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School Choice and Satisfaction of Low Income and High Income Families: Nested Logit Model Application

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Abstract

The purpose of the study is to determine socioeconomic factors affecting low income and high income families' choice for a public school or a private school, to investigate their state of satisfaction with the school their children are attending and to determine the factors affecting their state of being satisfied or dissatisfied with the school. To this end, the "Life Satisfaction Survey" B micro data set issued by the Turkish Statistical Institute for the year 2018 was used. The scope of the study consists of the data set of 1,939 households in the school choice model and 2,021 households in the school satisfaction analysis. In the analysis of the data, a two-level Nested Logit model was used in the school choice stage and three-level Nested Logit model was used in the school satisfaction stage. As a result of the school choice analysis, the number of people who bring income to the household, the household head's marital status, education level and age and household size variables were found to be influential on school choice. As a result of the satisfaction analysis, it was determined that the variables of the quality and number of educational materials in the school, the general approach of the school administration, the attitude of teachers towards students and the number of students in the classroom are the predictors of the satisfaction/dissatisfaction with a public or a private school.

Keywords

Low income and high income groups
Private school
Public School
School choice
School satisfaction
Choice theory
Nested logit model

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Introduction

The basis of the social and economic development of countries is laid by educated manpower. Thus, education has become one of the priority services to be offered by the public as a public service. However, limited financial resources and increasing demand have created difficulties in the financing of education and led countries to privatize the sector (Ortaç, 2003). As a result, private education institutions, like public schools, have become a part of the education system.

With the entrance of private schools into the education system, parents have gained the opportunity to choose between public and private schools. The choice of parents between public and private schools is a complex, dynamic and multi-stage process that requires evaluating many factors together (Stein, Goldring, & Cravens, 2011) because, from an economic perspective, a rational consumer

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tries to maximize his/her utility under a certain constraint (Kelman, 1979; Kirman, 2013). According to the rational choice theory, individuals tend to prefer from among the goods and services offered to them the ones that provide them with the highest benefit (Kelman, 1979; Kirman, 2013; Wallace & Wolf, 2004). Therefore, when making this decision, parents are faced with the necessity of weighing the importance of one factor relative to other factors in terms of return (Goldring & Haussman, 1999).

According to the literature, academic quality is one of the main determinants of parents' preferences for the school (public or private) they want their children to attend (Altenhofen, Berends, & White, 2016; Beavis, 2004; Figlio & Stone, 2001; Härmä, 2013; Hausman & Goldring, 2000; Heyneman & Stern, 2014; Prieto, Aguero-Valverde, Zarrate-Cardenas, & Maarseveen, 2019; Stewart & Wolf, 2014). Parents are more likely to choose successful schools (Hastings & Weinstein, 2008; Kisida & Wolf, 2010). The main reason for the increase in demand for private schools is the perception of parents that private schools are of higher quality compared to public schools (Beavis, 2004; Dixon & Tooley, 2012; Härmä, 2013). Besides academic factors, safety is among the highest priorities of parents when choosing a school (Hamilton & Guin, 2006; Rhodes & DeLuca, 2014; Schneider, Teske, & Marschall, 2000; Stewart & Wolf, 2014). For example, according to the PISA 2018 report, school safety and a pleasant school climate are variables that come to the fore in parents' selection of school. In the report, in all countries surveyed, school safety is cited as a more important selection criterion than student achievement (Organization for Economic Co-operation and Development [OECD], 2019). There is a clear link between teacher quality, class size (Stewart & Wolf, 2014), student-teacher ratio (Nishimura & Yamano, 2013), parental perception of more individual attention to students, and school choice (Beavis, 2004). The content of the curriculum, the availability, diversity and usability of special programs, namely social, sportive and cultural activities, the physical conditions of the school and how hygienic the school and classrooms are have been found to be associated with the choice of school (Çelikten, 2010). Attitudes of school administrators and teachers towards parents (Argon & Akkaya, 2008) and proximity of school to home affect parents' school choice decisions (Altenhofen et al., 2016; Lareau & Goyette, 2014). According to some studies, parents tend to prefer schools closer to home than schools with high academic achievement (Hastings, Kane, & Staiger, 2005). If parents think that the school is the best school that has the potential to meet their children's needs to the greatest extent, they can tolerate the long distance between home and school (Jacobs, 2011). The racial/ethnic or socioeconomic composition of the student profile is also important in school choice. Parents choice schools where children of families with similar socioeconomic profile attend (Bağcı, 2019). The proportional highness of the number of students from different races or of poor students reduces the likelihood of parents' preferring a school (Neild, 2005; Saporito, 2003). The extent to which the school has traditional values, its discipline and religious philosophy affect parents' school choice (Beavis, 2004). For example, parents of high socioeconomic status avoid schools with a high percentage of poor students and generally prefer schools with a racial structure similar to theirs (Neild, 2005; Saporito, 2003).

Every parent wants to choose the school that best fits his/her child's academic needs. However, parents' choice options vary depending on the socioeconomic characteristics of the household. Socioeconomic status influences parents' school choice decision by increasing or decreasing alternatives in terms of number and diversity (Beavis, 2004; Goldring & Haussman, 1999; Hesapçıoğlu & Nohutçu, 1999; Smedley, 1995; Van Pelt, Allison, & Allison, 2007). According to PISA reports, socioeconomically disadvantaged parents place much more emphasis on cost when choosing schools for their children (OECD, 2019). It is reported that parents with higher education level, higher income and higher occupational status are more likely to send their children to a private school (Dimaki, Kaminioti, Kostaki, Psarakis, & Tsourti, 2005). Similarly, it is argued that as their professional prestige and status increase, parents' school choices are in favour of private school (Rehman, Khan, Tariq, & Tasleem, 2010), that low income and minority groups prefer public school, while middle and upper class choice private school (Bernal, 2005). It is stated that public schools are less preferred when the amount allocated to the education of the child from the total income of the family increases (Guzman et al., 2008; Keskin & Bilgin Turna, 2010). In families where the number of children is high, the birth order of the child can shape the school choice of parents. According to some researchers, the gender of the child is also effective in the

school choice of parents. In many countries, parents tend to invest more in the education of male children. Girls, especially in low income households, have limited access to a private school or are more likely to be sent to a low-quality private school compared to their brother (De, Majumdar, Samson, & Noronha, 2002; Lerche & Jeffery, 2003; Srivastava, 2006). It is emphasized that older girls are more disadvantaged in this respect compared to younger ones (Pushkar, Pal, & Sharma, 2016).

