

EARLY SCHOOL DROPOUTS IN TÜRKİYE: THE INFLUENCE OF PERSONAL AND FAMILY CHARACTERISTICS

TÜRKİYE'DE ERKEN OKUL TERKİ: BİREYSEL VE AİLEVİ ÖZELLİKLERİN ETKİSİ

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Abstract

This study presents evidence on how individual and family factors affect the probability of educational dropout behavior in Türkiye by utilizing data from Household Labor Force Survey (HLFS) provided by the Turkish Statistical Institute (TurkStat) for the period 2004–2023. A probit model is employed to analyze the factors determining the school dropout probability of children aged 7-18. The results indicate that the impact of age on dropout probability is more pronounced for boys. As education level is increased, dropout probability is found to decrease in line with the findings in the literature. An increase in parental education results in a decrease in the dropout probability, while the father's education level has a stronger impact on dropout rates than the mother's education level in both 2013 and 2023. Children in co-parenting households are less likely to leave school compared to those in single-parent households in all years. The influence of region on dropout probability is stronger for girls than for boys supporting the presence of a patriarchal social structure, and a conservative family environment towards girls' schooling across regions.

Keywords: School Dropout, Early School Leaving, Educational Level, Probit Model, Türkiye.

Jel Codes: J01, J12, J13, J16, I21.

Öz

Bu çalışma, 2004-2023 dönemi için Türkiye İstatistik Kurumu (TÜİK) tarafından sağlanan Hanehalkı İşgücü Anketi (HİA) verilerini kullanarak bireysel ve ailevi faktörlerin eğitimden terk davranışının olasılığını nasıl etkilediğine dair kanıtlar sunmaktadır. Çalışmada, 7-18 yaş arasındaki çocukların okul terk olasılıklarını belirleyen faktörleri analiz etmek için probit modeli kullanılmıştır. Sonuçlar, yaşın okul terk olasılığı üzerindeki etkisinin erkeklerde daha belirgin olduğunu göstermektedir. Eğitim seviyesi arttıkça,

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okul terk olasılığının literatürdeki bulgularla uyumlu olarak azaldığı bulunmuştur. Ebeveyn eğitiminin artması, okul terk olasılığında bir azalmaya yol açarken, babanın eğitim seviyesinin, hem 2013 hem de 2023 yıllarında anne eğitim seviyesinden daha güçlü bir etkisi olduğu tespit edilmiştir. Ebeveynlerin bir arada yaşadığı hanelerdeki çocukların, tek ebeveynli hanelerdeki çocuklara kıyasla her yıl okuldan daha az ayrılma eğiliminde oldukları gözlenmiştir. Bölgenin okul terk olasılığı üzerindeki etkisi, kızlar için erkeklere göre daha güçlüdür. Bu durum, bölgesel düzeyde kızların eğitimi konusunda patriarkal bir toplumsal yapı ve muhafazakâr bir aile ortamının varlığını desteklemektedir.

Anahtar Kelimeler: Okul Terki, Erken Okuldan Ayrılma, Eğitim Seviyesi, Probit modeli, Türkiye.

Jel Kodları: J01, J12, J13, J16, I21.

1. Introduction

The accumulation of human capital has progressively become a focal point in discussions and policy decisions concerning national economic performance. Education is widely regarded as a pivotal instrument in mitigating poverty and fostering economic growth (Ananga, 2011; Ghignoni, 2015). Individuals who invest in education, particularly tertiary education, enjoy enhanced employment prospects, a lower likelihood of unemployment, and higher lifetime earnings in comparison to those who have pursued fewer years of education. However, millions of children still drop out of school at an alarmingly young age, shifting the focus from simply enrolling them to ensuring their continued participation and retention. School dropout, which refers to a student's departure from school before graduating or completing their program, continues to be a significant educational challenge in many countries.

The phenomenon of dropout is the result of a prolonged process of disengagement from school, one that begins well before the student officially stops attending (Barrington and Hendricks, 1989; Ensminger and Slusarcick, 1992). The term school dropout has yet to be universally defined by researchers in a way that garners widespread agreement. While one might define a school dropout as an individual who departs from school before completing their education, such a definition oversimplifies the complexity of the phenomenon, especially within a highly stratified education system. Furthermore, various administrative bodies may adopt divergent definitions of what constitutes a dropout, and these definitions may differ from those employed by social scientists in large-scale social surveys and other research methodologies.

School dropout is better understood as a process rather than a one-time event. It represents the culmination of a prolonged pattern of academic disengagement. It refers to the act of leaving education without obtaining a minimum credential, typically a high school diploma or equivalent. In its definition of dropout, UNESCO (2005) introduces the term "early school-leaving," contending that it refers to exiting the formal education system without completing the cycle or program in which the individual was initially enrolled. According to some researchers, school dropout is defined as a student's failure to complete the level of education they are enrolled in, due to range of factors (Dekkers and Claassen, 2001). The Turkish Statistical Institute (TÜİK) defines "dropout" within the educational context as students who leave the education system before completing the level in which they were enrolled. This generally pertains to individuals who do not finish their primary, secondary,

or higher education, thereby exiting the system prior to graduation. TÜİK monitors dropout rates as part of its educational statistics, aiming to track trends, identify vulnerable populations, and guide the formulation of educational policies.

Dropout is inherently a school-related phenomenon; however, both the school and the student are deeply interconnected with the broader society and its culture. However, dropout is increasingly being viewed as a social issue that extends well beyond the confines of the school. Therefore, understanding the dynamics of dropout necessitates an examination that extends beyond the confines of the school environment. School dropouts represent a significant challenge for the individual, the educational institution, and society as a whole (Christle et al., 2007; Rumberger and Lim, 2008; Makarova and Birman, 2015). Dropping out of school often results in underemployment and a diminished quality of life for young individuals (Dowrick, 2003; Hawkins et al., 2013). Dropouts face higher unemployment rates and earn less than their high school graduate counterparts. (Rumberger, 1987; Arulampalam et al., 2005). Dropouts are also more likely than graduates to become reliant on welfare, engage in criminal activities, and face health and emotional challenges (Rumberger, 1987). Additionally, they are more prone to depression and other mental health challenges (Liem et al., 2010; Rumberger, 2011). Moreover, when dropouts are largely influenced by socioeconomic family backgrounds, they tend to exacerbate inequalities in distribution.

A range of interconnected individual, family, school, social, cultural, socioeconomic, and institutional factors are believed to influence the decision to drop out (Farah and Upadhyay, 2017). Individual factors including ethnicity, race, gender, age, and academic performance have been recognized as key variables associated with dropout behavior (Warren and Lee, 2003). The older a student becomes, the more likely they are to drop out. Males are slightly more likely than females to drop out of school to seek employment or work full-time because of financial struggles (Ball et al., 2002; Hanafin and Lynch, 2002; Tenbusch, 2016). Low academic achievement is the most consistently recognized predictor of school dropout or continued enrollment (Arslan and Peker, 2023). Family related characteristics are one of the recognized factors affecting educational attainment and are thought to play a crucial role in a child's decision to either stay in school or drop out. Family socioeconomic status (SES) is the most commonly cited factor predictive of school dropout. Students from lower SES families facing structural disadvantages such as low-income parents, parents with limited education, single-parent or female-headed households, large family sizes, and a history of dropouts within the family are significantly more likely to leave school. A parent's educational level has a significant influence on whether a student drops out. When the parent's educational level is low, there is a greater chance for children to drop out of school. Moreover, household composition, structure, interactions, and support are critical factors in student retention and completion. A stable family structure, particularly during the early years of a child's life, is essential. The level of parental education and the presence of single-parent households appear to be intricately connected to the family's income. Moreover, parenting style is thought to influence academic achievement by fostering the development of autonomy and maturity. Parents are not the only influential figures in academic decisions; siblings also play a significant role, often serving as role models. A robust correlation exists between dropping out of school and having a sibling who has also discontinued their education.

