The roles of attitudes towards learning and opposite sex as a predictor of school engagement: mixed or single gender education?

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ABSTRACT Students’ attitudes towards learning and their school engagement play important roles on the success of educational programs. Therefore, the main purpose of this research is to examine the roles of attitude towards learning and attitude towards the opposite sex as a predictor of school engagement and to determine the correlation between mixed gender education vs. single gender education and school engagement. Eight hundred and forty-three students (525 females and 318 males) who were studying in single gender or mixed gender schools were included in the research. Data were collected through School Engagement Scale, Attitude Scale towards Learning and Opposite Sex Attitude Scale. The Pearson moment correlation coefficient, multiple regression and stepwise regression were used to analyze the data. Findings showed that attitudes towards learning scores are the most predictive for school engagement. Results also showed that school engagement was higher in single gender schools for girls than in single gender schools for boys and mixed gender schools. The success of the student and the attitude towards the opposite sex were also variables that predict school engagement. The democratic attitude and education levels of parents also had important effects on students’ school engagement. The findings have important implications for educational policy making and curriculum designs. Some general recommendations were made based on the findings.

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Introduction

The development of societies is possible with the presence of trained and equipped manpower. Undoubtedly, the important impact of the school cannot be ignored in the training of qualified manpower required by the modern times. The school not only is an environment that provides students with academic knowledge and improve their mental processes, but also bears features that affect their emotional, social, physical, and moral development. Hence, it is important for children to have positive feelings towards school so that they can benefit from the educational activities at the highest level. There are many factors originating from individual and family that affect students’ attitudes towards the school. One of them is school engagement. There have been many definitions of school engagement to date. While Silins Mulford (2002) defined school engagement as going to school regularly, participating in school-related decisions and social activities, Finn (1993) described it as feeling the sense of belonging to the school and adopting school’s objectives. The common ground in school engagement is that students identify themselves with the school and participate in school-related activities (Audas and Willms, 2002; Finn and Voelkl, 1993). In this context, school engagement in general can be defined as how the individual embraces the school, integrates themselves with school’s objectives, participates in cultural and social activities in the school and wants to be together with their friends and teachers.

School engagement is addressed in affective, cognitive, and behavioral dimensions. Cognitive dimension refers to students’ willingness to learn, their positive attitude towards learning; behavioral dimension is about students’ participation in sporting and cultural activities; and emotional dimension is described as students’ having a positive attitude towards school and friends at school (Finlay, 2006; Fredricks et al., 2004). It has been observed that students with high school engagement go to school more frequently, are less absent from school and have lower dropout rates (Connell et al., 1994; Hirschfield and Gasper, 2011; Janosz et al., 2008; McNeeley and Falci, 2004). Furthermore, research results have explored that students with high school engagement levels are also those who are academically successful (Appleton et al., 2006; Hirschfield and Gasper, 2011; Klem and Connell, 2004; Simons-Morton and Chen, 2009).

Studies on school engagement in the literature seem to address many different variables. In the study conducted by Erdögdü (2016), friendship relations predicted school engagement on a higher level than teacher attitudes, and school engagement of those who attended cultural and sporting activities was on higher levels. Shin et al. (2007) achieved similar results and explored that peer support had a positive effect on school engagement. Thalia and Hashim (2008) reported that students’ school engagement levels were higher when they had more teacher support. Arastaman (2009) and Conchas (2001) found that children of parents with low socio-economic status experienced more school engagement.