While a child's education in a public or private school is affected by many factors, school choice is often the result of parents' tendency to increase school satisfaction (Witte, Sterr, & Thorn, 1995). In many studies, parental satisfaction with school is shown as an effective predictor of school choice decision (Goldring & Phillips, 2008; Ham, Johnson, Weinstein, Plank, & Johnson, 2003; Hamilton & Guin, 2006). The level of satisfaction of people varies depending on the extent to which their wishes, expectations and needs are met. When the perception of results is compared with expectations, satisfaction leads to contentment, and disappointment leads to dissatisfaction. High satisfaction creates not only a rational choice but also an emotional bond (Kotler & Keller, 2012). High satisfaction is the most important factor that ensures and maintains customer loyalty (Appleton-Knapp & Krentler, 2006), increases interest in purchasing and reduces losses (Anderson, Fornell, & Lehmann, 1994). In this connection, it can be said that the school satisfaction of parents depends on the compliance between the service quality of the school and the expectations of the parents. As stated by File, Judd, and Prince (1992) and Taylor and Baker (1994), parents' school satisfaction is a key factor in measuring school effectiveness and in their school choice decisions. School choice is often the result of parents' tendency to increase school satisfaction (Witte et al., 1995). Parents' level of satisfaction with the services provided by schools is the most influential variable in choosing the school for their children to attend (Ham et al., 2003). When they are satisfied with the school, parents are more likely to keep their children in that school and send their other children to the same school (File et al., 1992; Taylor & Baker, 1994). In addition, it is emphasized that the choice of school is a factor affecting satisfaction (Greene, 2001) and that the difference in satisfaction is caused by whether the parents make the right choice or not (Bosetti, 2004; Buckley & Schneider, 2006; Kim & Hwang, 2014).

Given that satisfaction is related to the extent to which expectations have been met (Kotler & Keller, 2012) and that expectations are related to one's background and cultural experiences (Carnevale & Desrochers, 1999), it can be said that satisfaction with a school may vary from parent to parent, or the relative importance of factors affecting satisfaction may differ. In fact, some studies suggest that parents' expectations and satisfaction with their children's education differ according to their income level (Badri, Mason, & El Mourad, 2010; Jacob & Lefgren, 2007; Selim, 2009). Similarly, it is argued that family background plays an important role in school choice (Kim & Baek, 2010), and household characteristics that determine school choice vary depending on the income level (Rhodes & DeLuca, 2014). Seen from this perspective, it can be predicted that both the household characteristics that affect the choice for a private and public school and the factors that determine school satisfaction may differ depending on the income level.

When the studies on the subject are reviewed in light of this prediction, it is seen that the household characteristics that affect school choice have generally been addressed without making any distinction by income level (Çelikten, 2010; Goldring & Phillips, 2008; Hesapçıoğlu & Nohuttçu, 1999; Karataş & Varlık, 2019; Keskin & Bilgin Turna, 2010; Prieto et al., 2019; Suppramaniam, Kularajasingam, & Sharmin, 2019; Uysal, 2017; Yaacob, Osman, & Bachok, 2014; Zuilkowski, Piper, Ong'ele, & Kiminza, 2018). In a limited number of studies conducted in countries such as the United States, Bangladesh, Brazil, Nigeria, and Pakistan, the factors that affect school choice have been investigated for high (Altenhofen et al., 2016) and low income groups (Alderman, Orazem, & Paterno, 2001; Perosa & Dantas, 2017; Ukpor, Ubi, & Okon, 2012). However, in these studies, other determinants; rather than household characteristics, that are effective in school choice were discussed, and school choice was generally limited to private school. When the literature on satisfaction is reviewed, it can be said that such studies mostly focused on general factors affecting satisfaction (Alpaykut, 2017; Badri et al., 2010; Çamlıca, 2016; Friedman, Bobrowski, & Markow, 2007; Selim, 2009) and low income parents' satisfaction (Chambers &

Michelson, 2020). In some studies, it is seen that parental satisfaction is compared across different ethnic groups (Almond, 2013; Friedman, Bobrowski, & Geraci, 2006) and between charter and public schools (Oberfield, 2020). In the literature review conducted within the current study, no research has been found that examines the factors affecting school choice and satisfaction separately across different income groups. Therefore, it can be said that there is a gap in the literature in this context. Pointing to this gap, Friedman et al. (2006) suggested conducting future studies to compare school satisfaction by income group and to address parents' actual school choices and school satisfaction together in the same study. For these reasons, it is aimed to determine the socioeconomic factors that affect the public or private school choices of low and high income families, to examine whether parents are satisfied or not with the school their children are attending and to determine the factors affecting the level of satisfaction. As a result of the current study, it is thought that the differences and similarities in household characteristics that are important in school choice for different income groups can be determined. In addition, it can be determined whether both the satisfaction with the choice made and the factors determining satisfaction differ in the high and low income groups. It is thought that this study, which differs from the existing research in these aspects, will contribute to the literature. In the literature, information about what parents want and how satisfied they are considered as a means of exploring ways to improve the quality of education and schools (Henderson, 1993). Seen from this perspective, the current study can be a source of data for the education system on the one hand, and for schools, on the other hand, in terms of increasing their preferability and can contribute to the development of more focused policies to increase the rate of private schooling. In addition, the study can be a source of information for discussions and similar research about school choice and satisfaction of people from different income groups.

Purpose of the Study and Sub-Problems

The purpose of the current study is to determine the socioeconomic factors that affect the public or private school choices of families in low and high income groups, to examine whether families are satisfied with the school their children are attending and to determine the factors affecting the families' level of satisfaction/dissatisfaction with the school. To this end, answers to the following questions were sought:

1) What are the socioeconomic factors that affect the public or private school choice of families in low and high income groups?
2) What are the factors affecting the level of satisfaction/dissatisfaction of families in low and high income groups with the school their children are attending?

Method

Research Model

The study employed the predictive design, one of the correlational designs. In the predictive design, variable is tried to be explained by other variables based on the relationship between the variables, in other words, the variables that affect or define a variable are tried to be determined. In this design, it is possible to predict one of the variables based on the other. The accuracy of the prediction varies depending on the level of the relationship between the two variables. As the level of the relationship between the variables increases, the accuracy of the prediction increases, as well (Frankel & Wallen, 2006).

Population and Sample

According to the data of the Ministry of National Education (MoNE), a total of 16,529,169 students were studying at preschool, primary, secondary and high school levels in Turkey in the 2018-2019 school year. While 1,440,577 of these students were educated in private schools, 15,088,592 of them were in public schools (MoNE, 2020). In the current study, household and individual data sets within the "Life Satisfaction Survey (LSS)" B micro data set issued by the Turkish Statistical Institute (TURKSTAT) for the year 2018 were used. The scope of the LSS used in the analysis of the study consisted of the households in all the settlements within the borders of Turkey, and the sample size was

designed big enough to make accurate estimations for the whole population of the study (TURKSTAT, 2020). Two-stage stratified sampling method was used to determine the LSS sample size. In the first stage, blocks consisting of 100 households were created. In the second stage, sample addresses were determined by the systematic selection method from the blocks created following the first stage. As a result of these two stages, the sample size was calculated to be 5,410 households for 2018. Between 01 January and 31 December 2018, 4,733 of the households in the sample size and 9,719 individuals living in these households were interviewed. This study was built on the data collected from these households and individuals through interviews.

In the public or private school choice part of the study, the data obtained from 1,939 household heads answering "Yes" to the question "Are there any household members who attend one of the public and/or private schools (preschool/primary school/secondary school/high school or equivalent education institutions) in 2018?" were used (the word "individual" is used instead of the term "household head" in the following section of the study). In the school satisfaction part of the study, the data obtained from 2,021 individuals answering "Yes" to the question "Are you satisfied with the education you receive?" asked to a total of 1,939 households. The difference between the numbers of participants in the two groups stemmed from the fact that there is more than one student in some households and that the schools the children attend differ in private and public dimensions. These individuals answered the question "Are you satisfied with the education you receive?" separately for private and public schools. Therefore, the satisfaction dimension of the study includes 641 individuals giving the answer "No" and 1,380 individuals giving the answer "Yes" to the question "Are you satisfied with the education you receive?" asked to a total of 1,939 households.