Evidence also indicates that peer relationships and school-related connections are closely linked to school completion (Arslan and Peker, 2023; Aşar et al., 2024). Additionally, the general school climate can play a crucial role in a student's decision to drop out (Tsolou and Babalis, 2020). Community characteristics can also act as predictors of fluctuations in school dropout rates. Dropout rates are higher in communities with a greater percentage of female-headed households and adult dropouts, but lower in communities with a higher percentage of adult college graduates. Employment opportunities within the community also influence the decisions of students. Dropout rates also vary significantly by region, with higher rates observed in urban areas compared to suburban and rural areas (Ekstrom et al., 1986; Brennan and Anderson, 1990). Any form of child labor exerts pressure on the child's time available for schooling. When children balance work and school, it often results in irregular attendance. Child labor in agriculture is often seasonal, which conflicts with school hours and may result in seasonal withdrawal or dropout. Such dropouts may start as temporary, but they often lead to a more permanent departure from school.

The issue of dropping out, which predominantly affects minority and disadvantaged youth, is particularly prevalent in developing countries with a high number of children from impoverished socioeconomic backgrounds. School dropout remains a significant educational and social concern in Türkiye for educators, policymakers, and the public, as it does in many other countries. According to HLFS data, dropping out of school is 10.76% in the age range of 7-18 in Türkiye in 2023. The ratio is 10.22% for females and it is 11.26% for males. Eurostat refers to early school leavers as individuals aged 18 to 24 who have completed, at most, lower secondary education and are no longer enrolled in any form of education or training. Dropout rates among younger students tend to be lower, largely because education remains compulsory in most OECD and EU countries until at least the age of 16. According to EUROSTAT (2023), 9.6% of individuals aged 18–24 in EU member states were early leavers from education and training. According to UNESCO (2019), the share of out-of-school students is 15.5% in North Africa and Western Asia, 21.5% in Southern Asia, and 31.2% in Sub-Saharan Africa. Gender is a significant factor contributing to school dropout in Türkiye, with its impact being particularly pronounced among female students, except for the last year of analysis. A conservative point of view, along with patriarchal family beliefs and practices, poses significant barriers to girls' education. These include concerns about preserving the expectation for girls to contribute labor at home, a preference for religious education, and the occurrence of early marriages. These factors appear to be major impediments to education, with their impact being independent of macro-structural and family background variables. (Rankin and Ayaç, 2006; İlhan Tunç, 2009; Caner et al., 2016)

Before 1997, Türkiye's education system adhered to a 5+3+3 structure. This system included 5 years of compulsory primary education, 3 years of junior high school, and 3 years of high school. After 1997, the system underwent significant reform with the introduction of an 8-year compulsory education policy. This reform unified primary and junior high school into a single stage, consisting of 8 consecutive years of mandatory education. The most significant change since the expansion of compulsory education in 1997 occurred in 2012. Turkey's education system adopted the 4+4+4 model in 2012 expanding compulsory education to 12 years, organized into three stages: four years

of primary education, four years of secondary education, and four years of high school. With the expansion of compulsory education to 12 years, the objective was to increase the school enrollment rate. This new law requires that children must begin primary school at the age of 6. The government established this new law with the belief that starting at age 6 ensures children embark on their educational journey early, emphasizing the development of a strong foundation in literacy, numeracy, and other essential skills. It is also argued that this new system would be more flexible and better able to address the varied needs and preferences of families and children.

The majority of research on dropout has been carried out in highly developed countries, with significantly less known about the situation in developing countries with a large population of disadvantaged children from low socioeconomic backgrounds. Therefore, it is essential to deepen our understanding of the factors that drive the decision to drop out of school in developing countries such as Türkiye. The primary aim of the study is to contribute to the limited body of literature on the dropout rates in developing countries, which still fall short of the standards seen in developed countries. While most studies on school dropout in Türkiye primarily focus on education policies, school environments, and teaching quality as the main factors influencing dropout rates, individual and family dynamics are often not explored in sufficient detail. Additionally, these studies are outdated, lacking long-term perspectives and comprehensive datasets. Therefore, there is a need for longitudinal studies that provide deeper insights. As a second objective, this paper aims to address this gap in the literature.

This paper presents evidence on how individual and family factors affects the probability of educational dropout behavior in Türkiye by utilizing data from Household Labor Force Survey (HLFS) provided by Turkish Statistical Institute (TurkStat) for the period 2004–2023. The study aims to deepen our understanding of the factors influencing school dropouts in developing countries like Türkiye, offering valuable insights into the origins of dropouts that go beyond what is currently known from developed countries. It adds to the existing literature by examining the individual and household characteristics of those experiencing dropout in a developing country with a high prevalence of educational dropout rate.

The paper is organized as follows. The next section presents the literature review. The third section describes the data, where the subsequent section encompasses the econometric model. The fifth section presents the findings of the study, while the final section draws some conclusions.

2. Related Literature

In the past twenty years, numerous studies have sought to enhance the comprehension of students vulnerable to dropping out of school. These investigations primarily focus on personal, family, and school related factors. Studies focusing on the first two determinants of the issue based on the attention given in this paper are discussed here. At the individual level, research has identified cognitive, emotional, and behavioral traits linked to dropout. Among these, low educational performance stands out as a significant cognitive factor commonly noted in dropout studies (Rumberger, 1995;

O'Connell and Sheikh, 2009; Wood et al., 2017). Behavior-oriented concerns are recognized as one of the most critical risk factors for school dropout (Jimerson et al., 2002; Fortin et al., 2006; Bridgeland et al., 2006; Hickman et al., 2008). Furthermore, it is argued that females often drop out of school for reasons like caring for siblings, which are influenced by both gender norms and economic factors (Ramañaik et al., 2018). Additionally, adolescent pregnancy and early marriage can lead to female students discontinuing their education (Psaki, 2016). Age is significantly linked to dropout rates, even when accounting for prior grade repetition. The older a student is when they begin high school, the higher the likelihood of them dropping out (Neild and Furstenberg, 2008).

Parental background is among the foremost extensively explored factors, and it is believed to have a significant impact on a choice to either remain in school or drop out. Family SES built upon several indicators of a family's economic and human assets, including parents' employment and occupational status, education, and income, is the most widely recognized determinant of school dropout (Dalton et al., 2009; Osgood et al., 2010; Rumberger, 2011; Tenbusch, 2016). Higher parental income has been said to increase the ability of a family to offer more resources for assistance in their child's schooling, such as access to more prestigious schools, private lessons, and additional educational support at home (Cardoso and Verner, 2007; Braun and Clarke, 2013; Chenge et al., 2017). Children tend to perform better in school when their parents have a higher level of education (Worswick, 2001; Bynner and Joshi, 2002; Chevalier et al., 2005; Lund, 2009). Furthermore, numerous studies have highlighted the association between a family's social position and background, as well as the influence of children's gender and the resulting effects on academic outcomes. (Ball et al., 2002; Hanafin and Lynch, 2002; Tenbusch, 2016). In addition, the dynamic between adolescents and their parents has been mentioned as a crucial determinant, with dysfunctional parent-teenager relationships emerging as a key indicator of dropout (Battin-Pearson et al., 2000; Roberts et al., 2013; Fortin et al., 2013; Wang and Fredricks, 2014). Empirical evidence also demonstrates that children from single-parent homes are more inclined to drop out (Bridgeland et al., 2006). Overcrowded households and additional responsibilities, such as caring for younger siblings, may also contribute to an increased likelihood of dropout (Bridgeland, 2010; Yadav et al., 2010).

