consists of 688 high school students, both identified (n = 343) and unidentified (n = 345) as gifted, enrolled in nationwide after-school gifted education programs. The "identified" group comprises adolescents who scored an IQ index of 130 or higher, while the unidentified group comprises high school students attending formal educational institutions without meeting the IQ-based identification criterion. Chi-square tests of independence were utilized to investigate the relationship between identification status and SES indicators such as perceived household income, parental education level, current area of residence, and area of residence where most of life is spent. The results indicate that identified participants are more likely to come from families with higher perceived income and parental education levels, live in urban areas, and spend most of their lives in urban areas compared to the unidentified group. Overall, the findings suggest that SES factors might play a significant role in the identification of giftedness students in Turkey. The findings are discussed around the problem of underrepresentation in traditional identification methods, with a focus on educational equality within the framework of systems theory and critical systems theory.

Keywords: Low representation group, equality, gifted and talented, socioeconomic status

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1. INTRODUCTION

Numerous gifted and talented students who have the potential to gain from educational programs for gifted go unnoticed, leading to a squandering of valuable potential. This is a long-standing issue that has persisted for many years. Taking a holistic approach, it has been argued that traditional identification processes used by gifted programs may not be effective in identifying or including students from low socioeconomic status (SES) backgrounds (Card & Guiliano, 2016; Crabtree, Richardson & Lewis, 2019; de Wet & Gubbins, 2011; Ford, 2011; Renbarger & Long, 2019; Worrell, Subotnik, Olszewski-Kubilius & Dixon, 2019; Yoon & Gentry, 2009). Limitations of traditional identification methods are frequently cited in the literature as contributing to the underrepresentation of low-income students and students from certain geographical locations in gifted programs. The impact of SES on academic achievement and future education opportunities, as well as the possibility for poor health to perpetuate a cycle of disadvantage by impacting future job prospects and financial stability, has been noted by many scholars (Baker, 2014; Donovan & Cross, 2014). Along the same lines, whereas research on the impact of the area of residence on the identification gap is limited to date, Hamilton et al. (2018) found that geographical regions with higher poverty rates had lower percentages of students identified as gifted. This study examines the association between SES indicators and whether being identified as gifted.

1.1. Identification of Gifted Individuals

Identifying gifted students is generally a process in which educational decisions are made by collecting information about the student (Ayas, 2018). The main components of identification can be listed as (a) nomination, (b) screening, (c) identification, and (d) placement (Johnsen, 2009). According to Feldhusen, William Asher, & Hoover (1984), the process of identification involves five fundamental steps, which include: "1) defining program goals and types of gifted youth to be served; 2) nomination procedures; 3) assessment procedures; 4) individual differentiation, and; 5) validation of the identification

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process" (p. 149). These functional components of any identification model can be used to distinguish between traditional and contemporary approaches. Since the process of identifying gifted and talented individuals has become increasingly complex due to several factors, including advancements in knowledge, improvements in measurement and assessment methods, the use of modern assessment tools, the neo-liberal market demand for specific 21st-century skills, and the shifting to the contemporary theories, as many of them noted by Worrell et al. (2019) in their comprehensive review on giftedness, programs that use the above elements appropriately and effectively rather than a one-dimensional identification could be classified as more contemporary. Nevertheless, this is an arbitrary description of the modernization of identification models rather than objectivist. The key is to address the problems in identification by applying the most up-to-date theoretical and conceptual insights to practice. Likewise, another distinctive feature of contemporary identification approaches is their utilization of multiple data sources, various types of data, and identification at different times (Coleman, 2003). Hence, an identification method can be classified as traditional or contemporary based on whether or not it includes the main components and modern fundamental steps outlined above.

As described in the systems theory of giftedness (Ziegler & Stoeger, 2017), the paradigm of the identification approach can be examined at both the macro and micro levels (Dai, 2020). On the macro level, Gücyeter, Kanlı, Özyaprak, and Leana-Taşçılar (2017) highlighted the inadequacy of comprehensive policies on gifted education in Turkey to meet the needs of gifted and talented students. In terms of the connection between the macro and the micro, according to Sak et al. (2019), although there has been a promising paradigm shift, there are still discrepancies between theory, policy, and practice in the field of gifted education in Turkey. However, although Turkey is not one of the countries with a long tradition of research and practice on the education of the gifted (Mammadov, 2019), in recent years, it has been seen that policies on educating the gifted are in the process of "transitioning to contemporary approaches" (e.g., MoNE, 2013; MoNE, 2019; Sak et al., 2019). Since transitions in education policy are closely tied to the definition of giftedness, best practices for identifying gifted students through research, and labeling gifted behaviors in underrepresented groups (Crawford, Snyder, & Adelson, 2019), examining the strengths and weaknesses of the current system will enable us to take more effective steps toward future policies and the transition process. Furthermore, numerous studies indicate that programs should analyze their current structures and potential biases (both macro and micro levels) to overcome the problems that are acknowledged as concerns with traditional methods (e.g., Olszewski-Kubilius & Clarenbach, 2012; Plucker & Makel, 2010).

1.2. Systems Theory of Giftedness

The under-representation of low-income students in gifted programs cannot be attributed to a single cause. However, among the many factors that cause the identification gap in gifted education, one obvious factor is often considered to be the most pronounced. To put it in a more anecdotal way, we can think of it like aircraft accidents. Also, in air accidents, one factor often stands out as the main cause, but there is always a "perfect" combination of many factors contributing (i.e., 4.52 contributing factors per accident, see., Fajer, Almeida, & Fischer, 2011). Returning to the social sciences, as Ziegler and Stoeger (2017) defined very briefly, "systemic thinking is concerned with the simultaneous investigation of many variables and their changes over time as well as self-organizations into states with radically different properties" (p. 183). In other words, it is necessary to think within a system or a context in which the causes are chaotic (Ceci, 1990). The systems theory of giftedness is one of the theories that most clearly emphasizes the role of context (Sternberg, 2023). According to this theoretical framework, education takes place in a complex and dynamic environment, and society co-constructs talent through the interaction of the individual with the environment (Ziegler & Phillipson, 2012).