Data of the Study

In the current study, household and individual data sets included in the 2018 LSS B micro data set issued by TURKSTAT were used. These data are subject to permission to use. For this reason, an application was made to TURKSTAT with the number 01201900000000924 for legal permission. The LSS B micro data set of 2018 was allowed to be used in the study by TURKSTAT. This B micro data set was shaped in an appropriate manner within the context of the study.

Data Analysis

The data of the study were analyzed using the Nested Logit (NL) model. Modelling of individuals' choices has an important place in many disciplines. The method commonly used in these disciplines is the unordered choice models developed based on random utility maximization models. The Multinomial Logit (MNL) model, which is one of the unordered choice models, is more widely used than other models (Greene, 2012; Sarrias & Daziano, 2017). The advantage that brings this model to the fore is the simplicity of the analysis and the ease of interpretation of the choice probability values and elasticity values obtained as a result of the analysis (Munizaga & Alvarez-Daziano, 2001). MNL is based on the assumption of Independence from Irrelevant Alternatives-IIA (Hausman & McFadden, 1984). This assumption has been criticized as being too unrealistic, and various models as the extension of MNL have been developed due to these criticisms (Anwar, 2012; Silberhorn, Boztuğ, & Hildebrandt, 2007). The NL model is one of these models. The NL model is a special case of discrete choice models used when one wants to go beyond MNL (Train, 2009). The NL model, first developed by Ben-Akiva (1973), is designed to capture the correlation between alternatives. This model allows the independence of the items in the choice set and gives the alternatives a hierarchical structure (Ben-Akiva & Lerman, 1994; Hoffman & Duncan, 1988; Train, 2009). In addition, the NL model assumes that choices are accomplished through nested choice sets, rather than treating all alternatives as members of a single choice set.

In the NL model constructed on the basis of the random utility model, the individual i obtains the utility $U_{ij} = z'_{ij}\theta + \varepsilon_{ij}$; $(j = 1,2, \dots, J)$ by choosing the alternative j. Here, U_{ij} represents the utility value of the j alternative of the i^{th} individual; z'_{ij} represents the observable features of the j alternative and ε_{ij} represents the random error term according to the unobservable features of the choices.

In the model, it is assumed that the decision unit chooses the choice set that provides the most efficient benefit or profit among J alternatives. In the NL model, if the alternatives are independent and have identical Gumbel distribution, the utility depends on z_{ij} (McFadden, 1974). Accordingly, the probability of the i^{th} individual choosing alternative j is as follows:

$$P(Y_i = j) = \frac{exp(z'_{ij}\theta)}{\sum_{j=1}^{J} exp(z'_{ij}\theta)} \quad (1)$$

In Equation 1, the probability of the i^{th} individual choosing alternative j is independent of the properties of the other alternatives. In addition, the probability of choosing the alternative (excluding other alternatives) depends on the probability of choosing the relevant alternative. This property represents the IIA assumption and this assumption is invalid if the alternatives are correlated with the error terms (Hoffman & Duncan, 1988). The validity of the IIA assumption is tested with the Classic Hausman specification test introduced to the literature by Hausman and McFadden (1984) (Greene, 2012). In cases where the IIA assumption cannot be met, the NL model developed by McFadden (1981) and Hausman and McFadden (1984) is used.

In the NL model, choices are expressed as $[c_1, \dots, c_J] = (c_{1|1}, \dots, c_{J1|1}), \dots, (c_{1|L}, \dots, c_{JL|L})$. Choices occur under the assumption that there are J alternatives that can be divided into L $(l = 1,2, \dots, L)$ subgroups. In addition, it is assumed that the choice process will be carried out in a way that will provide the highest benefit. Accordingly, the mathematical form of the model and the probability of the i^{th} decision unit choosing the j^{th} alternative in the nest b are as follows (Greene, 2012):

$$P_{ijb} = P_{ij|b}P_b = \left(\frac{exp(x'_{ij|b}\beta)}{\sum_{j=1}^{J_b} exp(x'_{ij|b}\beta)}\right)\left(\frac{exp(z'_{ib}\gamma)}{\sum_{l=1}^{L} exp(z'_{ib}\gamma)}\right)\frac{\left(\sum_{j=1}^{J_b} exp(x'_{ij|b}\beta)\right)\left(\sum_{l=1}^{L} exp(z'_{ib}\gamma)\right)}{\left(\sum_{l=1}^{L}\sum_{j=1}^{J_b} exp(x'_{ij|b}\beta + z'_{ib}\gamma)\right)}$$

$$P_b = \frac{exp[\tau_b(z'_{ib}\gamma + IV_{ib})]}{\sum_{b=1}^{B} exp[\tau_b(z'_{ib}\gamma + IV_{ib})]} \quad (2)$$

In Equation 2, i denotes the decision unit, b denotes the choice nest, j denotes the alternatives in the nest, $x_{ij|b}$ denotes the behaviour of the decision units, z_{ib} denotes the properties of the choice set, IV denotes the inclusive value and τ denotes the parameter of the inclusive value.

For any b branch, the inclusive value is (IV): $IV_{ib} = ln\left(\sum_{j=1}^{J_b} exp(x'_{ij|b}\beta)\right)$. The inclusive value gives a measure of the correlation between the random error terms of the choices with respect to the unobservable features (Akın, 2002) and IV parameters take values in the closed range of 0 to 1 (McFadden, 1981). Stata 16.0 (StataCorp, 2019) program package was used in the analysis of the NL model. In the study, the statistical significance of the data was evaluated at the $p \leq .05$ significance level.

In the study, the factors affecting the school choice were analysed using the two-level NL model in Figure 1, and the satisfaction of the individual from the school his/her child is attending was analysed using the three-level NL model in Figure 2.