In line with existing literature, much of the research in Türkiye examines the relationship between individual, family and school related characteristics and dropout. Özer (1991) suggests that the increased dropout tendencies among male students are linked to their higher likelihood of securing income-generating jobs. Additionally, students holding jobs outside school, having friends who have dropped out, exhibiting socially disruptive actions and feeling alienated from school are more prone to dropping out. According to Zorbaz (2018), students who perceive their environment as safe, receive strong academic monitoring, demonstrate high academic dedication and have parental support in their education are less likely to drop out, while those without these factors face an increased risk of dropout. Müftü (2001) notes that for traditional reasons, rural households are hesitant to Enroll their daughters in co-educational schools, leading to girls being excluded from basic education by the fourth grade. According to Bakış et al. (2009), conservative value judgments within traditional relationships influence the perception that girls are more suited to household responsibilities over academic ones, which has a negative impact on their schooling. Similarly, İlhan Tunç (2009) emphasized that

economic factors, a male-dominated social structure, and a traditional family environment are major barriers to girls' education. Kirdar et al. (2016) examine the effects of the 1997 legislation on 8-year compulsory education on the gender gap in education and it significantly reduced the disparity in educational achievement between urban and rural areas, but had no impact on the gender disparity. Caner et al. (2016) assert that cultural prejudice against girls' education is a key factor leading to their limited educational achievement in Türkiye. Küçüker (2019) argues the schooling of female students is often halted, resulting from a lack of self-assurance in their surroundings, conservatism, poverty, and academic struggles. Zengin (2021) finds that male students, based on data from public high school students in the central districts of Mersin, are at greater risk of leaving school and engaging in disruptive behavior. All of these studies reveal a prevalent gender effect in dropout behavior for Türkiye.

Karacabey and Boyacı (2018) identify the causes leading to dropout among secondary education students in Şanlıurfa and suggest that participants dropped out due to financial difficulties, academic failure, absenteeism, enrollment in open education, family issues, dislike of school, conflicts with educators and school leaders, preparation for university entry exams, health issues, marriage, and the belief that education was unimportant, immigration, the need to care for sick family members and sanctions. Boyacı (2019), using the Family Structure Survey data in 2016, reveals that marriage, employment, rural living, and residing away from One's father or in a family with separated parents are the key socio-demographic factors contributing to school dropout. Koc et al. (2020) examine the reasons and implications of dropout from an ecological view and conclude that adjustment issues at the personal level, parents, educators, and economic factors at the individual level, and gender at the societal level are the factors contributing to dropout. Almış and Karakütük (2021), using data from the 2011, 2003, and 2016 Household Budget Survey, find that the predictive effect of disability status has increased over time. However, other variables, including factors like parental education, household size, and yearly income per person, remain key indicators, although their impact has decreased over the years. Korumaz and Ekşioğlu (2022) conclude that individual problems are the most frequently mentioned issues encountered by participants at school, while economic factors are identified as the primary reasons behind the students' decision to drop out in vocational and technical education. Kirdar et al. (2023), using data from the 2018 Turkey Demographic and Health Survey, found that the disparity between natives and refugees completely disappears for both boys and girls, suggesting successful inclusion of refugee children in schools, particularly among early arrivals. Arslan and Peker (2023) find that low academic achievement, grade repetition, absenteeism, financial difficulties, employment, lack of motivation, apathy, negative behaviors, association with a destructive peer group, unfavorable social environments, preventive issues, peer abuse, differing professional goals, and harmful influences are the causes for dropout. Avşar et al. (2024) develop a dropout risk scale for secondary school student dropouts and find that factors such as peer bullying, low family socioeconomic status, disinterest in education, familial pressure to leave school, unjust punishments by administrative staff at school, and insufficient school resources contribute to the reasons for dropping out according to students. Karacan Ozdemir et al. (2024) argue predictive factors for enrollment in open high school, both related to the pandemic and not, the benefits and

drawbacks of the transition, the pandemic's impact on the continuity of academic education, Core competencies for open high school, and approaches to diminish such preferences.

Studies by Smits and Gündüz Hoşgör (2006), Arslan and Balkıs (2014), and Çalış and Erbay (2021) focus on the impact of family characteristics on school dropout. Smits and Gündüz Hoşgör (2006) reveal that the mother's traditional gender role attitudes decrease the likelihood of girls receiving secondary education. Çalış and Erbay (2021) report that students' perceptions of family functioning differ based on factors such as the maternal employment, average academic performance, school attitudes, family educational support, and student-family alignment on educational goals. Finally, Eraslan Yalçın and Gülseçen (2023) and Eranıl (2024) offer comprehensive literature reviews on the influences leading to school dropout and its implications.

3. Data

We utilize microdata from the HLFS provided by TurkStat spanning the years 2004 to 2023. Our analysis focuses on children aged 7 to 18 who are not enrolled in any educational institution. However, between 2014 and 2019, children under the age of 15 were excluded from the survey. To maintain consistency, we omit this six-year period from the econometric analysis.

Table 1 below shows the descriptive statistics regarding the school dropout ratios among 7-18 years old children. The school dropout ratio has decreased from 21.11 % in 2004 to 9.73 % in 2013 and then increased back to 10.76 % in 2023. One can notice that dropout ratio is significantly higher among girls at the beginning of the analyzed period. However, the gap between girls and boys diminishes within time while the dropout ratio of males becomes higher than that of girls in the last year. It must be noted that the dropout ratio for girls has decreased from 24.08 % in 2004 to 11.11% in 2013 and then declined further to 10.22 % in 2023. However, for boys, dropout ratio sharply declines in the first ten years of analyzed period and then increases in the second ten years.

The highest dropout ratios are observed in three regions of East Anatolia in all years and the region with lowest dropout ratio is East Marmara in 2004, and East Black Sea in 2023, whereas it is West Anatolia in 2013. Also, it must be noted that the disparity between regions has increased in the first half of the analyzed period and then declined in the second half.

There is an obvious inverse relationship between parents' education levels and children's dropout ratio and the effect is stronger for mother's education level. We observe lower dropout ratios in families with parents who have decent jobs compared with those with non-decent employees. For instance, dropout ratio of children whose mothers are non-decent employee is 21.65 %, whereas the ratio is only 9.85 % for whose mothers are decent employees in 2004. As observed in parental education level-dropout ratio relationship, mother's decent employment has stronger effect in decreasing the dropout ratio of children. Finally, regarding the family type-dropout ratio relationship, the data shows that the highest dropout ratios are observed in single-dad households, followed by single-mom households, whereas the lowest ratios are observed in co-parenting families. Also, it must be noted that the drop ratios across family types converge within the analyzed period.

Table 1: School Dropout Ratios

	2004	2013	2023
Last Education			
Literate but No Diploma	22.14	10.24	11.36
Primary School	1.12	0.43	0.60
Secondary School	30.45	18.38	20.43
Gender			
Female	24.08	11.11	10.22
Male	18.32	8.35	11.26
Region			
Istanbul	16.64	8.98	8.30
West Marmara	17.36	7.48	8.63
Aegean	18.82	9.73	9.32
East Marmara	15.59	8.3	7.92
West Anatolia	18.45	8.18	10.32
Mediterranean	19.57	9.94	9.82
Middle Anatolia	21.82	9.85	9.23
West Black Sea	19.5	10.03	9.41
East Black Sea	19.59	9.28	7.19
North East Anatolia	29.51	15.85	12.11
Middle East Anatolia	30.3	18.63	13.88
South East Anatolia	29.17	17.03	16.81
Family Characteristics			
Mother's Education Level			
Literate but No Diploma	40.93	21.11	18.81
Primary School	20.98	9.38	12.75
Secondary School	7.58	4.20	5.72
High School	6.93	3.10	5.60
Vocational High School	5.14	2.85	5.24
2 Years College			4.22
University			3.74
University and Higher	3.16	2.17	
Master or PhD			2.65
Father's Education Level			
Literate but No Diploma	37.09	26.58	22.92
Primary School	20.96	13.01	15.32
Secondary School	12.11	7.82	8.12
High School	9.87	5.68	6.14
Vocational High School	7.02	3.61	5.29
2 Years College			4.29
University			3.79
University and Higher	6.08	3.00	
Master or PhD			1.94
Parents' Decent Employment Situation			

Mother Non-Decent Employee	21.65	9.89	11.56
Mother Decent Employee	9.85	6.40	7.07
Father Non-Decent Employee	26.95	10.56	14.99
Father Decent Employee	13.91	8.06	7.97
Family Type			
Single Dad Family	28.28	18.11	15.58
Single Mom Family	20.71	12.69	12.58
Co-parenting	17.33	9.45	10.59
Total	21.11	9.73	10.76

Source: Author's own calculations using HLF5 2004, 2013, and 2023.