One should consider the environmental and individual indicators as "capitals" according to the actiotope model of giftedness. Ziegler's (2005) actiotope model, which focuses on an individual's learning resources and pathways, highlights intrinsic and extrinsic capitals. The model comprises ten capitals, five intrinsic (organismic, telic, actional, episodic, and attentional), and five extrinsic (economic, cultural, social, infrastructural, and didactic), that impact an individual's learning path. As defined in this model, "economic educational capital is every kind of wealth, possession, money, or valuable that can be invested in the initiation and maintenance of educational and learning processes." (Ziegler & Stoeger, 2017, p. 188). Therefore, access to opportunities is significantly influenced by the economic status of families, not only for gifted students but for all students (Kingston, 2021; McBee, 2006). For example, the family might have a major role in this economic and educational capital, including making educational investments that can impact the individual's micro-level system (Fu, 2017). Thus, perceived household income is contextualized in terms of economic capital as this capital. Since "cultural educational capital includes value systems, thinking patterns, models, and the like that can facilitate—or hinder—the attainment of learning and educational goals" (Ziegler & Stoeger, 2017, p. 188), parental education level and the areas of residence were considered within the context of cultural capital. Henceforth, central to this study is the inquiry into the potential association between identified and unidentified students' economic and cultural capitals (see., Bicakci, 2020). The relevant arguments on these capitals are presented below.

1.2.1. Critical Systems Theory

In Kantian critical philosophy, the term "critique is not precisely a criticism, but a critical analysis" (Durant, 1933, p. 289). Coming from this philosophical root, *critical systems theory* extends systems theory to include broader research goals such as individual liberation and social justice (Watson & Watson, 2011). In other words, the researchers advocating for social equity

in education criticize systems that are not functioning effectively. For example, it has been argued that “white middle-class parents, policymakers, or conservative think tanks—create, advocate, and promote practices and policies that protect their privilege, reproduce inequality, and retrench social hierarchies” (Aydarova, 2019, p. 33-34). The basis of critical thinking is to investigate systems that are not working well and to identify the causes, not speculatively as in the previous quote, but scientifically. Thus, exploring the individual systems of gifted individuals from low SES systems can provide insights for effective interventions to realize this group's full potential (Ballam, 2009).

In order to begin research on social justice, it is necessary to examine the possible shortcomings. Therefore, Turkey needs to explore potential gaps in its identification system to be ready for the paradigm shift it is aiming for. However, as the body of literature indicates, researchers have not considered socio-economic and contextual variables that significantly influence gifted education, and policies for gifted identification do not consider the impact of cultural or socio-economic differences on student performance (VanTassel-Baska, Johnson, & Avery, 2002; Wyner, Bridgeland, & DiJulio, 2007). Consequently, gifted students from low SES face many challenges, including lower nomination rates and academic support. The disproportionate representation of different SES groups is a long-standing problem in education for underrepresented minorities, and more research is needed to reduce the achievement gap (Plucker & Peters, 2018). The primary objective of this study was to conduct a correlational analysis of both micro and macro systems in order to assess the inclusivity of the identification system, as well as to investigate any potential discrepancies that may exist between national policies and current practices.

1.3. Socioeconomic Status (SES)

Sociology's *functionalist theory* argues that social stratification arises for society to function (Mueller & Parcel, 1981). When examining society's fabric, one can use comparable social and economic indicators to illustrate a functional system's various components. There are some criticisms of elitism in gifted education. However, from the point of view of a functionalist theory, providing individuals with the education they need and enabling them to contribute to the universal system is not a privilege. In this research, SES is defined in such a way as to critically analyze the functioning.

As there are various suggestions, SES can be measured as a latent construct with various composites of indicators such as occupation, education, income, place of residence, or immediate neighborhood (APA Dictionary of Psychology, n.d.; Baker, 2014). However, these indicators can differ depending on the cultural context (Grissom, Redding, & Bleiberg, 2019; Mueller & Parcel, 1981). In its broader sense, SES is frequently defined as access to financial, human, and social capital, with indicators such as income, occupational status, and assets. Therefore, the consideration of household income alone, in monetary terms, may result in the neglect of the influence of the area of residence on education, cognitive development, opportunities, and access to valuable resources. To better understand how SES affects child development, researchers suggest gathering more data on social and cultural capital; and, thus, examining *collective SES* (Bradley & Corwyn, 2002). In other words, a context-based critical understanding might be used for defining the SES effectively. However, there is no agreement on how best to composite the set of indicators. Arguments centered around whether to use a composite or each indicator singly and how best to measure each component (Bradley & Corwyn, 2002). Overall, the perceived household income level is contextualized as economic capital, whereas parental levels of education as cultural capital.