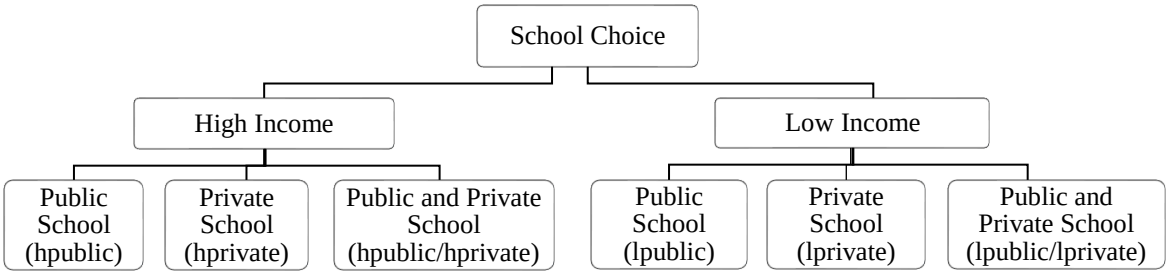

Figure 1. School Choice-Two Level Nested Logit Model

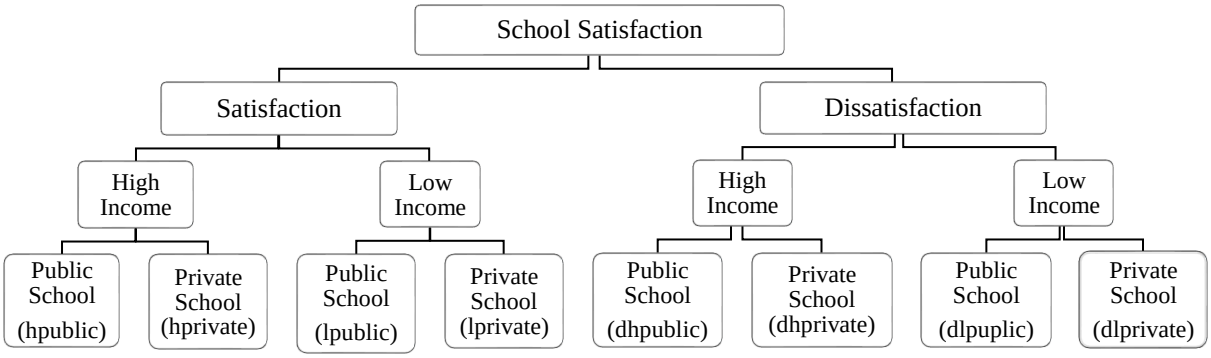

Figure 2. School Satisfaction-Three Level Nested Logit Model

In the first level of the NL model given in Figure 1, the individuals participating in the survey were considered in two categories according to their income levels as high and low income groups. In the formation of income categories, the per capita income level of 2018 was taken into account (TURKSTAT, 2018a). Households with a monthly income of approximately 3,788TL and above were classified in the high income group, and households below this value were classified in the low income group. School choices of high and low income groups include a total of six choices: (i) public schools, (ii) private schools and (iii) public and private schools.

In the analysis of the NL model presented in Figure 1, socioeconomic factors of the individual were used. In the study, the presence of an individual who brings income to the household other than the head of the household (dummy variable), the working status of the head of the household (dummy variable), the structure of the institution/organization in which the head of the household works (public or private), gender, property ownership (dummy variable), marital status (single or married), household size, age and education level variables were used. The household size variable was handled in two categories as below average and above average, taking into account the average household size (3.4 people) in 2018, published by TURKSTAT (2018b). Due to the iteration limitation experienced in the analysis of the NL model, the age and education variables in the analysis were also analyzed in two categories. The age variable was considered as below and above the average by using the average age of the household heads participating in the survey (36 years old), and the education variable was handled in two categories as high school and below and college and above.

The NL model in Figure 2, on the other hand, was divided into two branches as "satisfied" and "dissatisfied" according to school satisfaction at the first level. In the 2018 LSS administered by TURKSTAT throughout Turkey, the families' satisfaction with the schools they sent their children to and the reasons for being or not being satisfied were questioned separately. Of the 1,939 respondents

who participated in the survey, 1,681 sent their children to public schools, and 176 to private schools and 82 had children attending both public and private schools. The households having children attending both public and private schools expressed their level of satisfaction with the public and private schools separately. For this reason, the data belonging to these households were evaluated in the dimensions of both public schools and private schools. Thus, the total number of surveys reached was 2,021. From among these participants, 1,380 gave a positive answer and 641 gave a negative answer to the question "Are you satisfied with the school your child is attending". Participants having positive or negative satisfaction stated the reasons for being satisfied or dissatisfied separately. Therefore, in the current study, the factors affecting school satisfaction and dissatisfaction were analyzed separately. The NL model, which was divided into two categories according to satisfaction, was then divided into two subcategories as low and high income groups. The income subcategories, on the other hand, were then analysed in two sub-stages, namely (i) public and (ii) private schools. In the formation of the income subcategory, the level of national income per capita in 2018 was taken into account, as in the school choice.

In the analysis of the NL model in which the school satisfaction level of the household head was investigated (Figure 2), answers to the questions *"Do you like the quality of education at school?", "What do you think about the quality/number of educational tools at school?", "Are you satisfied with the general approach of the school administration?", "Are you satisfied with the teachers' approach to students?", "What do you think about the number of students in classes?", "What do you think about the heating, cleaning, lighting, etc. conditions of the schools?"* and *"What do you think about safety in and around the school?"*.

Independent variables used in the study: Public school choice of the high income group (hpublic), private school choice of the high income group (hprivate), public and private school choices of the high income group (hpublic/hprivate), public school choice of the low income group (lpublic), private school choice of the low income group (lprivate) and public school and private school choice of the low income group (lpublic/lprivate). The variables used in the school satisfaction analysis include: satisfaction of the households in the low income group with private school (lprivate), satisfaction with public school (lpublic); satisfaction of the households in the high income group with private school (lprivate), satisfaction with public school (lpublic). In the school dissatisfaction analysis, the households who were in the low income group and dissatisfied with private school were defined as (dlprivate), dissatisfied with the public school as (dlpublic) while the households who were in the high income group and dissatisfied with private school as (dhprivate), dissatisfied with public school as (dhpublic).

Results

The head of the household makes a choice between possible alternatives while making a decision about the type of school his/her child will attend. Individuals' level of satisfaction with the school they choose is determined by their alternatives. Therefore, alternatives are important in determining school type choice and the public of satisfaction/dissatisfaction with the school. Therefore, before progressing onto the analysis of the NL models in the current study, the probability of choosing each alternative at the second level of the hierarchy was calculated for all the alternatives and the results are presented in Appendix 1 and 2. According to the results of the analysis, it was determined that the highest probability of being chosen belongs to public schools in the high and low income groups. As for the level of satisfaction with the school, it was seen that the level of satisfaction with the school attended has a determining role for both income groups and as the satisfaction with the public schools increases, the probability of choosing public schools increases, as well; otherwise, the probability of choosing private school increases.

1. Nested Logit Model Prediction Results for School Choice:

The factors affecting the households' school choice were predicted with the two-level NL model and the results of the analysis are presented in Table 1.