There are several variables that affect students’ school engagement, and one of them is the attitude towards learning. The concept of learning has been defined in many different ways. According to some scientists, learning is a relatively permanent change in behavior resulting from experiences in the interaction with environment (Hergenhann, 1988; Hoy and Miskel, 2010; Schunk, 2009). Whereas behaviorists describe learning as only observable behavioral changes since they ignore internal processes (Schwartz and Reisberg, 1991), cognitive theorists focus on mental processes and state that there is no need for observable behavior to occur in learning.Ormrod (1990) defines the concept of learning as the association of new knowledge with existing knowledge based on the knowledge-processing approach. Positive attitudes towards learning affect the learning of individuals both in school and real life. In the case of positive attitudes towards learning, it is observed that individuals perform more successfully in academic terms (Bråten and Stormsø, 2006; Duarte, 2007) and that emotions and thoughts about learning affect student behaviors (Pierce et al., 2007). Prokop et al. (2007) showed that there was a positive correlation between the level of knowledge and individuals’ positive emotions towards learning. A study by Aktürk (2012) concluded a positive relationship between the preservice teachers’ positive attitudes towards learning and their academic achievement. Erdögdü (2017), observed that the students with a positive attitude towards learning were more successful, had higher motivation for the courses, participated more in cultural activities in the school and listened to the teacher in the class more carefully.

One of the variables which is assumed to relate to school engagement is students’ opposite-sex attitudes; that is the relationship between opposite-sex attitude and school engagement (Klem and Martin, 2011). Opposite-sex attitude refers to emotional tendencies against opposite sex. These tendencies shape sexes’ behaviors towards each other cognitively, behaviorally and affectively. Formation of opposite-sex friendships, which can be defined as the desire of two different sexes to coexist with each other, purpose of this coexistence, and the way it is realized vary by developmental processes. During the developmental period between the ages of 3 and 6, also called early childhood, opposite-sex friendships are observed in plays whereas in late childhood which refers to 7–11 years of age such friendships is observed in activities of learning, investigating and being successful In adolescence, opposite-sex friendship might result in emotional coexistence and marriage.

According to the psychoanalytic theory, efforts to develop intimacy with the parent of the same sex in the phallic era tend to shift towards the opposite-sex parent in the latent period (Öztürk, 1995), and immediately afterwards, opposite-sex friendships gain importance in the genital period. Sullivan (1953) argues that efforts to establish friendship with the opposite sex increase further during adolescence, and these efforts of becoming intimate happen to be the developmental task of this period. Purposes of establishing friendship with the opposite sex may differ by gender. In the study conducted by Lacey et al. (2004), the preference of the women in opposite-sex friendships was the social status and income of men whereas the men attached more importance to the physical attractiveness of women. Another study by Underwood et al. (2009) reported that the adolescent girls expected to become only friends with boys while the boys were in the expectation of an emotional relationship. Adolescents can learn their self, gender-based identity and role by befriending the opposite sex. In this context, positive attitudes towards the opposite sex are important for them, since they help them acquire their developmental characteristics (Collins and Sprinthall, 1995).

Studies on opposite-sex friendship in Turkey seem to address the relationship between opposite-sex friendship and social self-efficacy (Başaranoğlu, 2011; Türkoglu et al., 2015), but there has been no study performed on the relationship between attitude towards opposite-sex friendship and academic achievement at school.

Of research interest is whether school engagement differed by attending a coed or single-sex school. Coeducation can be described as female and male students’ receiving education in the same environment while single-sex education refers to how only students of the same sex receive education in the same environment (Hammaker, 1995; Mael, 1998). Not only in Turkey but also around the world, the effects of coeducation or single-sex education on the development of individuals have still been
investigated (Gibb et al., 2008; McFarland et al., 2011; Rycik, 2008; Schober et al., 2004). Debates on coeducation arose for the first time after the foundation of the republic in Turkey when girls wanted to enroll in boys high schools in Tekirdağ (Kamer, 2013). The implications of coeducation or single-sex education are the matter of concern not only in education policies but also in political and ideological debates. There are those who argue that coeducation is more effective as it increases respect among opposite sexes, improve their confidence and make them study together while others advocate the idea that single-sex education is more effective because coeducation leads to moral degeneration.