1.3.1. Area of Residence

Current residential areas and the places where individuals spend the majority of their life might provide a contextual framework that effectively illustrates the local influence on identification patterns. It is not unexpected that a significant body of literature indicates that rural areas are insufficient in providing education for gifted students, resulting in a circular causation of lower identification rates for students residing in these areas (Hodges, 2018; Hodges, Tay, Desmet, Ozturk, & Pereira, 2018; Hodges & Gentry, 2021; Rasheed, 2020). Research indicates that poverty, whether at the individual level, school level, or district level, can have negative effects on student outcomes, and consequently, students from low-income families may encounter barriers in being identified for gifted programs (Hamilton et al., 2018). It has also been well-documented that living in low-SES neighborhoods can negatively impact children's well-being, with violence exposure leading to post-traumatic stress disorder (PTSD) symptoms, while social capital and cohesion can promote healthier lifestyles and positive well-being (Bradley & Corwyn, 2002). In Turkey, where internal migration is mostly towards large urban centers, the residential area where most of life is spent is crucial since families with a long history of low SES may lack the cultural capital to offer educational opportunities to their children, even after migrating to large cities (Ross & Mirowsky, 1999). To put it into numbers, around 28% of Turkey's population lived outside of their city of birth, indicating a high level of internal migration mobility as per the 2000 census (Gökhan, 2008). Therefore, due to its contextual role, the area of residence is not treated as a separate indicator but as an indicator of SES.

1.4. Research Questions

1. Is there a nonchance association between being identified as gifted and socioeconomic status (SES), which is indicated by perceived household income, parental level of education, current residence area, and area of residence where most of life is spent?

2. What is the strength of the association between being identified as gifted and SES, which is indicated by perceived household income, parental level of education, current residence area, and area of residence where most of life is spent?

2. METHODOLOGY

2.1. Design

In this correlational study, a chi-square test of independence was utilized as a correlational probe (Huck, 2012). The aim of this research is to investigate the existence of a nonchance association between categorical variables as being and not being identified as gifted and SES. SES is measured as a latent construct by using (a) perceived household income, (b) parental education level, (c) current area of residence, and the area of residence where most of life is spent. In the present study, the chi-square calculated value was converted into an index that estimates the strength of the relationship that exists in the population (Tabachnick & Fidell, 2019). Statistical techniques of Phi (ϕ) and Cramer's measure of association index (ϕ_c) were adroitly employed to compute the measures of associations for each 2x2 and 2x3 contingency tables, respectively (Huck, 2012). A value of $p < .05$ was considered statistically significant.

2.2. Procedure

The data collection process started after obtaining the necessary permissions from the Hacettepe University Institutional Review Board (04.09.2018, 35853172-101.02.02) and the Ministry of National Education (21.11.2018, 81576613/605.01/22350310). Nominal data were categorized in a manner that optimally aligns with the research questions at hand during each contingency table construction process. The identification status of students was objectively determined as the data were collected from Science and Art Centers (SAC). Similarly, the area of residence was objectively determined as the location of data collection was recorded. However, certain variables, such as age, duration of enrollment in SAC, parental level of education, number of siblings enrolled in SAC, and perceived household income level, were self-reported in the data collection form. Furthermore, subjective statements of identification status in institutions other than SAC were objectified by following up with the participants.

2.3. Sample

This study employed a multi-stage sampling method. In the first stage, using convenient sampling, 18 provinces located in seven geographical regions of Turkey were chosen as data collection centers. In the second stage, the institutions for data collection were also chosen through convenience sampling. SACs and the high schools closest to these SACs in terms of location were selected as inclusion criteria. In the final stage, the sample was taken from the selected institutions using convenient sampling with accessibility and voluntary participation criteria, which included obtaining parental informed consent for those under 18 and individual informed consent for those over 18. No specific convenience was sought for the selection of participants, but rather a random participation (e.g., students who had classes at SAC on Thursday when data was collected). In the sample, 345 (50.1%) of the participants were unidentified, and 343 (49.8%) were identified. Out of the total participants, 311 (45.20%) were male, including 137 (39.71%) unidentified males and 174 (50.72%) identified males. The age range of the participants was between 14 and 18 years old, with a mean age of 15.6 years and a standard deviation of 1.1. Among the participants, 95 were aged up to 14 years old (with an unidentified n of 44), 276 were 15 years old (with an unidentified n of 146), 163 were 16 years old (with an unidentified n of 82), 92 were 17 years old (with an unidentified n of 57), and 55 were 18 years old or older (with an unidentified n of 14).

2.4. Measures

To ensure scientific rigor, an analysis was conducted to determine whether bias due to missing values existed for one of the five indicators that had missing values exceeding 5%, specifically in relation to the identification status. I conduct a chi-square test of independence to determine if there is a significant relationship between missing values in the area of residence currently living and the identification status.

Table 1.
Missing Values in SES Indicators

Variables	Identification Status			
	Unidentified		Identified	
	<i>f</i>	%	<i>f</i>	
Perceived household income (see. Table 2)	2	0.58	2	0.57
Maternal level of education (see. Table 3)	2	0.58	2	0.57
Paternal level of education (see. Table 4)	4	1.16	2	0.57
Area of residence currently living (see. Table 4)	12	3.50	10	2.89
Area of residence where most of life is spent (see. Table 4)	22	6.43	25	7.24

The chi-square test was not significant (2×2 ; $\chi^2(2) = .26, p = .64, \phi = .18, p = .64$), and this suggests that missing values for the variable of interest are missing completely at random (MCAR). Tabachnick and Fidell (2019) state that missing values are completely unbiased if the missing data is no more than 5% and the p-value of the MCAR test is not less than .05. Overall, the study used a total of 688 data sets collected from 14 different cities, and missing data for variables in the entire data set can be found in Table 1.