Table 1. Nested Logit Model Prediction Results for the Households' School Choice

The Lower Branch (Twing Level)				
The Dependent Variables (1-6 Choice)	**hpublic**	**hprivate**	**lpublic/lprivate**	**lprivate**
Income-Generating Individual (Yes) (dummy)	-0,137	1,967	-0,734	35,323
(z)	(-0,16)	(3,89)*	(-0,05)	(2,68)*
Gender (Female) (dummy)	0,7588	-2,126	-3,483	11,642
(z)	(1,64)	(-1,37)	(-1,32)	(2,10)**
Marital Status (Single) (dummy)	-2,691	4,536	-5,484	-35,965
(z)	(-3,77)*	(1,99)**	(-1,68)	(-3,38)*
Education (College and above) (dummy)	0,548	1,256	-0,930	35,280
(z)	(0,70)	(2,62)*	(-0,33)	(3,69)*
Age (Below average) (dummy)	0,666	-0,396	-0,007	-13,541
(z)	(1,92)**	(-0,24)	(-0,00)	(-2,01)**
Household Size (Below average) (dummy)	0,598	9,562	3,791	31,271
(z)	(1,53)	(2,75)*	(1,87)**	(3,22)*
The Upper Branch (Branch Level)				
Low Income Group (High Income-Base Class)				
Working Status (Yes) (dummy)	1,8675			
(z)	(-4,96)*			
Structure of the Institution/Organization (Private) (dummy)	-1,498			
(z)	(-5,11)*			
Income-Generating Individual (Yes) (dummy)	1,627			
(z)	(13,61)*			
Household Size (Below average) (dummy)	1,352			
(z)	(3,60)*			
Property Ownership (Yes) (dummy)	0,475			
(z)	(3,97)*			
IV Parameters				
Low Income Group	High Income Group			
34.890	8.308			
LR test for IIA (High Income Level) (iv=1): chi2(2) = 64.04; prob>chi2= 0.0000				
Log likelihood= -1731.83 N=11634 (n=1939) Wald chi2(30)= 438.45 prob > chi2= 0.0000				

Note: * and ** signs denote significance at the level of 1% and 5%, respectively. In Table, IV parameter denotes the inclusive value, IIA denotes the independence from irrelevant alternatives, LR denotes the likelihood ratio and log-likelihood denotes the logarithm of the probability value of the predicted function.

In the analysis of the NL model, the choice of public/private school in the high income group and the choice of public school in the low income group were used as the base class in the lower branch. In the upper branch, the high income group was used as the base class[3].

When the results of the upper branch NL analysis in Table 1 are examined, it is seen that all the variables in the equation are statistically significant at the $p<.05$ significance level. According to the results of the analysis, the fact that the individual in the low income group is actively working affects the school choice 1.8675 times more positively. The presence of the individual(s) who contribute(s) to

[3] Automatically determined by the Stata 16.0 program package used.

the family budget, apart from the head of the household, also positively affects the school choice. This effect is 1.627 times higher compared to the high income group. The type of institution/organization that the head of household works for is another important parameter affecting the school choice. The head of the household who is in the low income group and working in a private institution/organization is less likely to choose a private school compared to the head of the household in the other income group (-1.498). Having a household size below Turkey's average and property ownership variables also contribute positively to school choice. In fact, an individual with a household size below the average, despite being in the low income group, prefers school 1.352 times more than an individual in the high income group. The same also holds true for property ownership, and it positively affects the school choice (0.475) of an individual in the low income group.

When the prediction results of the lower branch equation in Table 1 are examined, it is seen that the marital status and age variables are statistically significant in the public school choice of the households in the high income group while the variables of the presence of another income- generating individual, marital status, education and household size are statistically significant in their private school choice ($p<.05$). On the other hand, the household size variable was found to be significantly effective in the public/private school choice of the households in the low income group ($p\leq.05$). The variables of the presence of another income-generating individual, gender, marital status, education and household size were found to be significantly effective in their private school choice ($p<.05$).

When the results of the lower branch analysis are examined in terms of sign, it can be said that all the variables in the analysis are compatible with the expectation in terms of sign. The presence of an income-generating individual other than the head of the household has a decisive role in the choice of private school in the high and low income groups. In the high income group, the probability of choosing a private school is 10.967 times more than a public/private school. This probability value is even higher in the low income group and the probability of choosing a private school rises to 35.323.

The gender variable only has a decisive role in the private school choice in the low income group. The female household heads in the low income group prefer private school to public school 11.642 times more than the male household heads. The education level variable also yields a result similar to the gender variable. As the education level of the household head in the low income group increases, his/her probability of preferring private school to public school also increases.

The marital status variable is another parameter that affects school choice. This parameter affects the public and private school choices of the households in the high income group and the private school choice of the households in the low income group. The direction of the effect is negative in the school choice of all the income groups, except for the private school choice of the high income group. The single head of the household in the high income group prefers public school less than other types of school (2.691 times) compared to the married head of the household. If the household head is single and has a high income level, he or she prefers private school more than public school with a probability value of 4.536. In the low income group, the single household head prefers private school, and the probability value of choice is 35.965.

The household size variable affects the school choice in the lower branch group as in the upper branch group. The school choice of the families with a household size below the average of Turkey is in favour private school in the high income group, while in the low income group, it is in favour of public/private and private school.

When the IV parameters of the model are examined, it is seen that the parameters are greater than 1. (in the low income group: 34.890 and in the high income group: 8.308). According to the analysis results, IV parameters meet the local maximization conditions (Boersch-Supan, 1990).

2. Nested Logit Model Prediction Results for School Satisfaction/Dissatisfaction:

The household head's public of satisfaction/dissatisfaction with the school his/her child is attending was predicted with the three-level NL model. In the analyses, as in the school choice model, public school in the high income group was selected as the base class in the upper branch and public school in the low income group was selected as the base class in the lower branch (lpublic). The NL model analysis results obtained are presented in Table 2.

Table 2. Nested Logit Model Prediction Results for School Satisfaction

The Lower Branch (Twing Level)						
The Dependent Variables (1-4 Choice)	**School Satisfaction**			**School Dissatisfaction**		
	hpublic	**hprivate**	**hpublic**	**hprivate**	**hpublic**	**hprivate**
The Quality of Education at School (Yes) (dummy)	0,058	0,463	3,199	-0,593	-0,617	-14,394
(z)	(0,16)	(0,26)	(0,89)	(-1,21)	(-0,11)	(-0,92)
The Quality/Number of Educational Tools at School (enough) (dummy)	0,780	6,269	-13,953	-0,426	-11,649	-76,499
(z)	(1,97)**	(1,85)**	(-1,39)	(-0,52)	(-0,89)	(-1,37)
The General Approach of the School Administration (Yes=Bad) (dummy)	-0,411	0,335	-1,927	1,134	-24,855	-45,456
(z)	(-0,84)	(0,13)	(-0,37)	(1,95)**	(-1,37)	(-1,25)
The Teachers' Approach to Students (Yes) (dummy)	-1,021	7,414	11,696	-0,441	24,592	54,721
(z)	(-1,50)	(1,79)**	(1,39)	(-0,59)	(1,35)	(1,35)
The Number of Students in Classes (Crowded) (dummy)	-1,137	-6,147	-8,628	1,088	22,678	41,799
(z)	(-2,81)*	(-2,30)**	(-1,23)	(2,16)**	(1,83)	(1,48)
The Heating, Cleaning, Lighting, etc. Conditions of the Schools (Well) (dummy)	0,049	-3,717	-9,320	-0,222	6,601	12,032
(z)	(0,13)	(-1,48)	(-1,14)	(-0,43)	(0,97)	(0,352)
Safety in and around The School (Well) (dummy)	-0,266	-0,995	-4,594	0,044	-4,317	4,575
(z)	(-0,77)	(-0,55)	(-1,00)	(0,08)	(-0,06)	(0,36)
The Upper Branch (Branch Level)						
School Satisfaction (Satisfaction-Base Class)						
Low Income Group (High Income-Base Class)						
IV Parameters						
Low Income Group	High Income Group					
11.353	1.534					
LR test for IIA (High Income Level) (iv=1): chi2(2) = 53.88; prob>chi2= 0.0000						
Log-likelihood= -1319.437 N=5520 (n=1380) Wald chi2(30)= 241.23 prob > chi2= 0.0000						

Note: * and ** signs denote significance at the level of 1% and 5%, respectively. In Table, IV parameter denotes the inclusive value, IIA denotes the independence from irrelevant alternatives, LR denotes the likelihood ratio and log-likelihood denotes the logarithm of the probability value of the predicted function.