At the US Congress, Hillary Clinton (2001) said, “There should be no obstacles to single-sex education in the education system of the state. We have to see the successes of single-sex schools. These schools encourage students and parents”, emphasizing the effectiveness of single-sex education. Some studies show that female students studying in single-sex classes are more successful than in co-educational schools (Kohlhaas et al., 2010; McFarland et al., 2011; Mulholland et al., 2008). Thom (2006) achieved similar results in another research. According to Leonard (2007), this is because such schools are more careful about choosing students.

Moreover, some studies have shown that academic achievement of schools significantly differ by being a coed or single-sex school (Fritz, 1997; García, 1998; Schober et al., 2004; Scoggins, 2009; Spielhofer et al., 2004). There are also research findings indicating that coeducation yields more positive results than single-sex education setting in terms of academic education (Elam, 2009; Marsh and Rowe, 1996). As abovementioned, previous research studies achieved different findings on whether coed or single-sex schools increase academic achievement more. In Turkey, to the best of the researcher knowledge, no research has been conducted on the relationship between coed or single-sex education and academic achievement.

This study aims to make contributions to the literature by testing the effects of variables which are assumed to be related to school engagement with regression analysis. It is anticipated that the research findings will guide future studies on increasing students’ school engagement. In the light of discussion made above study examined, the questions to be addressed in this study are: (1) is there a relationship between school engagement, attitude towards learning, opposite-sex attitude, type of school, parental attitude, and parents’ educational level? (2) is there a relationship between school engagement and achievement level? (3) to what extent does type of school, achievement level, parental attitude, and parents’ educational level predict school engagement?

### Method

**Research model.** This research was carried out in the relational survey model since it aimed to determine how the variables that are assumed to relate to school engagement predict the level of school engagement. According to Heppner et al. (2013), research aiming to explore the relationship(s) between two or more variables is called relational research.

**Study group.** As the research was performed on coed and single-sex schools, stratified purposive sampling method of purposive sampling methods was used to choose the schools. In this method, the sample is composed of subgroups of interest to show, describe, and compare their characteristics. It is also called quota sampling (Büyüköztürk et al., 2012). The research was conducted on the students attending girls’, boys’, and coed high schools within the boundaries of Istanbul Metropolitan Municipality. Table 1 shows the number of girls and boys attending the schools that were selected for the research sample.

| Schools                        | Girl | Boy | Total |
|-------------------------------|------|-----|-------|
| Girls’ vocational high school| 316  | -   | 316   |
| Boys’ high school             | -    | 154 | 154   |
| Private (coed)                | 100  | 65  | 165   |
| Public (coed)                 | 109  | 99  | 208   |
| Total                         | 525  | 318 | 843   |

Participants were 525 (62.3%) girls and 318 (37.7%) boys. Instruments were applied to 316 (37%) students from girls’ vocational high schools, 154 (19%) students from boys’ high schools and 373 (44%) students from coed high schools (843 volunteered students in total).

Of the total students who participated in the study, 264 (31%) perceived themselves as successful, 531 (63%) as moderately successful, and 48 (6%) as unsuccessful. The students reported that their parents had authoritarian attitude (93 [11%]), democratic attitude (163 [19%]), over-protective attitude (366 [43%]), over-demanding attitude (136 [16%]) and other parental attitudes (79 [10%]). As for education levels of the students’ mothers, 35 (4%) are illiterate, 306 (36%) are primary school graduates, 351 (42%) are high school graduates and 147 (17) are university graduates. Of their fathers, 10 (1%) are illiterate, 243 (29%) are primary school graduates, 377 (45%) are high school graduates and 208 (25%) are university graduates.

### Data collection instruments

**School Engagement Questionnaire (SEQ) (Arastaman, 2006).** The SEQ developed by Arastaman is graded on a 5-point Likert scale. The instrument consists of 9 items and 5 factors. The subscales are Student’s Internal Engagement, School Environment Engagement, School Program Engagement, School Administration’s Engagement Relationship, Teacher’s Engagement Relationship. Cronbach’s Alphas of the subscales vary between 0.65 and 0.83. The variances explained by the subscales were calculated to be between 7.94% and 14.72% (Arastaman, 2006). Since all items provided a total score on school engagement, the subscales were not used in this study. In this current study, the Cronbach’s Alphas of all items were recalculated, and the reliability value was found to be 0.95.