4. Model

We apply a probit model to analyze the factors determining the school dropout probability of children aged 7-18. Age 7 is chosen as the lower threshold. Although the mandatory age for commencing primary school was set at 6 years old starting in 2012, in practice, the majority of families did not enroll their children at that age. Therefore, it would be misleading to incorporate the age of 6 as the lower limit into the analysis. Age 18 is chosen as the upper threshold since it is the average age for high school graduation. It is not often very easy to determine whether an individual is a dropout when they are older than the age of 18 because they might be preparing for university education on their own or they may do so by attending a course. In this case, the former one would be counted as a dropout although in fact he/she is not. Thus, age 18 is chosen as the upper age limit for the clarity.

A child is defined as a dropout if he/she is not enrolled in any formal education institution. We have two categories of explanatory variables: individual and family characteristics. As individual characteristics, we have age, gender, education level (expressed as the last school graduated from) and region (at Nuts-1 level). As family characteristics, we have income per head in the household, age difference with mother, mother's and father's education levels, mother's and father's decent employment status, and family type (single dad/single mom/co-parenting). While the literature emphasizes the role of school-related variables such as school quality, teacher qualifications, class size, physical infrastructure, or peer relations on dropout behavior, the dataset used in the analysis does not include information on school or environmental characteristics. As a result, the effects of school-level factors could not be incorporated into the analysis. This represents rather a limitation of the study and should be considered when interpreting the findings.

The probit model is:

$$\begin{aligned}
 P(\text{Dropout})_i = & \alpha_0 + \alpha_1 \text{age}_i + \alpha_2 \text{IncomePerHead}_i + \alpha_3 \text{AgeDifMother}_i \\
 & + D_1 \text{LastEducation}_i + D_2 \text{Region}_i + D_3 \text{Mother'sEducation}_i \\
 & + D_4 \text{Father'sEducation}_i + D_5 \text{Mother'sDecentEmp}_i \\
 & + D_6 \text{Father'sDecentEmp}_i + D_7 \text{FamilyType}_i + D_8 \text{Gender}_i + \varepsilon_i
 \end{aligned}$$

We first run this model for a pooled sample and then for the male and female samples separately after excluding the gender dummy. We also run the logit version of this model for robustness check in order to compare coefficients and signs. All regression results show the marginal effects.

Regarding age, we expect a positive coefficient sign since older children are more likely to dropout as they are more likely to enter the labor force and more likely to quit school because of many socioeconomic and psychological factors. As for gender, there is no certain expectation for the coefficient sign. In one hand, because of traditional pressures on women and early marriage cases, one can expect a positive sign for girls. On the other hand, since males are regarded as the primary workforce, one can expect a positive sign for boys also. Thus, the expectation for signs of gender is inconclusive.

South East Anatolia, being the less developed region with the highest share of agriculture in employment, is chosen as the base category for the region dummy. It is plausible to expect a higher dropout ratio for the less developed regions since children, besides women, are seen as the main sources of unpaid family workers in agriculture. In addition, young females in less developed regions are more likely to be forced into early marriages, which in turn increases the dropout ratio further. Therefore, other than the base, all regions are expected to have negative coefficient signs with less developed ones having smaller coefficients in magnitude.

A Child's education level is expected to be negatively correlated with dropout probability. In other words, as education level increases, an individual is less likely to quit since a higher education level indicates higher schooling success. An increase in parents' education levels is also expected to cause a decline in dropout probability of the children, since more educated parents are expected to be keener on schooling of their kids. Furthermore, parents are role models for their children. Thus, higher is the educational level of parents, higher is that of child.

An increase in family income is expected to decrease the dropout probability. Hence, the coefficient for income per head in the household is expected to be negative. The age difference between the mother and child is likely to increase for well-educated, middle-class families, which in turn causes a decline in dropout probability. Therefore, the coefficient of age difference with the mother is expected to be negative. There is a similar relationship between the decent employment of parents and dropout probability of children. Children with parents who have decent work are less likely to quit schooling. Thus, a decent employment coefficient for both parents is expected to have a negative sign, indicating a decrease in dropout probability.

Finally, for family types, children of co-parenting families are expected to be least likely to dropout schooling. Regarding the comparison of single-dad households with single-mom households, there is no clear-cut answer. It is expected that boys take their dads and girls take their moms as role models. Thus, the gender of child plays a crucial role besides family type. Also, since males are expected to earn more than women, single-dad households are expected to have better economic conditions compared to single-mom households. Because of complicated factors it is hard to make expectations for the signs of single parent households.

5. Results

Table 2 below shows the probit and logit regression marginal effects results for the pooled sample, besides the probit regression results for the male and female samples for the year 2004. Logit regression is executed for robustness analysis. As can be noticed, the signs of coefficients in the pooled probit model are totally in line with those in the pooled logit model, with a 0.99 correlation coefficient, proving that regression results are robust.

As expected, the sign of age coefficient is positive, indicating a higher probability of dropout for older children. The effect is stronger for the female sample (0.042 versus 0.034), which might be a clue for higher conservative pressure on females and for the early marriage effect. In line with this finding, the effect of the male category is negative in the pooled sample, which means males are 4 % less likely to dropout schooling. Regarding the regions, all of the coefficients are negative except Middle East Anatolia. Thus, our expectation of negative correlation between dropout probability and regional development level is verified. It must also be noticed that, regional disparities are more evident for the female sample.

Since we are interested in dropout children under 19 years old, the highest possible last diploma is secondary school. As the education level is increased, dropout probability decreases as expected. The effect of recent education level on dropout probability is stronger for males. Also, it must be noticed that the weakest effect is observed for primary school diploma. The income per head coefficient is very small but positive contrary to our expectations. In addition, results show that there is no significant difference among genders regarding the effect of income per head on dropout probability. Contrary to expectation, the sign of age difference with the mother is positive but very small. It must be noted that the effect is more evident for the female sample.

Both parents' education levels are negatively correlated with dropout probability, as expected. In other words, an increase in either the mother's or father's education level results in a decrease in the dropout probability of children. The effect of a mother's education on dropout probability is stronger than that of a father's. It is noteworthy to say that both parents' education levels are more effective on dropout probability of male children. When examining the impact of parents' decent employment on dropout probability, two key points emerge. First, a father's decent employment plays a more significant role than a mother's. Second, the combined effect of both parents' decent employment on reducing dropout probability is more pronounced among female students than male students.

Finally, regarding the impact of family structure on dropout probability, several key findings emerge. First, children raised by single mothers are 2.9% more likely to drop out of school than those raised by single fathers. Additionally, children in co-parenting arrangements are 3.1% less likely to leave school compared to those in single-father households. Another significant result is that boys from single-mother households face a higher dropout risk than their female counterparts (4.3% vs. 1.7%). Lastly, the dropout-reducing effect of co-parenting is more pronounced for girls than for boys.