When the NL analysis results in Table 2 are examined, it is seen that the independent variables of the quality/number of educational tools at school and the number of students in the classroom are significantly effective in the satisfaction of the high income group with public school and that the independent variables of the quality/number of the educational tools, the number of students in the classroom and teachers' approach to the student are significantly effective in the satisfaction of the individuals in the same income group with private school *(p<.05)*. According to the results of the lower branch analysis of the low income group, not all the variables in the analysis are statistically significant (*p>.05*). In the lower branch of the school dissatisfaction of the household head, the variables of the school administration's general approach and the number of students in the class were found to be significantly effective in the dissatisfaction of the households in the high income group with public school (*p<.05*). As in school satisfaction, in the school dissatisfaction of the households in both the low income and high income groups, all the independent variables were found to be statistically insignificant (*p>.05*).

When the variables found to be statistically significant are examined in terms of sign, it is seen that the quality/number of educational tools independent variable in the public and private school satisfaction lower branch of the high income group is compatible with the expectation, in other words, it has a positive effect. This positive effect is 0.78 in public schools and 6.27 in private schools. The independent variable of the number of students in the class is also in line with the expectation in terms of sign. Crowded classrooms negatively affect both private and public school satisfaction. The degree of this negative effect is approximately 1.14 in public schools and 6.15 in private schools. Even if they are in the same income group, the reaction of individuals to crowded classes is stronger in private schools. The independent variable of teachers' approach to students is only determinant in private school satisfaction of the high income group, and the teacher's approach to students positively affects school satisfaction. The degree of this effect is 7.41. When the NL analysis of school dissatisfaction is evaluated in terms of signs, it is seen that the variable of the number of students in the class in the public school equation of the high income group and the independent variable of the general approach of the school administration are compatible with the expectation in terms of signs. The results obtained for the independent variable of the number of students in the class support the results of the school satisfaction analysis. As the number of students in the class increases, the dissatisfaction with public school also increases. Another factor that has a decisive effect on the dissatisfaction of the households in the high income group with public school is the general approach of the school administration, and the effect size of this variable is 1.134.

As in the school choice NL analysis, in this developed analysis, the local maximization criterion is met. The Wald statistics probability value is zero. IV parameters are greater than 1 and the parameters take values of 11.35 and 10.53, respectively.

Discussion

In the current study, it was aimed to determine socioeconomic factors affecting low income and high income families' choice for a public school or a private school, to investigate their public of satisfaction with the school their children are attending and to determine the factors affecting their public of being satisfied or dissatisfied with the school. According to the results of the NL model analysis, in the school choice of the households in the low income group, the variables of the household head's having an active job, working in a public institution/organization, the presence of anther income-generating member in the family, the number of individuals in the household being below the Turkey average and the ownership of the place of residence are more decisive compared to the households in the high income group. These variables positively affect the household head's choice of private or public school. The household head's taking an active role in the working life and the presence of individuals other than the head of the household who contribute to the family budget can generally lead to an increase in the total income of the family. This might mean that single-child families in the low income group can allocate a greater amount of money to the education of their child than the low income families with more than one child and thus such families can have more school alternatives. When the relevant literature is reviewed, it is seen that some studies support this conclusion. For example, Keskin and Bilgin Turna (2010) public that public schools are less preferred as the amount allocated to children going to school from the total income of families increases.

In the current study, it was determined that the independent variable of household size also affected school choice positively. Families with a household size below the average in the low and high income groups are more likely to prefer private school. Having more than one child in low income families changes the direction of their school choice. While these families send some of their children to private schools, they prefer to send others to public schools. Studies on the subject support this finding (Kingdon, 1996; Srivastava, 2006). When the number of children is high, in low income families, the child's gender or birth order plays a decisive role in which school the child will attend (De et al., 2002). Therefore, it can be said that the analysis results obtained in the current study are compatible with other studies in the literature.

According to the results of the current study, another factor that affects the decision on school choice is the home ownership of the household. Owning the place of residence makes a positive contribution to the family budget. The Household Budget Survey data published by TURKSTAT (2018c) also support this finding. According to 2018 data, the highest share in consumption expenditures of households in Turkey belongs to housing and rent expenditures with 24.1%. Home ownership can therefore positively affect the amount of expenditure made on the child's education from the total household budget. The result of the study regarding these variables supports the hypothesis that one of the main determinants of school choice is income (Alderman et al., 2001; Bernal, 2005; Dimaki et al., 2005).

Another remarkable point in the current study is that the probability of choosing a private school in the low income group is approximately 3.5 times higher than that of the high income group. This may be because low income parents tend to perceive schooling as the only opportunity for their children (Kim & Hwang, 2014). Families generally think that although the education program of public and private schools is the same, private schools are better than public schools in many regards (academic success, positive school climate, classroom activities, exam preparation-oriented education, foreign language education and social activities). The study conducted by Tooley, Dixon, and Gomathi (2007) supports this finding. According to this study, the main reason why families choice private schools to public schools that offer free education is parents' conviction that public schools are unsuccessful. Similar results were reported in the studies conducted by Beavis (2004), Dixon and Tooley (2012) and Härmä (2013). The researchers attributed the increase in demand for private schools to the conception of parents that private schools are of higher quality compared to public schools. For these reasons, it has been argued that low income families also choice private schools to public schools, despite their higher cost (Alderman et al., 2001).

According to another result of the current study, the gender of the head of the household is not effective in the school choice of the households in the high income group, while it is effective only in the choice of private school in the low income group. When the effect of gender on school choice in the low income group is examined, it is seen that women more choice private schools compared to men. Especially in developing countries, the social perception of gender and the fact that parents see their sons as a guarantee for old age may result in the prevention of women's right to education or the decrease in education investments made for them. This may have differentiated the sensitivities of female household heads in the low income group towards education. This issue, compounded by the parental perception that private schools are of higher quality, may have led female household heads to choice private schools more.

The marital status of the household head also affects the school choice. If the head of the household has a high income and is single, he/she choices private school to public school. However, the same is not true for the single household head in the low income group. In the low income group, the head of the household choices public school. The household head's being single may impose a greater burden on the individual compared to the married ones in terms of financial responsibilities. This may further limit low income single household heads compared to high income household heads in terms of school choice. Therefore, the single household head in the low income group may not be able to take the decision of choosing a private school as easily as the single household head who is economically more advantageous. According to the results of the analysis, the single head of household in the high income group choices private school to public school with a probability value of 62.27%.