**Scale of Attitudes Towards Learning (SATL) (Kara, 2010).** The SATL was applied to determine students’ attitudes towards learning. The scale consists of 4 factors which are Nature of Learning (7 items), Expectation (9 items), Openness (11 items), and Anxiety (13 items). Cronbach’s Alphas of the subscales range from 0.72 to 0.78. The factor analysis concluded the factor loadings of the scale to be within acceptable limits. Test-retest reliability coefficient of the scale was calculated to be 0.87. For this study, the Cronbach’s Alpha of the scale was recalculated, and the reliability value was 85.

**Opposite-Sex Attitude Scale (OSAS) (Erdoğan, 2018).** The OSAS is a 26-item 5-point Likert scale. An exploratory factor analysis was performed for the validity study, and all 26 items were observed to group under a single great factor with an eigenvalue >1. The variance explained by this single factor is 53.13%. Common variances of the single factor vary between 0.321 and 0.614. KMO values, Bartlett’s Test, and Cronbach’s Alpha internal consistency coefficients of the final version of the scale were calculated, and the obtained data were found within acceptable limits. The Cronbach’s Alpha of the scale was calculated to be 0.95 for the
reliability study. Item discriminations were calculated to support the construct validity, and each item’s discriminants were found to be significant. The Cronbach’s Alpha of the scale was recalculated, and the reliability value was found to be 0.96.

An information form was prepared by the researcher to obtain students’ demographic data.

Procedure and data analysis. Consent letters were obtained from the volunteer students and their parents and the required permissions were also obtained from the school authorities where the study was conducted, and the instruments were applied to volunteered students in groups in the classroom setting. The relationships between predictor variables and predicted variables were calculated with Pearson’s product moment correlation coefficient. In the research, the categorical variables were converted to dummy variables produced in the amount that is one minus the number of levels by excluding one of the levels. Next, a multiple regression analysis was performed to determine to what extent the independent variables contributed to dummy variables predicted the dependent variable. Then, a stepwise regression analysis was carried out to determine which of the independent variables contributed significantly to the prediction of school engagement level. How each of these independent variables contributed to the variance when predicting school engagement were also calculated.

Results
Descriptive statistics of the instruments used in the research are given in Table 2.

As shown in Table 2, the mean score was 100.87 and the standard deviation was 17.72 for the SEQ, the mean score was 93.35 and the standard deviation was 21.20 for the OSAS, and the mean score was 146.40 and the standard deviation was 16.78 for the SATL.

The correlation coefficients among the variables addressed in the study are given in Table 3.

As shown in Table 3, a moderate positive correlation was found between the scores of SEQ and Scale of Attitudes toward Learning ($r = 0.486, p < 0.01$). There was no significant correlation between the scores of SEQ and Scale of Attitude towards Learning ($r = -0.028, p > 0.01$). A positive correlation was observed between the achievement levels and the scores of SEQ ($r = 0.236, p < 0.01$). There were low, negative, significant correlations between the scores of SEQ and moth er’s education level ($r = -0.154, p < 0.01$) and father’s education level ($r = -0.185, p < 0.01$). A low, negative, significant correlation was found between the scores of SEQ and the type of school ($r = -0.335, p < 0.01$). No significant correlation was observed between the scores of SEQ and the perceived parental attitudes ($r = -0.056, p > 0.01$).

Since the students’ demographics were categorical variables, these variables were converted to dummy variables before the analysis, and a multiple regression analysis was carried out to determine to what extent each of these categorical variables predicted school engagement. The findings are presented in Table 4.