Table 2: Probit and Logit Regression Results, 2004

	Probit			
School Dropout	Pooled Probit	Female	Male	Pooled Logit
DEMOGRAPHICS				
age	0.038	0.042	0.034	0.041
Gender				
Female (Base)	0.000	-----	-----	0.000
Male	-0.040	-----	-----	-0.041
Region				
South East Anatolia (Base)	0.000	0.000	0.000	0.000
Istanbul	-0.042	-0.066	-0.022	-0.042
West Marmara	-0.049	-0.084	-0.018	-0.048
Aegean	-0.036	-0.070	-0.006	-0.033
East Marmara	-0.059	-0.080	-0.041	-0.057
West Anatolia	-0.048	-0.083	-0.017	-0.047
Mediterranean	-0.038	-0.062	-0.018	-0.036
Middle Anatolia	-0.031	-0.048	-0.016	-0.027
West Black Sea	-0.037	-0.052	-0.025	-0.034
East Black Sea	-0.059	-0.093	-0.028	-0.055
North East Anatolia	-0.004	-0.022	0.012	-0.002
Middle East Anatolia	0.011	0.021	0.002	0.008
Last Education				
Illiterate (Base)	0.000	0.000	0.000	0.000
Literate But No Diploma	-0.872	-0.839	-0.905	-0.865
Primary School Graduate	-0.495	-0.473	-0.515	-0.529
Secondary School Graduate	-0.860	-0.840	-0.878	-0.862
FAMILY CHARACTERISTICS				
Income Per Head	0.000	0.000	0.000	0.000
Age Difference with Mother	0.001	0.001	0.000	0.000
Mother's Education Level				
Literate But No Diploma (Base)	0.000	0.000	0.000	0.000
Primary School Graduate	-0.047	-0.034	-0.056	-0.045
Secondary School Graduate	0.000	0.000	0.000	0.000
High School Graduate	-0.056	-0.029	-0.081	-0.058
University And Higher Degree	-0.034	-0.041	-0.000	-0.049
Father's Education Level				
Literate But No Diploma (Base)	0.000	0.000	0.000	0.000
Primary School Graduate	-0.042	-0.030	-0.053	-0.047
Parents Decent Employment				
Mother Non-Decent Employee (Base)	0.000	0.000	0.000	0.000
Mother Decent Employee	-0.042	-0.046	-0.039	-0.049
Father Non-Decent Employee (Base)	0.000	0.000	0.000	0.000
Father Decent Employee	-0.050	-0.054	-0.046	-0.051

Family Type				
Single Dad Family (Base)	0.000	0.000	0.000	0.000
Single Mom Family	0.029	0.017	0.043	0.035
Co-parenting Family	-0.031	-0.036	-0.025	-0.028
Observations	93147	45559	47580	93147
Pseudo R²	0.520	0.548	0.487	0.520

Source: Author's own calculations using HLFS 2004.

Table 3 below shows the regression results for the year 2013. Compared to results in 2004, the effect of age is positive again but smaller. This means that dropout ratios of different age groups converged over time. In other words, the effect of age on dropout probability has weakened in the first 10 years of the analyzed period. Contrary to 2004, the effect of age on dropout probability is stronger for the male sample in 2013. Again, contrary to 2004, the dummy coefficient for the male category is positive.

Regarding the regions, there is not a big change compared to 2004. All the regions except North East Anatolia have negative signs. Contrary to 2004 results, regional disparities in the male sample are more evident in 2013. The results on the effect of the last education level on dropout probability are similar to the ones in 2004. The coefficients in the male sample are again larger compared to the female sample.

Income per head has again a positive sign, which contradicts our expectations, but again, the coefficient is negligible. Age difference with mother is negative in line with expectation, but the magnitude is very small. 1 year increase in the age difference with the mother causes the dropout probability to decline by only 0.01 %.

Contrary to the 2004 results, the impact of the father's education level on dropout probability is stronger than the impact of the mother's education level in 2013. Similar to 2004 results, the effect of parents' education level on dropout probability is stronger for male children compared to females.

Table 3: Probit and Logit Regression Results, 2013

School Dropout	Probit			Pooled Logit
	Pooled Probit	Female	Male	
DEMOGRAPHICS				
age	0.017	0.010	0.024	0.022
Gender				
Female (Base)	0.000	-----	-----	0.000
Male	0.004	-----	-----	0.003
Region				
South East Anatolia (Base)	0.000	0.000	0.000	0.000
Istanbul	-0.042	-0.033	-0.052	-0.041

West Marmara	-0.056	-0.057	-0.059	-0.055
Aegean	-0.006	0.001	-0.012	-0.005
East Marmara	-0.060	-0.051	-0.070	-0.063
West Anatolia	-0.011	-0.004	-0.017	-0.009
Mediterranean	-0.031	-0.018	-0.043	-0.031
Middle Anatolia	-0.024	-0.016	-0.033	-0.021
West Black Sea	-0.007	0.017	-0.031	-0.008
East Black Sea	-0.075	-0.055	-0.096	-0.076
North East Anatolia	0.013	0.024	0.004	0.015
Middle East Anatolia	-0.013	-0.013	-0.014	-0.013
Last Education				
Literate But No Diploma (Base)	0.000	0.000	0.000	0.000
Primary School Graduate	-0.800	-0.755	-0.842	-0.831
Secondary School Graduate	-0.743	-0.737	-0.746	-0.754
FAMILY CHARACTERISTICS				
Income Per Head	0.000	0.000	0.000	0.000
Age Difference with Mother	-0.001	-0.001	-0.001	-0.001
Mother's Education Level				
Literate But No Diploma (Base)	0.000	0.000	0.000	0.000
Primary School Graduate	-0.088	-0.103	-0.073	-0.086
Secondary School Graduate	-0.173	-0.187	-0.158	-0.174
High School Graduate	-0.202	-0.204	-0.198	-0.208
Vocational High School Graduate	-0.203	-0.203	-0.201	-0.207
University and Higher Degree	-0.218	-0.186	-0.242	-0.226
Father's Education Level				
Literate But No Diploma (Base)	0.000	0.000	0.000	0.000
Primary School Graduate	-0.053	-0.038	-0.072	-0.051
Secondary School Graduate	-0.132	-0.097	-0.168	-0.130
High School Graduate	-0.208	-0.179	-0.236	-0.205
Vocational High School Graduate	-0.230	-0.199	-0.258	-0.229
University and Higher Degree	-0.260	-0.234	-0.283	-0.257
Parents Decent Employment				
Mother Non-Decent Employee (Base)	0.000	0.000	0.000	0.000
Mother Decent Employee	-0.053	-0.069	-0.032	-0.056
Father Non-Decent Employee (Base)	0.000	0.000	0.000	0.000
Father Decent Employee	-0.052	-0.049	-0.052	-0.052
Family Type				
Single Dad Family (Base)	0.000	0.000	0.000	0.000
Single Mom Family	0.000	0.020	0.001	0.008
Co-parenting Family	-0.051	-0.103	0.011	-0.046
Observations	27448	13265	14183	27448
Pseudo R²	0.296	0.336	0.263	0.298

Source: Author's own calculations using HLFS 2013.

Table 4 below shows the regression results for the year 2023. As in previous tables, coefficients reflect the marginal effects.

The first point to mention is that the effect of age has increased back to its 2004 levels. 1 year increase in a child's age results in a 3.2 % increase in dropout probability. The effect is stronger in the male sample. As of 2013 being male increases the likelihood of dropping out. However, the impact of gender has become more pronounced. Regarding regional differences, disparities have continued to decline between 2013 and 2023, indicating a convergence across regions. This trend is more evident among males, suggesting that the influence of region on dropout probability is weaker for boys than for girls. The 2023 findings also reveal that a father's education level has a stronger impact on dropout probability than a mother's education level. Moreover, for both parents, this effect is more pronounced among males. In other words, parental education reduces the likelihood of boys dropping out more significantly than it does for girls.

When it comes to the effect of the parents' decent employment on dropout probabilities, it must be first noticed that the effect of the mother's decent employment is higher than that of the father's decent employment. Second, the parental decent employment effect is more evident in male sample.

Finally, 2023 results show that the effect of family type on dropout probability has declined compared to previous years. Similar to previous years, the lowest dropout probability is observed in co-parenting families, but the divergence between single-dad households and single-mom households has almost disappeared.