2.4.1. Identification

Based on the two categorizations employed in this study (identified vs. unidentified), enrollment at the Science and Art Center (SAC), which is a nationwide after-school gifted education institution, is used as a criterion for grouping under the “identified as gifted.” The identified group comprises adolescents who scored an IQ index of 130 or higher on the WISC-R test (Kurnaz, 2014; Tarhan & Kılıç, 2014). To put it briefly, “identified” participants underwent formal identification and were subsequently enrolled in the SACs. The cohort of participants in the unidentified group comprises high school students attending formal educational institutions without meeting the IQ-based identification criterion. For example, among the other types of high schools in Turkey, Science High School (Turkish trans., *fen lisesi*) which shares similarities with German Gymnasiums, students, who are admitted solely based on their performance in a national college entrance exam and do not undergo IQ-based identification, were categorized as part of the unidentified group in this study, despite scored at the top 1%.

2.4.2. Socioeconomic Status

As mentioned in the previous section, there are various suggested indicators of SES, such as parental education and household income. For the first, this research obtained information regarding parents' educational background (Table 3). Maternal and paternal level of education was categorized as up to high school, high school, bachelor's degree, and higher. For the second, it should be noted that the perceived SES may vary depending on the cultural context (Grissom et al., 2019; Mueller & Parcel, 1981). Therefore, to account for the diverse economic conditions across different cities of Turkey, avoid numbers that are likely to be affected by economic fluctuation, inflation, or fluctuation in the power of purchase over time, and the role of the immediate economic context on educational opportunities; the *perceived* household income level was used (Table 2).

Table 2.
Student Distribution by Perceived Household Income Levels

Identification Status	Perceived Household Income Level	f	%
Unidentified	Low	15	4.34
	Middle	311	90.14
	High	16	4.63
	Total	342	99.13
Identified	Low	10	2.91
	Middle	284	82.79
	High	47	13.70
	Total	341	99.41

To account for the potential influence of region-specific perception of SES, the area of residence was considered as an indicator of SES rather than as a separate variable (Goodman, Huang, Schafer-Kalkhoff, & Adler, 2007). This decision was made based on the premise that an individual's perception of SES may be influenced by the general SES of the area in which they reside (i.e., looking-glass self; Cooley, 1902; Hoffman, 2020; Mead, 1934/1972). Symbolic interactionism theoretical framework states that the general surrounding perceptions of the individual might shape the perceptions of the individual. This framework combines the systems theory of giftedness with sociology's Chicago pragmatic school (Carter & Fuller, 2016) and suggests that individuals can reflect the general SES of the region in which they live.

Table 3.
Educational Level of Students' Parents

Identification Status	Maternal Level of Education	f	%	Paternal Level of Education	f	%
Unidentified	Up to high school	182	52.75	Up to high school	112	32.46
	High school	91	26.37	High school	114	33.04
	Bachelor's degree and higher	70	20.28	Bachelor's degree and higher	115	33.33
	Total	343	99.42	Total	341	98.84
Identified	Up to high school	39	11.37	Up to high school	29	8.45
	High school	75	21.86	High school	49	14.28
	Bachelor's degree and higher	227	66.18	Bachelor's degree and higher	263	76.67
	Total	341	99.41	Total	341	99.41

2.4.3. Area of Residence

In Turkey, there are seven geographical regions, with the Marmara Region having the highest population of approximately 25 million people and the Eastern Anatolia Region having the lowest population of approximately 6 million people. Turkey has 81 cities, consisting of 30 cities classified as metropolitan areas and 51 as provinces. All 81 cities are further divided into 922 districts, 388 towns, and 18,275 villages. Of these districts, 519 are located in metropolitan areas, and 403 are in provinces (see., <https://www.e-icisleri.gov.tr/Anasayfa/MulkiIdariBolumleri.aspx>). Statistical calculations of homogeneous regions, cities, and provinces in terms of similarity in the economic and social structure were utilized, taking into account regional development indices (Atun et al., 2013; OECD, 2016; Öztürk, 2009). Overall, participants residing in the centers of 31 metropolitan cities and the centers of 51 provinces were classified as "urban," while those living in districts, towns, and villages were classified as "rural" (Table 4). The classification was based on Ministry of Interior Law No. 6360, dated 11/12/2012. Data were collected from SAC's and the high schools closest to SAC's in terms of location.

Table 4.

Distribution of Participants Based on their Current Area of Residence and Residential Area where they Spend Most of their Life

Participant's Distribution by their Current Area of Resident

Identification Status	Residential Areas	f	%
Unidentified	Urban	184	53.33
	Rural	149	43.18
	Total	333	96.52
Identified	Urban	243	70.84
	Rural	90	26.23
	Total	333	97.98

Participant's Distribution by the Residential Area they Spend Most of their Life

Identification Status	Residential Areas	f	%
Unidentified	Urban	185	53.62
	Rural	138	40.00
	Total	323	93.62
Identified	Urban	240	69.92
	Rural	78	22.74
	Total	318	92.71

3. FINDINGS

After examining the possible association between perceived household income level and identification status, I found a significant low to moderate association between the two categorical variables (2×2 ; $\chi^2(2) = 17.48$, $p < .001$, $\phi = .16$, $p < .001$). Specifically, identification was more prevalent among individuals with high perceived household income than those with low or middle perceived household income.