The scores obtained by the students attending different types of school (Boys’ High School, Girls’ High School, Coed High School) significantly predicted students’ school engagement ($R = 0.342, R^2 = 0.117, p < 0.001$). These three variables explained 12% of the variance on the level of school engagement. According to the standardized regression coefficient ($β$), the relative order of significance of the predictor variables for school engagement is the scores obtained by girls’ high school, boys’ high school and coed high school students, respectively. There was a negative correlation between the scores obtained by the boys’ high school students and their school engagement scores. As for the t-test results regarding the significance of the regression coefficients, the scores obtained by the boys’ high school and girls’ high school students were found to be significant predictors of school engagement.

The scores obtained by the students with different achievement levels (successful, moderately successful, unsuccessful) predicted their school engagement ($R = 0.261, R^2 = 0.068, p < 0.001$). These three variables explained 7% of the variance on the level of school engagement. According to the standardized regression coefficient ($β$), the relative order of significance of the predictor variables for school engagement is the scores obtained by the unsuccessful, successful and moderately successful students, respectively. There was a negative correlation between the scores of the unsuccessful students and their school engagement scores. Given the t-test results concerning the significance of the regression coefficients, the scores obtained only by the successful and unsuccessful students significantly predicted school engagement.

The scores obtained by the students with different perceived parental attitudes (democratic, over-protective, authoritarian, over-demanding) significantly predicted students’ school engagement ($R = 0.145, R^2 = 0.021, p < 0.001$). These four variables explained only 2% of the variance on the level of school engagement. According to the standardized regression coefficient ($β$), the relative order of significance of the predictor variables for school engagement is the scores obtained by the students who had parents with democratic, over-protective, over-demanding, and authoritarian attitudes, respectively. In regard to the t-test results concerning the significance of the regression coefficients, the scores obtained by the students who had parents with democratic and over-protective attitudes were found to be significant predictors of school engagement.

The scores obtained by the students whose mothers have different educational levels (illiterate, primary school, secondary education, university) significantly predicted students’ school engagement ($R = 0.165, R^2 = 0.027, p < 0.001$). However, no significant correlation was observed between the scores of the students whose mothers have different educational levels and their school engagement scores.

The scores obtained by the students whose fathers have different educational levels (illiterate, primary school, secondary education, university) significantly predicted students’ school engagement ($R = 0.228, R^2 = 0.052, p < 0.001$). These four variables explained only 5% of the variance on the level of school engagement. According to the standardized regression coefficient ($β$), the relative order of significance of the predictor variables for school engagement is the scores obtained by the students whose fathers are primary school graduates, secondary education graduates, university graduates, and illiterate, respectively. As for the t-test results regarding the significance of the regression coefficients, the scores obtained only by the students whose fathers are primary school and secondary school graduates were found to be significant predictors of school engagement.

Stepwise regression analysis of the predictors of students’ school engagement levels is shown in Table 5.

The analysis was completed in seven steps. The variable of attitude towards learning, which explained the greatest variance at

| Table 2 Descriptive statistics of the scores obtained in the instruments. |
|------------------------|--------|-------|----|----|
| Instruments             | Items  | Mean ± SD | Min. | Max. |
| School Engagement       | 27     | 100.87 ± 17.72 | 29   | 135 |
| Questionnaire           |        |          |     |     |
| Opposite-Sex Attitude Scale | 26    | 93.35 ± 21.20 | 26   | 130 |
| Scale of Attitudes Towards | 40  | 146.40 ± 16.78 | 70   | 187 |
| Learning Scale          |        |          |     |     |
24% in the school engagement variable, was included in the first step of the analysis. There was a positive correlation between positive attitudes toward learning and school engagement. With the inclusion of type of school, which had a 7% contribution to the variance, in the second step, the explained variance increased to 31%. A negative significant correlation was found between attending a coed high school and school engagement. Achievement level, which contributed to the variance at 2%, was included in the third step, and the explained variance increased to 33%. A negative significant correlation was found between high achievement and school engagement. It is thought that the girls had higher levels of school engagement because they interact with each other more in school. They experience problems with going out of house unless they go to school which is due to their conservative family structures. Furthermore, the reason why they had high levels of school engagement could be associated with the fact that they become mature more rapidly than their male peers and are more willing to succeed. Similar results were obtained in several studies (Deem, 1984; Fullarton, 2002; Gauley, 2017; Neel and Fuligni, 2013; Spender and Sarah, 1980), and the girls were found to have lower correlation was found between the opposite-sex attitude scores and school engagement. In the last step, primary school graduate fathers were included with 3% contribution to the variance, and the total explained variance increased to 38%.