Another factor affecting the school choice decision of the household head is his/her education level. As the education level increases, families' probability of choosing to send their children to private schools rather than public schools also increases. Another important point here is that the households with higher education in the low income group are more likely to choice private school than those in the high income group. Studies have shown that there is a positive relationship between parents' education and their decision to send their children to a private school (Dimaki et al., 2005; Goldring & Phillips, 2008). In addition, studies suggest that school choice differs according to the quality and

amount of information possessed about schools (Kim & Hwang, 2014). Low level of education may prevent parents from having accurate information about the objective conditions of schools. Parents with higher levels of education are more likely to be aware of the importance of education, put greater emphasis on educational achievements, learn about the diversity of educational options, seek better educational opportunities for their children, and make more informed decisions and choices about their child's education. This might be the reason for this result of the current study. In addition, in Turkey, as in all parts of the world, the income level has a decisive role in the selection of the residential area/neighborhood where the household will live. Being economically disadvantaged can force families to reside in the outskirts of cities or in more disadvantaged residential areas. According to the research carried out by the World Bank (2011) and OECD (2009), educational opportunities and the quality of these opportunities offered by the school may vary depending on the residential area. It is stated that there are inadequacies in terms of quantity and quality of the physical and technical resources, particularly of human resources offered by schools located in disadvantaged residential areas (Önder, 2016). All these factors together with the fact that public schools have an address-based student enrolment policy may have led low income, highly educated households to seek alternatives other than public schools for their children's education and thus may have led them to choice private schools.

The age of the head of the household is also a determining factor in school choice. Young household heads in the high income group choice public school. On the other hand, it is seen that the heads of the households in the low income group tend to choice private school to public school as they get older. The reason for this might be that the priorities of the individuals change in favour of education as they get older on the basis of their previous experiences and as a result, the amount of expenditure allocated to the children from the total income of the families increases. Contrary to this result of the current study, in some other studies, it has been determined that parents tend to prefer public schools more as their age increases (Härmä, 2013; Keskin & Bilgin Turna, 2010).

In the NL model, which analyzed whether the household heads are satisfied with the school their children are attending, it was determined that "*the quality/number of educational tools in the school, the teachers' approach to the students and the number of students in the classroom*" are the most influential factors on the satisfaction of the parents while "*the general approach of the school administration and the number of students in the classroom*" are the most influential factors on the dissatisfaction of the parents.

Sufficient and qualified educational tools in the school were found to have a significant effect on the satisfaction of the households in the high income group with both private and public schools. However, the effect of this independent variable on school satisfaction is approximately eight times greater in private schools than in public schools. Some studies in the literature (Almond, 2013; Friedman et al., 2006) support this result. For example, according to Friedman et al. (2006), the availability of school resources is one of the important determinants of parental satisfaction. Moreover, as stated by Machin and Vignoles (2004), the income level of the family mainly determines the extent to which quality education services can be drawn on. According to Hastings et al. (2005), high socioeconomic status increases the probability of parents to prefer high quality private schools for their children. Hanushek, Kain, Rivkin, and Branch (2007) found that parents who choose private schools are more sensitive to school quality than those who choose public schools. It is reported that parents with high income tend to give more importance to the educational competence of schools (Kim & Hwang, 2014). Furthermore, it is argued that public schools are more inadequate in terms of tools and equipments, science and language laboratories compared to private schools (Gürler, 2020), and there are inequalities between public schools in terms of the quality of physical and technical resources (Petek & Önder, 2015). Due to social inequalities, it is thought that the access of students from the lower socioeconomic classes to more advantageous schools in terms of quantity and quality of educational tools will be more limited. The study conducted by the World Bank (2005) also supports this conclusion. In this study, it is reported that although there are better equipped schools, poor children do not have a chance to enrol in these schools. It is stated that the learning materials of the schools serving poor children are inadequate. All these reasons may have increased the private and public school satisfaction of the household heads in

the high income group in terms of the adequacy and quality of educational tools, and may have increased the private school satisfaction more than the public school satisfaction in the high income group. Another possible reason for this result may be related to the expectations of the high income parents for the educational tools of private and public schools.

Teachers' approach to students is also an effective factor in school satisfaction. This independent variable only affects the private school satisfaction of the high income group, and the degree of effect is positive. Kim and Hwang (2014) revealed that the relationship between students and teachers is a strong predictor of parental satisfaction. The researchers found that parents' school satisfaction tends to increase in schools where the student-teacher relationship is closer. According to Jacob and Lefgren (2007), educational expectations of low and high income families are different. In high income families, the teacher's attitude towards the student is one reason for school choice. Teachers' use of physical or psychological violence against students is one of the most important reasons for changing school (Bağcı, 2019). Since private schools cover their expenses with the fees they receive from the parents of the students, their survival depends on the satisfaction of the parents. Therefore, private schools may not tolerate teacher approach that can lead to student loss. Also, there is no job guarantee of a teacher in private schools. Teachers in private schools may be more tolerant of students for fear of losing their job. These factors may have increased the satisfaction of the household heads in the high income group with teachers' approach to their children in private schools.

Another factor affecting school satisfaction is the number of students in the class. A crowded classroom in both private and public schools is generally considered to be an undesirable situation by household heads. Yet, compared to public schools, crowded classrooms in private schools are less tolerated by parents. In the high income group, this variable has approximately 5.5 times less negative impact on private school satisfaction than in public schools. This result is supported by many studies that show that less populated classes increase parents' school satisfaction (Alpaykut, 2017; Buckley & Schneider, 2006; Grady, Bielick, & Aud, 2010). A crowded classroom means that the time the teacher will allocate to each student will be less, that the attention to be paid to each student by the teacher will decrease and that classroom management will be more difficult for the teacher. A crowded classroom is likely to hinder effective teaching and decrease the efficiency of the lesson instructed. Research on the subject shows that as the number of students in a class increases, learning and academic achievement will decrease (Uludağ & Odacı, 2002). As such, a crowded classroom environment is not preferred by household heads. Public schools have an address-based student enrolment policy in Turkey and public schools have to admit all students in their area of responsibility. This may lead to the formation of more crowded classes in public schools from time to time. In addition, household heads do not have the opportunity to interfere with the number of students in a classroom in public schools. According to Bağcı (2019), crowded classrooms are one of the main reasons for the school change occurring from public school to private school. Such factors may have increased the satisfaction of the household heads in the high income group with regard to the number of students in the classroom, and may have affected higher-income households' satisfaction with private schools more than public schools.

When the results related to the households' dissatisfaction with private and public schools were examined, it was seen that the number of students played a decisive role in the school dissatisfaction of only high income parents. This result of the study may have been brought about by the same reasons stated in the school satisfaction section.

The general approach of the school administration also has a decisive role in dissatisfaction. It is observed that individuals in the high income group are not satisfied with the approach of public school administrators. Studies have shown that effective administrative leadership, family-administration contacts and communication between home and school are associated with parental satisfaction (Buckley & Schneider, 2006; Grady et al., 2010). This result of the study may have arisen from the negative attitude of the school administration towards the student and the parent, as well as from the interventions of the parents towards the internal functioning of the school administration. In addition, this result may be due to the expectation of high income parents that the school administration

is open to communication and that the administration makes them feel valuable/important during the communication process. It is understood from the study of Jacob and Lefgren (2007) that high income families have such expectations.