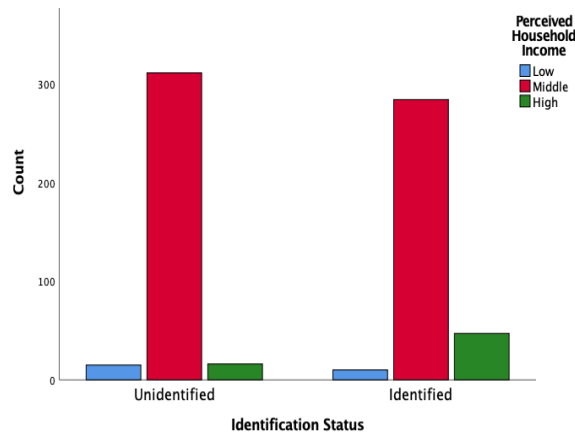


Figure 1. Clustered Bar Chart of Identification Status and Perceived Household Income Variables

Furthermore, the results showed a statistically significant medium to a high positive association between the identification and both maternal level of education (2×3 ; $\chi^2(2) = 177.06$, $p < .001$, $\phi_c = .51$, $p < .001$) and paternal level of education (2×3 ; $\chi^2(2) = 132.73$, $p < .001$, $\phi_c = .44$, $p < .001$). Specifically, identification was more prevalent among individuals whose mothers and fathers had completed a bachelor's degree or higher.

Table 5.
Summary of Chi-Square Tests

	χ^2	ϕ	ϕ_c
Identification (2) x Percieved household income (3)	17.48 ($p < .001$)		.16 ($p < .001$)
Identification (2) x Maternal education (3)	177.06 ($p < .001$)		.51 ($p < .001$)
Identification (2) x Paternal education (3)	132.73 ($p < .001$)		.44 ($p < .001$)
Identification (2) x Current area of residence (2)	22.72 ($p < .001$)	.19 ($p < .001$)	
Identification (2) x Residential area where most of the life is spend (2)	23.75 ($p < .001$)	.19 ($p < .001$)	

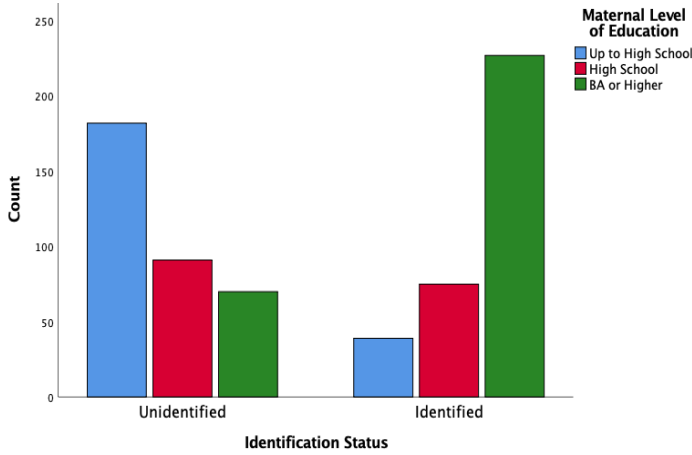


Figure 2. Clustered Bar Chart of Identification Status and Maternal Level of Education Variables

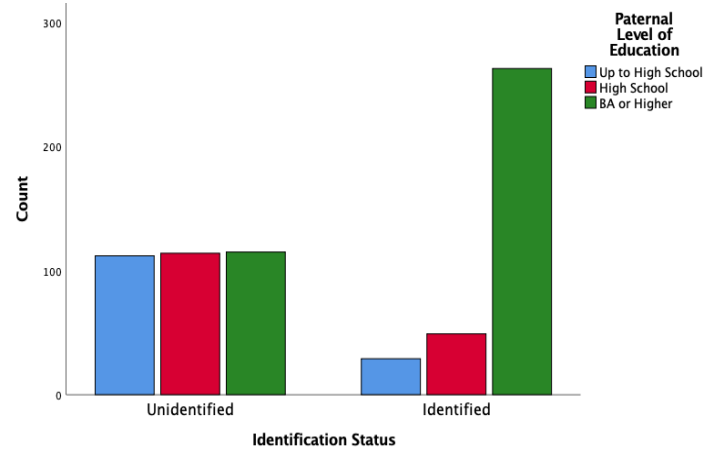


Figure 3. Clustered Bar Chart of Identification Status and Paternal Level of Education Variables

Further analysis between the identification and the area of residence indicated a statistically significant positive low to a medium association (2×2 ; $\chi^2(1) = 22.72, p < .001, \phi = .19, p < .001$). Similarly, a statistically significant positive low to a medium association was observed between the area of residence where most of the life is spent and identification (2×2 ; $\chi^2(1) = 23.75, p < .001, \phi = .19, p < .001$). According to these results, individuals living in urban areas and who spent most of their lives in urban were more likely to be identified as gifted than those in rural areas.

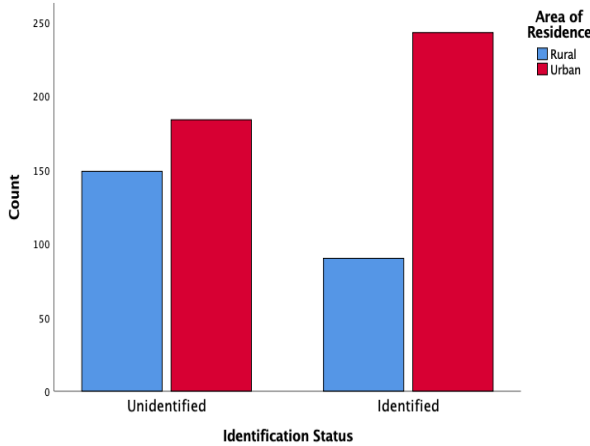


Figure 4. Clustered Bar Chart of Identification Status and Current Area of Residence