**Discussion, conclusion and recommendations**

The research results indicate that the scores obtained by girls’ high school students predicted the school engagement levels more than boys’ high school students and mix-gender school students. While a negative correlation was found between the scores obtained by the boys’ high school students and their school engagement scores, there was no significant correlation between the scores obtained by the coed high school students and school engagement. It is thought that the girls had higher levels of school engagement because they interact with each other more in school. They experience problems with going out of house unless they go to school which is due to their conservative family structures. Furthermore, the reason why they had high levels of school engagement could be associated with the fact that they become mature more rapidly than their male peers and are more willing to succeed. Similar results were obtained in several studies (Deem, 1984; Fullarton, 2002; Gauley, 2017; Neel and Fuligni, 2013; Spender and Sarah, 1980), and the girls were found to have lower

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**Table 3 Correlations among the variables in the research.**

|   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. SEQ | - | - | - | - | - | - | - | - |
| 2. SATL | 0.486** | - | - | - | - | - | - | - |
| 3. OSAS | -0.028 | -0.003* | - | - | - | - | - | - |
| 4. Type of school | -0.335** | -0.081* | -0.062* | - | - | - | - | - |
| 5. Achievement level | 0.236** | 0.234** | 0.028 | 0.174** | - | - | - | - |
| 6. Parental attitude | -0.056* | -0.032* | -0.026* | -0.006* | -0.014* | - | - | - |
| 7. Mother’s educational | -0.154** | -0.012* | 0.147** | 0.336** | -0.126** | 0.000 | - | - |
| 8. Father’s educational | -0.185** | -0.054* | 0.061 | 0.407** | -0.154** | 0.041 | 0.527** | - |

*p < 0.05; **p < 0.01.

| Predictors | B  | Standard error | β  | t       | p     | R    | R²   |
|------------|----|----------------|----|---------|-------|------|------|
| Type of school | | | | | | | |
| Constant | 99.990 | 0.819 | 119.171 | 0.000 | 0.342 | 0.117 |
| Boys’ high school | 11.940 | 1.718 | -0.236 | -6.869 | 0.000 |
| Girls’ high school | 6.644 | 1.246 | 0.283 | 5.334 | 0.000 |
| Mixed | 4.322 | 1.036 | 0.121 | 1.165 | 0.095 |
| Achievement level | | | | | | | |
| Constant | 106.12 | 1.714 | 61.904 | 0.000 | 0.261 | 0.068 |
| Successful | 6.755 | 1.244 | 0.178 | 5.607 | 0.000 |
| Moderately | 0.701 | 9.925 | 0.019 | 0.071 | 0.944 |
| Unsuccessful | -15.152 | 20.229 | -0.201 | -3.481 | 0.036 |
| Perceived parental attitude | | | | | | | |
| Constant | 95.235 | 1.907 | 49.951 | 0.000 | 0.145 | 0.021 |
| Democratic | 8.728 | 2.352 | 0.195 | 3.711 | 0.000 |
| Over-protective | 6.781 | 2.116 | 0.190 | 3.204 | 0.000 |
| Authoritarian | 3.485 | 2.638 | 0.062 | 1.321 | 0.187 |
| Over-demanding | 3.868 | 2.430 | 0.080 | 1.519 | 0.112 |
| Mother’s educational level | | | | | | | |
| Constant | 91.000 | 8.762 | 10.386 | 0.000 | 0.165 | 0.027 |
| Illiterate | 12.571 | 9.249 | 0.033 | 1.359 | 0.174 |
| Primary school | 13.085 | 8.812 | 0.148 | 1.484 | 0.138 |
| Secondary school | 8.500 | 1.484 | 0.245 | 1.000 | 0.318 |
| University | 13.085 | 8.819 | 0.033 | 1.359 | 0.174 |
| Father’s educational level | | | | | | | |
| Constant | 94.298 | 1.187 | 79.461 | 0.000 | 0.228 | 0.052 |
| Illiterate | 5.349 | 5.724 | 0.033 | 0.935 | 0.350 |
| Primary school | 8.811 | 1.484 | 0.239 | 5.728 | 0.000 |
| University | -18.473 | 12.565 | -0.051 | -1.470 | 0.142 |
achievement levels in coed schools (Lee and Bryk, 1986). Nevertheless, there are research findings indicating that there were no significant differences between the coed school students and the achievements of the single-sex school students (Marsh, 1989; Roberson, 2010; Smithers and Robinson, 2006).