Table 4: Probit and Logit Regression Results, 2023

School Dropout	Probit			Pooled Logit
	Pooled Probit	Female	Male	
DEMOGRAPHICS				
age	0.032	0.030	0.033	0.031
Gender				
Female (Base)	0.000	-----	-----	0.000
Male	0.010	-----	-----	0.009
Region				
South East Anatolia (Base)	0.000	0.000	0.000	0.000
Istanbul	-0.036	-0.039	-0.032	-0.035
West Marmara	-0.018	-0.032	-0.007	-0.015
Aegean	-0.014	-0.024	-0.003	-0.013
East Marmara	-0.034	-0.028	-0.039	-0.033
West Anatolia	0.000	-0.008	0.007	0.001
Mediterranean	-0.024	-0.023	-0.025	-0.023
Middle Anatolia	-0.013	-0.019	-0.008	-0.012
West Black Sea	-0.009	-0.012	-0.006	-0.012

East Black Sea	-0.041	-0.048	-0.033	-0.047
North East Anatolia	-0.020	-0.021	-0.019	-0.019
Middle East Anatolia	-0.024	-0.024	-0.023	-0.023
Last Education				
Literate But No Diploma	0.000	0.000	0.000	0.000
Primary School Graduate	-0.120	-0.113	-0.126	-0.115
Secondary School Graduate	-0.186	-0.189	-0.180	-0.181
FAMILY CHARACTERISTICS				
Income Per Head	0.000	0.000	0.000	0.000
Age Difference with Mother	-0.001	-0.001	-0.001	-0.001
Mother's Education Level				
Literate But No Diploma (Base)	0.000	0.000	0.000	0.000
Primary School Graduate	-0.035	-0.037	-0.034	-0.034
Secondary School Graduate	-0.042	-0.040	-0.042	-0.042
High School Graduate	-0.061	-0.061	-0.061	-0.065
Vocational High School Graduate	-0.064	-0.050	-0.078	-0.069
2 Years College Graduate	-0.052	-0.034	-0.071	-0.057
University Degree	-0.051	-0.050	-0.051	-0.054
Masters Or PhD Degree	-0.036	-0.026	-0.046	-0.040
Father's Education Level				
Literate But No Diploma (Base)	0.000	0.000	0.000	0.000
Primary School Graduate	-0.014	-0.007	-0.020	-0.011
Secondary School Graduate	-0.035	-0.032	-0.038	-0.034
High School Graduate	-0.058	-0.052	-0.065	-0.058
Vocational High School Graduate	-0.051	-0.046	-0.057	-0.050
2 Years College Graduate	-0.068	-0.049	-0.087	-0.072
University Degree	-0.053	-0.041	-0.065	-0.055
Masters Or PhD Degree	-0.047	-0.033	-0.062	-0.046
Parents Decent Employment				
Mother Non-Decent Employee (Base)	0.000	0.000	0.000	0.000
Mother Decent Employee	-0.027	-0.027	-0.028	-0.029
Father Non-Decent Employee (Base)	0.000	0.000	0.000	0.000
Father Decent Employee	-0.019	-0.017	-0.020	-0.018
Family Type				
Single Dad Family (Base)	0.000	0.000	0.000	0.000
Single Mom Family	0.000	0.000	0.001	0.000
Co-parenting Family	-0.004	0.000	0.000	-0.004
Observations	89295	43329	45966	89295
Pseudo R²	0.284	0.303	0.273	0.295

Source: Author's own calculations using HLFS 2023

6. Conclusion

Results show that there is a higher probability of dropout for older children in all years analyzed. This finding is consistent with the results of previous studies in the literature suggesting the older a student becomes, the more likely they are to drop out. However, the effect of age on dropout probability has weakened in the first 10 years of the analyzed period. Contrary to 2004, the effect of age on dropout probability is stronger for the male sample in 2013. Similarly, being male increases the likelihood of dropping out in the last year of analysis, which is again in line with the findings of the related literature, which consistently finds that males are slightly more likely than females to drop out of school in order to enter the labor market or work full-time due to financial pressures. There may be two channels for this observed trend. Firstly, it may be the case that the educational attainment of girls has shown an increasing trend. Secondly, since girls are more likely to be forced into early marriages, they often leave the household. As a result, their data is not captured, as they are no longer present in the household. In other words, the data—and consequently the estimations—tend to underestimate the dropout probability trend for girls in the sample.

As education level is increased, dropout probability is found to decrease in line with the findings in the literature. The effect of recent graduation on dropout probability is stronger for males. An increase in parental education results in a decrease in the dropout probability, as similar findings suggest in the literature, while the effect of the mother's education on dropout probability is stronger than that of the father's in the first year of analysis. However, findings reveal that the father's education level has a stronger impact on dropout than the mother's education level in both 2013 and 2023. Parental education reduces the likelihood of boys dropping out more significantly than it does for girls in 2023. A parent's educational level has a significant influence on whether a student drops out. When the parent's educational level is low, there is a greater chance for children to drop out of school. Both parents' education levels are negatively correlated with dropout probability as similar to the findings in the literature. Furthermore, it is found that the combined effect of both parents' decent employment on reducing dropout probability is more pronounced among female students than male students. SES is the most commonly cited factor predictive of school dropout in the literature. Students from lower SES families facing structural disadvantages such as low-income parents, parents with limited education, single-parent or female-headed households, large family sizes, and a history of dropouts within the family are significantly more likely to leave school. Our results support the prevailing evidence in the literature.

Children in co-parenting arrangements are less likely to leave school compared to those in single-parent households. Children raised by single mothers are more likely to drop out of school than those raised by single fathers. These findings also reinforce the conclusions of previous studies suggesting that the presence of single-mother households increases the probability of drop out and children in co-parenting arrangements are less likely to leave school compared to those in single-parent households. Another significant result is that the dropout-reducing effect of co-parenting is more pronounced for girls than for boys. The effect of family type on dropout probability has declined over time.

Finally, our finding of negative correlation between dropout probability and regional development level is consistent with those reported in the existing literature revealing lower dropout rates observed in urban areas compared to suburban and rural areas. Furthermore, regional disparities in male sample are more evident in 2013. Disparities have continued to decline between 2013 and 2023 for both genders, indicating a convergence across regions. This trend is vaguer among females, suggesting that the influence of region on dropout probability is stronger for girls than for boys. This finding supports the presence of a patriarchal social structure, and a conservative family environment towards girls' schooling across regions.

In light of these findings, several policy implications arise regarding early school leaving in Türkiye. Effective implementation of compulsory education is necessary for the country to promote continuation into secondary education, particularly in rural and disadvantaged regions. Raising awareness among families about the long-term benefits of education and the risks associated with early school leaving through targeted campaigns is also essential in this respect. Since family SES is the most widely recognized determinant of school dropout, providing social support for families is also essential. Lastly, since our results suggest that both gender and regional disparities play a significant role on dropout rates, policies that are sensitive to both gender and regional differences should be targeted to reduce these disparities and support the educational advancement of girls.