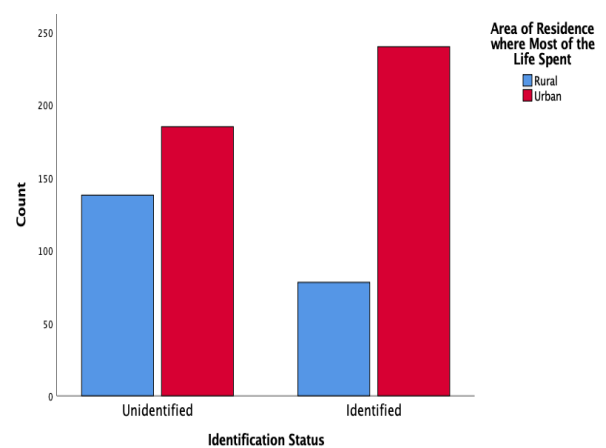


Figure 5. Clustered Bar Chart of Identification Status and Area of Residence where Most of the Life is Spent

A Bonferroni correction was employed with an adjusted alpha level of 0.01 (0.05/5) for each of the five independent Chi-square tests to address the risk of false positive results (Type I errors) due to multiple comparisons. Please refer to Table 5 for a summary of all the Chi-square tests and Table 6 for contingency tables. Other demographical findings are that the average duration of attendance SAC of *identified* participants during data collection (circa. 2019) is 6.75 (standard deviation = 1.5, range 3 -11) years. Overall, 29.15% of the participants attended SACs for five years or less, 15.45% for six years, 14.57% for seven years, 14.86% for eight years, and 17.49% for nine years or more. Only a small percentage of participants' siblings attended SAC ($n = 39$), with 36 (10.49%) of the identified sample having attended compared to only 3 (0.86%) in the unidentified sample.

Table 6.
Counts and Expected Counts for Chi-Square Contingency Tables

Indicators	Categorization	Unidentified		Identified	
		Count	Expected Count	Count	Expected Count
Perceived household income level	Low	15	13	10	13
	Middle	311	298	284	297
	High	16	32	47	32
	Total		342		341
Maternal level of education	Up to high school	182	111	39	110
	High school	91	83	75	83
	Bachelor's and higher	70	149	227	148
	Total		343		341
Paternal level of education	Up to high school	112	71	29	71
	High school	114	82	49	82
	Bachelor's and higher	115	189	263	189
	Total		341		341
Current area of residence	Rural	149	120	90	120
	Urban	184	214	243	216
	Total		333		333
Area of residence where the most of the life is spend	Rural	138	109	185	214
	Urban	78	108	240	211
	Total		323		318

4. CONCLUSION, DISCUSSION, AND RECOMMENDATIONS

This study aimed to explore the association between categorical variables of being identified as gifted and five indicators of socioeconomic status (SES) among a large and relatively representative sample of high school students in Turkey. The study sample consists of 688 high school students, both identified and unidentified as gifted, living in 14 provinces. The sample consisted of two groups: high school students who were identified as gifted based on an IQ score of 130 or higher and those who were not identified using this criterion by a national-wide identification system. After analyzing the correlation between identification status and each SES indicator, which is measured through factors such as perceived income, parental education level, and area of residence (current and where most of life is spent urban/rural residency), the application of chi-square tests of independence revealed that the identification of gifted students was significantly associated with all five indicators of SES than would be expected by chance. The results of statistical techniques of Phi (ϕ) and Cramer's V measure of association index (ϕ_c) of categorical variables indicated that students from overall high SES backgrounds were likely to be identified as gifted compared to students from low SES.

This research examined the traditional identification processes (i.e., linear, one-shot, which uses nomination, screening, and IQ-based identification) used by the nationwide gifted education program and whether they effectively identify or include students from low SES backgrounds. The study also highlights the limitations of traditional identification methods and how they contribute to the underrepresentation of low-income students and students from certain geographical locations in gifted education programs. The study found that identified participants are more likely to come from families with higher perceived income and higher parental education levels, live in urban areas, and spend most of their lives in urban areas compared to the unidentified group. Although Free and Reduced Lunch (FRL) is frequently employed as a proxy for poverty in giftedness research (e.g., Hamilton et al., 2018), Turkey does not have nationwide FRL criteria as it would be used as a proxy for poverty and, thus, low SES. Therefore, I utilized information on the perceived household income, area of residence, and paternal level of education, in composition. These findings suggest that SES factors might play a significant role in the identification gap in gifted education policies and practices in Turkey. Since one of the main features of contemporary identification approaches is their utilization of multiple data sources, various types of data, and identification at different times (Coleman, 2003), all in all, the study has valid grounds to suggest that identification methods that use multiple data sources, various types of data, and identification at different times may be more effective in identifying gifted students from low SES backgrounds than traditional methods, as discussed in the literature (Card & Guiliano, 2016; Peters & McBee, 2019).

According to the most contemporary understandings (e.g., Dai, 2020; Sternberg, 2023), the identification and education of gifted students should strive to address their individual needs and be devoid of any potential biases. However, despite high-income families having access to schools with gifted programs, it remains a persistent predicament that those from low-income families often attend schools without such programs (Hamilton et al., 2018). According to Borland (2005), students from low-income families had a significantly lower probability of participating in gifted programs than their peers from higher-income families - a difference of five times. Additionally, SES introduces a significant bias in nomination, often defined as one of the first steps in identifying gifted individuals for education programs (Hamilton et al., 2018). To prevent the potential loss, contemporary identification models endeavor to widen the socio-economic status spectrum of identified students, highlighting the significance of providing academic opportunities to close the excellence and identification gap. In this study, the participants mostly indicated a perceived middle level of family income. We can explain this with looking-glass-

self. It is theoretically expected that individuals see themselves as average in environments where they do not have economic difficulties (e.g., Carter & Fuller, 2016; Cooley, 1902; Mead, 1934/1972;). The fact that those who perceive themselves to be higher in economic conditions are identified may indicate that they might be students from families with higher income levels, although objective criteria are not used.