As Table 3 shows, there is a positive significant correlation between students’ school engagement levels and their achievement level. In other words, the academically more successful students were found to have higher school engagement levels. Enjoying being in school and participating in school activities, certainly, create a sense of belonging and responsibility in students, which therefore leads to higher levels of school engagement. Previous studies showed that the academically successful students had higher levels of school engagement (Erdoğan, 2016; Finn and Rock, 1997; Fredricks et al., 2004).

The students who perceived their parents’ attitudes as democratic and protective against external threats had higher levels of school engagement. The reason for students’ higher levels of school engagement could be that their parents respect child’s development and decisions, support their decisions and engagement in child’s school life and achievements. Research has shown that family participation in the child’s school life (Simons-Morton and Crump, 2003) and the presence of family support (Mengi, 2011) contribute to higher school engagement levels among these students. Another study by Finn and Rock (1997) showed that the family structure had a decisive role in school engagement.

While there was no significant correlation between mother’s educational level and the students’ school engagement levels, the levels of school engagement were higher among the students whose fathers have low educational levels. The reason why higher levels of school engagement were found among the students with parents with low educational levels might be due to the fact that they live under relatively more difficult conditions. As a result, such students might perceive attending school as an obligation to improve their living standards. Similarly, Arastaman (2009) explored that the children whose mothers have lower educational levels had higher levels of school engagement. Fullarton (2002) and Gemici and Lu (2014) also showed that the higher the educational level had higher levels of school engagement was. As children’s quality of life increases, the level of school engagement increases too (Savi, 2011).

The findings obtained in the stepwise regression analysis indicated that school engagement was predicted by students’ positive attitudes towards learning at the highest level. That is to say, as students’ attitudes toward learning increased, their sense of school engagement increased too. In the literature, it shows that there is a positive relationship between school engagement and desire to learn and success (Weinstein and Mayer, 1986; Thompson, 2005). In a similar study, Orhner et al. (2010) found that the value of students increases, their school engagement also increases. When students participate in off-classroom learning activities and cultural activities, their levels of school engagement increase (Shin et al., 2007). As discussed by Cernkovich and