Results, Suggestions and Limitations

The results of the current study show that the school choices of households are sensitive to socioeconomic and demographic family characteristics and these characteristics and probability values vary across different income groups. In addition, it was determined that the school's having quality educational tools, the number of students in the class, the positive attitude of teachers towards students and the approach adopted by the school administrators towards parents positively affected the school satisfaction of the household heads. It was determined that the state of the household head's being satisfied or dissatisfied with these factors, their effect sizes and probability values differed depending on the income group and whether the school is public or private.

It can be said that the current study forms a basis for future research in terms of understanding the public and private school choices of parents from different socioeconomic classes and their school satisfaction. However, while evaluating the results of the current study, the following limitations should be taken into consideration; i) the study was conducted by using the 2018 LSS B micro data set, ii) in this data set, the data about school choices were addressed without making any differentiation between the levels of schooling and these data were collected through a question asking whether there is a member of a household attending a public or private school giving preschool, primary school, secondary school or high-school education, iii) LSS data were collected without making any distinction between rural and urban areas. Due to these limitations, the current study may not give much insight into school choice and satisfaction in each level of schooling and of the household heads residing in rural and urban areas. For this reason, it would be beneficial to conduct similar studies on larger samples in provinces where private schools are more common, by asking the opinions of the students as well as the heads of the households for different education levels. In addition, due to the limitations of the questionnaire technique, the subject can be examined in more depth by using different methods and designs in future research. In the current study, the variables that determine school choice were limited to household characteristics. However, school characteristics also have a decisive role in the school choice of parents. For this reason, the school characteristics that are determinants of school choice (private/public) of the parents in low and high income groups can be examined in future studies. The current study showed the that factors affecting the school satisfaction of household heads vary depending on their income and also showed the degree of impact and probability values of these factors. This result may be an indication that the private schools accessed by low and high income groups may differ in terms of quality. Therefore, it is recommended to investigate private schools, which students from high and low income groups can attend, in terms of the quality of education in future research. Furthermore, as a result of the current study, it was determined that the household head in the low income group with a college or higher education level is 3.5 times more likely to choose a private school compared to the household head in the same education level but in the high income group. It is thought that an in-depth analysis of this subject with further research will contribute to the literature.

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Appendix 1. School Choice Model Probability Values

Alternatives for the School Choice Upper Branch

Index	Alternative Value	Label	Observation	Frequency	Percent (%)
1	1	High Income Group	5,817	726	37.44
2	2	Low Income Group	5,817	1,213	62.56

Alternatives for the School Choice Lower Branch

Index	Alternative Value	Label	Observation	Frequency	Percent (%)
1	1	lprivate	1,939	1,135	58.54
2	2	lpublic/lprivate	1,939	41	7.11
3	3	hpublic	1,939	546	28.16
4	4	hpublic/lprivate	1,939	41	2.11
5	5	lprivate	1,939	37	1.91
6	6	hprivate	1,939	139	7.17

Selection Probability Values *

Choice	Label	Selection	p2	p1	Condp
hpublic	High Income Group	1	0.3407	0.4631	0.7356
hpublic/hprivate	High Income Group	0	0.0247	0.4631	0.0534
hprivate	High Income Group	0	0.0976	0.4631	0.2108
lpublic	Low Income Group	0	0.4824	0.5368	0.8986
lpublic/lprivate	Low Income Group	0	0.0284	0.5368	0.053
lprivate	Low Income Group	0	0.0259	0.5368	0.0482
hpublic	High Income Group	0	0.3407	0.4631	0.7356
hpublic/hprivate	High Income Group	0	0.0247	0.4631	0.0534
hprivate	High Income Group	1	0.0976	0.4631	0.2108
lpublic	Low Income Group	0	0.4824	0.5368	0.8986
lpublic/lprivate	Low Income Group	0	0.0284	0.5368	0.053
lprivate	Low Income Group	0	0.0259	0.5368	0.0482
hpublic	High Income Group	0	0.3407	0.4631	0.7356
hpublic/hprivate	High Income Group	0	0.0247	0.4631	0.0534
hprivate	High Income Group	0	0.0976	0.4631	0.2108
lpublic	Low Income Group	1	0.4824	0.5368	0.8986
lpublic/lprivate	Low Income Group	0	0.0284	0.5368	0.053
lprivate	Low Income Group	0	0.0259	0.5368	0.0482
hpublic	High Income Group	0	0.3007	0.3804	0.7905
hpublic/hprivate	High Income Group	1	0.0151	0.3804	0.0396
hprivate	High Income Group	0	0.0646	0.3804	0.1698
lpublic	Low Income Group	0	0.5913	0.6195	0.9545
lpublic/lprivate	Low Income Group	0	0.0165	0.6195	0.0267
lprivate	Low Income Group	0	0.0115	0.6195	0.0187

Note: *= Due to the large number of observations, the analysis results of 1/24 observations are presented in the table. **p2** and **p1** in the table represent the probability of choosing each alternative at each level of the hierarchy, and **Condp** represents the conditional probability of each alternative at each level.

Appendix 2. School Satisfaction/ Dissatisfaction Model Probability Values

Alternatives for the School Satisfaction/ Dissatisfaction Upper Branch					
Index	**Alternative Value**	**Label**	**Observation**	**Frequency**	**Percent (%)**
1	1	High Income Group	4,042	767	37.95
2	2	Low Income Group	4,042	1,254	62.04
Alternatives for the School Satisfaction/ Dissatisfaction Lower Branch					
Index	**Alternative Value**	**Label**	**Observation**	**Frequency**	**Percent (%)**
1	1	lpublic	2,021	720	35.62
2	2	lprivate	2,021	56	2.77
3	3	hpublic	2,021	446	22.06
4	4	hprivate	2,021	158	7.81
5	5	dlpublic	2,021	456	22.56
6	6	dlprivate	2,021	22	1.08
7	7	dhpublic	2,021	141	6.97
8	8	dhprivate	2,021	22	1.08
Selection Probability Values*					
Choice	**Label**	**Selection**	**p2**	**p1**	**Condp**
hpublic	Satisfaction	0	0.2335	0.3449	0.3531
hprivate	Satisfaction	1	0.1013	0.3449	0.1468
lpublic	Satisfaction	0	0.1783	0.1551	0.4441
lprivate	Satisfaction	0	0.0163	0.1551	0.0559
dhpublic	Dissatisfaction	0	0.2005	0.0697	0.3882
dhprivate	Dissatisfaction	0	0.0476	0.0697	0.1118
dlpublic	Dissatisfaction	0	0.2095	0.4302	0.454
dlprivate	Dissatisfaction	0	0.0222	0.4302	0.0459
hpublic	Satisfaction	1	0.0919	0.1302	0.3531
hprivate	Satisfaction	0	0.0382	0.1302	0.1468
lpublic	Satisfaction	0	0.3284	0.3697	0.4441
lprivate	Satisfaction	0	0.0413	0.3697	0.0559
dhpublic	Dissatisfaction	0	0.0657	0.0693	0.4732
dhprivate	Dissatisfaction	0	0.0037	0.0693	0.0267
dlpublic	Dissatisfaction	0	0.4195	0.4306	0.4851
dlprivate	Dissatisfaction	0	0.0128	0.4306	0.0149