Whereas research on the impact of the area of residence on the identification gap is limited to date, Hamilton et al. (2018) found that geographical regions with higher poverty rates had lower percentages of students identified as gifted. This study found a high correlation between the area of residence and identification: where the individual currently resides and where they have spent most of their life. Firstly, I collected data on the area where most of their life is spent, as SACs move to the rural areas later. All students can be nominated for SACs, as they are nationwide, wherever they are located, but it is difficult to commute to these after-school institutions from rural to urban areas since they are established mostly in province centers. In fact, some families move to the urban center when their children are eligible to enroll in SACs. However, the number of SACs, led by the process of transitioning to the new paradigm, in the last three years (2020 - 2023), the number of SACs has increased by nearly 100% (MoNE, 2022). Considering that there are 81 provinces, there are, on average, three SACs per province. However, most of these institutions are located in metropolitan areas such as Istanbul or Ankara. As limitations of traditional identification methods are frequently cited in the literature as contributing to the underrepresentation of low-income students and students from certain geographical locations in gifted programs, this study underlines this issue in Turkey. Nevertheless, it is argued that Turkey is in a paradigm shift (Mammadov, 2019).

Data were collected from institutions representing seven geographical regions of Turkey, with a base in provinces and SACs selected through convenience sampling. In most cases, data for unidentified students were collected in high schools closest to these SACs. Although the findings show that the identified students are more likely to reside in urban areas, their rates may be higher due to the interaction effect of factors such as income level and parental education. More importantly, SACs are recently starting to open in rural areas. In this sample, the average duration of enrollment in SACs is 6.75 years. Considering that the data was collected in 2019, it is unlikely that they were identified in approximately 2013. Indeed, in 2013, there were 66 SACs in a total of 60 provinces (MoNE, 2013). Today (10 years later), there are nearly 300 SACs in all 81 provinces (MoNE, 2022). Therefore, the effect here is as much due to the geographical bias of SACs as it is due to bias from data collection and preference of convenience in sampling. The key point here is that rather than waiting for time to pass and modernization to take SACs to rural areas, students in rural areas should have access to SACs. This might be possible with a renovation.

Replacing traditional approaches with contemporary approaches that aim to address individuals and their environments holistically can improve the identification system and benefit underrepresented groups (Olszewski-Kubilius & Clarenbach, 2012; Plucker & Makel, 2010). For example, Card and Guiliano (2016) found that incorporating modern criteria into the national identification system led to a six-fold increase in identification rates for students from low SES backgrounds and diverse racial identities. Peters and McBee (2019) also observed a significant reduction in the socio-economic bias in identification with the implementation of contemporary and more culturally inclusive identification procedures, suggesting that abandoning traditional approaches and transitioning to contemporary ones can enhance SES sensitivity in identification (Balestrini & Stoeger, 2018; Cortina, Arel, & Smith-Darden, 2017). This will contribute to a chain reaction of positive contributions. As a first ring, for example, typically, gifted students are admitted into educational programs following the identification, where differentiated curricula and support are provided to meet their academic needs that cannot be accommodated in standard general education settings (Grissom et al., 2019). These programs could benefit students and their families academically and emotionally (Rogers, 2007). Adding another ring to this chain of benefits, Card and Guiliano (2014) contend that such programs' advantages will benefit students of low socio-economic status more significantly than their already "privileged" counterparts. Discussing these findings from a critical systems theory is necessary for these benefits. Whereas equality is defined as a constitutional right in Turkey, it is clear evidence of an identification gap that findings of this research indicated that students from higher SES backgrounds are more likely to be identified. However, this is not a problem specific to Turkey, but there has been no such finding so far; these findings are simply a recognition that a widely existing problem is also present in Turkey. Modernization (or, to put it in a more epistemologically correct nomenclature, post-modernization) in gifted education is self-correcting, that is to say, modernizing itself over time. Therefore, identification methods could integrate modern practices into their stages, allowing for updates or even a complete restructuring.

To achieve meaningful change, it is important to analyze the correct needs and make necessary modifications in the right areas. I found in this research that there is an SES bias in identification. Transitions in education policy are closely tied to the definition of giftedness, best practices for identifying gifted students through research and labeling gifted behaviors in underrepresented groups (Crawford et al., 2019). Therefore, simply changing, for example, the most visible and erroneous parts without addressing the system's underlying components may only result in a superficial, cosmetic modernization at best. That said, according to Renzulli (2004), although multiple criteria may be used during the screening stage of gifted identification, the further stages are mainly based on the results of individual intelligence tests, which have been criticized for not being a contemporary approach. This has also been the case for Turkey's nationwide governmental after-school program for gifted students, SACs (see., Kurnaz, 2014; Tarhan & Kılıç, 2014). As pointed out in the literature, overcoming this bias in SES requires contemporary transformations in identification paradigms, which is the aim of Turkey's transition (Card & Guiliano, 2016; Peters & McBee, 2019). One of the first of these steps could be the transition from IQ-based identification to identification models that might reduce SES bias.