References

- Almış, S., & Karakütük, K. (2021). Türkiye'de ortaöğretim çağ nüfusunun okul dışında kalmasını etkileyen bireysel ve sosyoekonomik değişkenler. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 53, 110-149. 1-36. <https://doi.org/10.9779.pauefd.840809>
- Ananga, E. D. (2011). Typology of school dropout: The dimensions and dynamics of dropout in Ghana. *International Journal of Educational Development*, 31(4), 374–381. <https://doi.org/10.1016/j.ijedudev.2011.01.006>
- Arslan, G., & Balkıs, M. (2014). The investigation of relationship between problem behaviors and family problems in adolescence. *SDU International Journal of Educational Studies*, 1(1), 11-23.
- Arslan, A., & Peker, A. (2023). Reasons for high school dropout: A descriptive phenomenological study based on students' common experiences. *Journal of Family, Counseling and Education*, 8(1), 57-73. <https://doi.org/10.32568/jfce.1271237>
- Arulampalam, W., Naylor, R., & Smith, J. (2005). Effects of in-class variation and student rank on the probability of withdrawal: cross-section and time-series analysis for UK university students. *Economics of Education Review*, 24(3), 251–262. <https://doi.org/10.1016/j.econedurev.2004.05.007>
- Avşar, D.S., Akay, C., & Arslantas, H.I. (2024). Secondary school students' dropout risk: a study of mixed methods. *i-manager's Journal on Power Systems Engineering*, 17(4). <https://doi.org/10.26634/jpsy.17.4.20348>

- Bakış, O., Levent, H., İnsel, A., and Polat, S. (2009). Türkiye’de eğitime erişimin belirleyicileri. İstanbul: Sabancı Üniversitesi Yayınları.
- Ball, J. S., Davies, J., David, M., & Reay, D. (2002). classification and judgement: social class and the “cognitive structures” of choice of higher education. *British Journal of Sociology of Education*, 23, 343-456. <https://doi.org/10.1080/014.256.90120102854>
- Barrington, B. L., & Hendricks, B. (1989). Differentiating characteristics of high school graduates, dropouts, and nongraduates. *The Journal of Educational Research*, 82(6), 309–319.
- Battin-Pearson, S., Newcomb, M. D., Abbott, R. D., Hill, K. G., Catalano, R. F., & Hawkins, J. D. (2000). Predictors of early high school dropout: a test of five theories. *Journal of Educational Psychology*, 92(3), 568–582. <https://doi.org/10.1037/0022-0663.92.3.568>
- Boyacı, A. (2019). exploring the factors associated with the school dropout. *International Electronic Journal of Elementary Education*, 12(2), 145-156. <https://doi.org/10.26822/iejee.201.925.7661>
- Braun, V., & Clarke, V. (2013). Successful Qualitative Research: A Practical Guide for Beginners. London: Sage.
- Brennan, T., & Anderson, F. (1990). A longitudinal study of factors producing high school dropout among handicapped and non-handicapped students. Nederland, CO: Institutional Development and Economic Affairs Service, Inc.
- Bridgeland, J. M. (2010). The new dropout challenge: Bridging gaps among students, parents, and teachers. New Directions for Youth Development. <https://doi.org/10.1002/yd.366>.
- Bridgeland, J. M., Dilulio, J. J., & Morison, K. B. (2006). The silent epidemic: Perspectives of high school dropouts. A report by Civic Enterprises in association with Peter D. Hart Research Associates for the Bill & Melinda Gates Foundation. Washington, DC: Civic Enterprises.
- Bynner, J., & Joshi, H. (2002). Equality and opportunity in education: Evidence from the 1958 and 1970 birth cohort studies. *Oxford Review of Education*, 28, 405-425. <https://doi.org/10.1080/030.549.8022000013599>
- Caner, A., Guven, C., Okten, C., & Sakalli, S. O. (2016). Gender roles and the education gender gap in Turkey. *Social Indicators Research*, 129(3), 1231–1254. <https://doi.org/10.1007/s11205.015.1163-7>
- Cardoso, A. R., & Verner, D. (2007). School dropout and push-out factors in Brazil: The Role of Early Parenthood, Child Labour, and Poverty. IZA Discussion Paper No. 2515, Bonn: Institute for the study of Labour. Washington DC. <http://ftp.iza.org/dp2515.pdf>
- Chenge, R. P., Chenge, E., & Maunganidze, L. (2017). Family factors that contribute to school dropout in Rushinga district in Zimbabwe. *International Journal of Law, Humanities & Social Science*, 1, 87-105.
- Chevalier, A., Halmon, C., O’Sullivan, V., & Walker, I. (2005). The Impact of Parental Income and

Education on the Schooling of their Children. Lancaster University Management School Working Paper No. 2010/36.

Christle, C., Jolivet, K., & Nelson, C. (2007). School characteristics related to high school dropout rates. *Remedial and Special Education* 28(6), 325-339. <https://doi.org/10.1177/074.193.2507028.006.0201>

Dalton, B., Gennie, E., & Ingels, S. J. (2009). Late High School Dropouts: Characteristics, Experiences, And Changes Across Cohorts (NCES 2009-307). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, US Department of Education.

Dekkers, H. & Claassen A. (2001). Dropouts: Disadvantaged by definition? A study of the perspective of very early school leavers. *Studies in Educational Evaluation*, 27, 341-354. [https://doi.org/10.1016/S0191-491X\(01\)00034-7](https://doi.org/10.1016/S0191-491X(01)00034-7)

Dowrick, P.W. (2003). School drop-outs, adolescence. In Gullotta T.P., Bloom M., Kotch J., Blakely C., Bond L., Adams G., Browne C., Klein W., Ramos J. (Ed.), *Encyclopedia of Primary Prevention and Health Promotion* (pp.924–929). Boston, MA: Springer. https://doi.org/10.1007/978-1-4615-0195-4_134

Ekstrom, R. B., Goertz, M. E., Pollack, J. M., & Rock, D. A. (1986). Who drops out of high school and why? Findings from a national study. *Teachers College Record*, 87(3), 356–373.

Ensminger, M. E., & Slusarcick, A. L. (1992). Paths to high school graduation or dropout: A longitudinal study of a first-grade cohort. *Sociology of Education*, 65(2), 95–113. <https://doi.org/10.2307/2112677>

Eranil, A. K. (2024). School dropout causes in Turkish education system (2009-2022): A pareto analysis by grade level. *Journal of Theoretical Educational Science*, 17(2), 451-477. <https://doi.org/10.30831/akukeg.1291174>

Eraslan Yalçın, M., & Gülseçen, S. (2023). Undergraduate dropout intentions in Turkey: A systematic review of factors and implications. *JRES*, 10(2), 237-252. <https://doi.org/10.51725/etad.1347987>

EUROSTAT (2023). *Early leavers from education and training by sex and labour status*. https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_14/default/table?lang=en.

Farah, N., & Upadhyay, M. P. (2017). How are school dropouts related to household characteristics? Analysis of survey data from Bangladesh. *Cogent Economics & Finance*, 5(1), 1268746. <https://doi.org/10.1080/23322.039.2016.1268746>

Fortin, L., Marcotte, D., Potvin, P., Royer, É., & Joly, J. (2006). Typology of students at risk of dropping out of school: Description by personal, family and school factors. *European Journal of Psychology of Education*, 21(4), 363–383. <https://doi.org/10.1007/BF03173508>

Fortin, L., Marcotte, D., Diallo, T., Potvin, P., & Royer, É. (2013). A multidimensional model of school dropout from an 8-year longitudinal study in a general high school population. *Eur. J. Psychol. Educ.* 28, 563–583. <https://doi.org/10.1007/s10212.012.0129-2>

Ghignoni, E. (2015). Family background and university dropouts during the crisis: The case of Italy. *Working Papers in Public Economics*, 169, Department of Economics and Law, Sapienza University of Rome.

Hanafin, J., & Lynch, A. (2002). Peripheral voices: Parental involvement, social class and educational disadvantage. *British Journal of Sociology of Education*, 23, 35-49. <https://doi.org/10.1080/014.256.90120102845>

Hawkins, R.L., Jaccard J., & Needle, E. (2013). Nonacademic factors associated with dropping out of high school: Adolescent problem behaviors. *J. Soc. Soc. Work Res*, 4(2), 58-75. <https://doi.org/10.5243/jsswr.2013.5>

Hickman, G. P., Bartholomew, M., Mathwig, J., & Heinrich, R. S. (2008). Differential developmental pathways of high school dropouts and graduates. *The Journal of Educational Sciences*, 102(1), 3-14. <https://doi.org/10.3200/JOER.102.1.3-14>

İlhan Tunç, A. (2009). Kız Çocuklarının Okula Gitmeme Nedenleri Van İli Örneği. *Yüzyüncü Yıl Üniversitesi, Eğitim Fakültesi Dergisi*, 6(1), 237-269.