From a systems perspective, the environment, family structure, and available economic, social, or cultural capitals play an important role in unlocking an individual's potential (Ziegler & Stoeger, 2017). However, in countries like Turkey, where there is a national gifted education system but no unity among definitions, approaches, models, and theories for identification, assessment, and inclusion (Mammadov, 2019), many sub-systems can affect an individual's talent development (Ziegler et al., 2018). For example, even if an egalitarian approach is adopted at the national level (In Turkey, it is guaranteed by the constitution), identified students may still be likely to come from high SES due to their immediate ecological context (e.g., educational opportunities and resources provided by the family). On the other hand, "on average, children from low-SES families attain lower levels of scholastic achievement, profit less from similar educational measures, and choose less prestigious school tracks and university majors" (Ziegler, Chandler, Vialle, & Stoeger, 2017, p. 312). Therefore, the elimination of SES bias will not be achieved by financial measures alone. In addition to economic capital, cultural capital also needs to be cultivated, as evidenced by the high correlation between higher levels of parental education and identification. Rather than changing the level of parents' education, we should look at the underlying framework of cultural capital that the systems theory proposes; "value systems, thinking patterns, models, and the like that can facilitate-or hinder-the attainment of learning and educational goals" (Ziegler & Stoeger, 2017, p. 188). A well-educated family (which is generally defined as having more exposure to school, see., Ross & Mirowsky 1999) is an important resource for guiding students more consciously in accessing educational opportunities, as well as for teaching students efficacy skills such as problem-solving skills, self-efficacy, a sense of personal control, and greater motivation and effort to solve problems (Baker, 2014; Bicakci & Baloglu, 2021; Mirowsky & Ross, 2003; Peters & Engerrand, 2016; Ross & Mirowsky, 2010). Extensive research suggests that limited access to resources, including vocabulary exposure, learning materials, parental spending, and time for academic activities, places low-income students at a disadvantage in developing academic skills and achieving academic success compared to their higher-income peers (Hamilton et al., 2018). Moreover, to avoid the negative effects of the label of giftedness and alleviate the individual burden of giftedness, it would be more in line with a systems approach to label the *learning pathway* rather than the *individual* (Ziegler & Bicakci, 2023). Nevertheless, cultural resources should be enriched for the family, and the teachers who nominate students should be evaluated within the system. For example, teachers can nominate students with their own middle-class values (Morgan, 2019; Ross & Mirowsky, 1999). All in all, although socioeconomic status bias has been assessed in the context of economic and cultural capitals, if there is a problem, the whole system should be examined (Welsch & Zimmer, 2018).

If we think of critical systems theory and functionalist theory together for gifted education, a possible socio-economic bias could mean that poor students are underrepresented in programs due to the hegemony of the upper classes, as well as a malfunctioning system that does not provide equal opportunities. From a pragmatist point of view, our main theoretical framework could be to identify the parts that are malfunctioning in particular and universal (micro and macro) systems and make them work again. This understanding is not a criticism of elitism or an understanding that "we should educate the gifted children to serve society." Borland's (2005) idea of "gifted education without gifted children" may help us here. To put also in a paradoxical way, we must strive "*to give gifted students privilege without elitism.*" All in all, from the broadest perspective, a shift from the modernist and post-structuralist paradigm in which gifted education is currently situated could bring fresh insights.

The research has some limitations. Firstly, it is important to note that there were limited numbers of identified students in some provinces because SACs in those provinces were relatively new and did not yet have high school-level students. This is because, on average, Science and Art Centers (SAC) need to be at least five to eight years old to have students in high school, as they identify students at the elementary school level. Therefore, the following should also be kept in mind: The first SAC was opened in 1995. Since then, SACs have expanded into rural areas, especially in recent years (after ca. 2017, along with the paradigm shift), starting with large cities offering high population and economic opportunities. The MoNE's official announcement explicitly states that the expansion aims to "increase access," indicating a focus on providing more opportunities for students to participate in educational programs (%323 increase in the numbers of SAC's the last 10 years). Due to high internal migration from rural to urban, and the relatively late expansion of SAC into rural areas, it is unlikely that students identified in the last 5 to 10 years would have entered a gifted education system, even if they are currently living in urban areas.

Since the Chi-square test can only determine whether there is a relationship between two variables, but it cannot establish causality, even if there is a strong association is discovered in this research, one cannot say that a high SES is a ticket to being identified. A correlation analysis was conducted, not a prediction. The study's population included both IQ-based (with WISC-R) identified and unidentified high school students living in Turkey, with the assumption that voluntary participation did not introduce any biases. The interpretations of the findings were limited to the results of the nonparametric tests used in the study. The data are classified as rural vs. urban based on the development index, the official administrative classification of the ministry (metropolitan, province, district, town, and village), and economic conditions. To increase generalizability, further research could focus on statistical regions within Turkey. Needless to say, further research is needed to explore the complex interplay between these factors and their impact on gifted identification, particularly for students from low SES backgrounds.

Research and Publication Ethics Statement

This research article is conceptually similar but can stand alone as independent research of the overarching project carried out as a master's thesis in the Hacettepe University Institute of Educational Sciences Gifted Education Master's Program. This thesis project was found ethically appropriate with its Hacettepe University Institutional Review Board decision dated 04.09.2018 and numbered 35853172-101.02.02. The following ethical code articles were considered when preparing the publication: American Psychological Association (APA) Ethical Principles of Psychologists and Code of Conduct, 2017, articles 8.12.(a), 8.12.(b), and 8.12.(c), American Educational Research Association (AERA) Code of Ethics, 2011, article 15.(d), and lastly, the regulations of APA Publication Manual, Seventh Edition, Section 12.1 (adapting a dissertation or thesis into a journal article). Therefore, I am obligated to acknowledge the advisor's minor feedback on the overall master's thesis project.

Contribution Rates of Authors to the Article

Since this is a single-author research paper, the "Contribution Rates of Authors" concept would not apply.

Statement of Interest

I hereby declare that I have no conflict of interest in the publication of this research article. I have received no funding or support from any organization or institution that would benefit from the publication of this work. I have no financial or personal relationships that could bias my work or the interpretation of the results presented in this article. This research was conducted to advance knowledge in the field and contribute to scientific discourse.

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