Jimerson, S., Egeland, B., Sroufe, L. A., & Carlson, B. (2000). A prospective longitudinal study of high school dropouts examining multiple predictors across development. *Journal of School Psychology*, 38(6), 525-549. [https://doi.org/10.1016/S0022-4405\(00\)00051-0](https://doi.org/10.1016/S0022-4405(00)00051-0)

Karacan Ozdemir, N., Aras Kemer, F.N., Arslan, A., & Tuna B. (2024). A qualitative study of unveiling school dropout complexity in Türkiye. *Child Indicators Research*, 17(3), 1-21, <https://doi.org/10.1007/s12187.024.10116-7>

Karacabey, M. F., & Boyacı, A. (2018). Factors Contributing to secondary school dropouts and the dropouts' socioeconomic profiles: Şanlıurfa sample. *Kuram ve Uygulamada Eğitim Yönetimi*, 24(2), 247-293 <https://doi.org/10.14527/kuey.2018.007>

Kırdar, M., Dayioğlu, M., & Koc, I. (2023). School integration of Syrian refugee children in Turkey. *Labour Economics*, 85, 102448. 1-17. <https://doi.org/10.1016/j.labeco.2023.102448>

Kırdar, M., Dayioğlu, M., & Koc, I. (2016). Does longer compulsory education equalize schooling by gender and rural/urban residence? *The World Bank Economic Review*, 30(3), 549-579.

Koc, M., Zorbaz, O., & Demirtas-Zorbaz, S. (2020). Has the ship sailed? The causes and consequences of school dropout from an ecological viewpoint. *Social Psychology of Education*, 23, 1149-1171. <https://doi.org/10.1007/s11218.020.09568-w>

Korumaz, M. & Ekşioğlu, E. (2022). Why do students in vocational and technical education drop out? A qualitative case study. *International Journal of Contemporary Educational Research*, 9(1), 1-17. <https://doi.org/10.33200/ijcer.935042>

Küçükler, E. (2019). School dropout through three stories: Uneducated, poverty, patriarchy. *Journal of*

Education Science Society, 16(64), 94–119.

Liem, J.H., LustigK., & Dillon C. (2010). Depressive symptoms and life satisfaction among emerging adults: A comparison of high school dropouts and graduates. *Journal of Adult Development*, 17(1), 33–43. <https://doi.org/10.1007/s10804.009.9076-9>

Lund, C. (2009). The factors that contribute to the U.S. high school dropout rate. *Sociology Analysis*, 26, 334-357.

Makarova, E., & Birman, D. (2015). Cultural transition and academic achievement of students from ethnic minority backgrounds: A content analysis of empirical research on acculturation. *Educational Reerach.*, 57, 305–330. <https://doi.org/10.1080/00131.881.2015.1058099>

Müftü, G. (2001). Çocukların Hakları. *Milli Eğitim Dergisi*, 151(7).

Neild, R. C., Stoner-Eby, S., & Furstenberg, F. (2008). Connecting entrance and departure: The transition to 9th grade and high school dropout. *Education and Urban Society*, 40(5), 543-569.

O'Connell, M., & Sheikh, H. (2009). Non-cognitive abilities and early school dropout: longitudinal evidence from NELS. *Educational Studies*, 35(4), 475–479. <https://doi.org/10.1080/030.556.90902876586>

Osgood, D. W., Foster, E. M., & Courtney, M. E. (2010). Vulnerable Populations and the Transition to Adulthood. *The Future of Children*, 20, 209-229. <https://doi.org/10.1353/foc.0.0047>

Özer, M. (1991). İlköğretim okulları II. kademedede (ortaokul) öğrencilerinin öğrenimi terk etme sonunun analizi, (Unpublished Master Thesis). Ankara Üniversitesi, Sosyal Bilimler Enstitüsü, Ankara.

Psaki, S. (2016). Addressing child marriage and adolescent pregnancy as barriers to gender parity and equality in education. *Prospects*, 46(1), 109–129. <https://doi.org/10.1007/s11125.016.9379-0>

Ramanaik, S., Collumbien, M., Prakash, R., Howard-Merrill, L., Thalinja, R., Javalkar, P., et al. (2018). Education, poverty and “purity” in the context of adolescent girls’ secondary school retention and dropout: A qualitative study from Karnataka, Southern India. *PLoS ONE*, 13(9), 1–22. <https://doi.org/10.1371/journal.pone.0202470>.

Rankin, B. H., & Aytac, I. A. (2006). Gender inequality in schooling: The case of Turkey. *Sociology of Education*, 79(1), 25–43.

Roberts, G., Vaughn, S., Fall, A. M., & Vaughn, M. (2013). Preventing school dropout with secondary students: The implementation of an individualized reading intervention and dropout prevention intervention. Society for Research on Educational Effectiveness Berlin: Spring. Conference Abstract Template.

Rumberger, R. W. (1987). High school dropouts: A review of issues and evidence. *Review of Educational Research*, 57, 101-121.

Rumberger, R. W. (1995). Dropping out of middle school: A multilevel analysis of students and schools. *American Educational Research Journal*, 32(3), 583–625.

Rumberger, R. W., & Lim, S. A. (2008). Why Students Drop Out of School: A Review of 25 Years of Research. California Dropout Research Project Report. Policy Brief, 15. Vol. 15, Santa Barbara, CA: University of California, 1–130.

Rumberger, R. W. (2011). Dropping Out: Why Students Drop Out of High School and What Can Be Done About It. Cambridge, MA: Harvard University Press. <https://doi.org/10.4159/harvard.978.067.4063167>

Tenbusch, M. (2016). The Jonathan Effect: Helping Kids and Schools Win the Battle against Poverty. Downers Grove, IL: IVP Books.

Tsolou, O., & Babalis, T. (2020). The contribution of family factors to dropping out of school in Greece. *Creative Education*, 11(8), 1375–1401. <https://doi.org/10.4236/ce.2020.118101>

UNESCO (2005). World Education Report. New York.

UNESCO (2019). *New methodology shows that 258 million children, adolescents and youth are out of school*. <https://uis.unesco.org/sites/default/files/documents/new-methodology-shows-258-million-children-adolescents-and-youth-are-out-school.pdf>.

Wang, M. T., & Fredricks, J. A. (2014). The reciprocal links between school engagement, youth problem behaviors, and school dropout during adolescence. *Child Development*, 85, 722–737. <https://doi.org/10.1111/cdev.12138>

Warren, J. R., & Lee, J. C. (2003). The impact of adolescent employment on high school dropout: Differences by individual and labor-market characteristics. *Social Science Research*, 32(1), 98–128. [https://doi.org/10.1016/S0049-089X\(02\)00021-2](https://doi.org/10.1016/S0049-089X(02)00021-2)

Wood, L., Kiperman, S., Esch, R. C., Leroux, A. J., & Truscott, S. D. (2017). Predicting dropout using student- and school-level factors: An ecological perspective. *School Psychology Quarterly*, 32(1), 35–51. <https://doi.org/10.1037/spq0000152>

Worswick, C. (2001). School Performance of the Children of Immigrants in Canada, 1994-98 (p. 178). Department of Economics, Carleton University and Family and Labour Studies Statistics Canada.

Yadav, S., Kalakoti, P., & Ahmad, N. (2010). Determinants of school dropouts in children. *Review of Global Medicine and Healthcare Research*, 1(1), 232–245.

Zengin, M. (2021). Investigation of high school students' dropout risk level. *Shanlax International Journal of Education*, 9(1), 59–68. <https://doi.org/10.34293/education.v9i1S1-May.4000>

Zorbaz, O. (2018). Lise öğrencilerinin okul terk risklerini etkileyen öğrenci ve okul düzeyindeki faktörler, (Unpublished PhD thesis). Eğitim Bilimleri Enstitüsü, Ankara: Hacettepe Üniversitesi.