### Table 5 Stepwise regression analysis of the predictors of school engagement levels.

| Model | Predictors                  | B   | Standard error | Beta  | t     | R   | R²  | R² change ΔR² |
|-------|-----------------------------|-----|----------------|-------|-------|-----|-----|--------------|
| 1     | Constant                    | 25.715 | 4.691           |       |       | 5.482 | 0.486 | 0.236 | 0.236 |
|       | Attitudes learning          | 0.513 | 0.032          | 0.486 | 16.128 |     |     | 0.236 |
|       | Attitudes learning          | 0.496 | 0.030          | 0.469 | 16.291 |     |     | 0.236 |
|       | Type of school (mix)        | -13.438 | 1.460         | -0.265 | -9.204 |     |     | 0.236 |
|       | Constant                    | 35.157 | 4.525           |       |       | 7.770 | 0.573 | 0.329 | 0.023 |
|       | Attitudes learning          | 0.467 | 0.030          | 0.442 | 15.336 |     |     | 0.236 |
|       | Type of school (mix)        | -13.765 | 1.438        | -0.272* | -9.59* |     | 0.236 |
|       | Successful group            | -12.163 | 2.291          | -0.153* | -5.309 |     |     | 0.236 |
|       | Type of school (boy)        | -12.400 | 2.253          | -0.156* | -5.505 |     |     | 0.236 |
|       | Attitudes learning          | 0.458 | 0.030          | 0.434 | 15.288 |     |     | 0.236 |
|       | Type of school (mix)        | -17.032 | 1.532        | -0.336* | -11.115 |     |     | 0.236 |
|       | Successful group            | -14.032 | 1.507          | -0.174* | -5.850 |     |     | 0.236 |
|       | Type of school (boy)        | -5.870 | 1.070           | -0.165* | -5.486 |     |     | 0.236 |
| 2     | Constant                    | 48.527 | 4.807           |       |       | 10.095 | 0.609 | 0.371 | 0.018 |
|       | Attitudes learning          | 0.430 | 0.030          | 0.407 | 14.293 |     |     | 0.236 |
|       | Type of school (mix)        | -18.772 | 1.552         | -0.370* | -12.099 |     |     | 0.236 |
|       | Successful group            | -11.055 | 2.238          | -0.139* | -4.939 |     |     | 0.236 |
|       | Type of school (boy)        | -6.184 | 1.057           | -0.174* | -5.800 |     |     | 0.236 |
|       | Successful group            | 0.685 | 0.138          | 0.143 | 4.956 |     |     | 0.236 |
| 3     | Constant                    | 53.043 | 5.287           |       |       | 10.031 | 0.611 | 0.375 | 0.004 |
|       | Attitudes learning          | 0.429 | 0.030          | 0.407 | 14.307 |     |     | 0.236 |
|       | Type of school (mix)        | -19.167 | 1.512        | -0.378* | -12.280 |     |     | 0.236 |
|       | Successful group            | -10.810 | 2.237        | -0.136* | -4.832 |     |     | 0.236 |
|       | Type of school (boy)        | -5.958 | 1.060           | -0.169* | -5.648 |     |     | 0.236 |
|       | Successful group            | 0.695 | 0.138          | 0.146 | 5.036 |     |     | 0.236 |
|       | Opposite-sex attitude       | -0.047* | 0.023        | -0.057* | -2.209 |     |     | 0.236 |
| 4     | Constant                    | 51.871 | 5.308           |       |       | 10.772 | 0.614 | 0.377 | 0.003 |
|       | Attitudes learning          | 0.432 | 0.030          | 0.409 | 14.403 |     |     | 0.236 |
|       | Type of school (mix)        | -18.559 | 1.583         | -0.367* | -11.570 |     |     | 0.236 |
|       | Successful group            | -10.561 | 2.236        | -0.133* | -4.772 |     |     | 0.236 |
|       | Type of school (boy)        | -6.218 | 1.064           | -0.175* | -5.845 |     |     | 0.236 |
|       | Successful group            | 0.693 | 0.138          | 0.143 | 5.030 |     |     | 0.236 |
|       | Opposite-sex attitude       | -0.049* | 0.023        | -0.058* | -2.032 |     |     | 0.236 |
|       | Fathers’ ed. level (primary school) | 2.054 | 1.011           | 0.058 | 2.032 |     |     | 0.236 |
Giordano (1992), if students have high school responsibility, their school engagement levels are high too. According to the research findings, being a coed or single-sex school is the second important variable that predicted school engagement. This suggests that the type of school (coed-single sex) should be taken into account in increasing the school engagement. A negative correlation was observed in the research between attending a boys’ high school and a coed high school and school engagement. In other words, the boys’ and coed high school students generally had lower levels of school engagement. In the research, the male students were selected from vocational high schools. It is assumed that the students attending vocational high schools had lower levels of school engagement for reasons, such as their desire to start working sooner and their unwillingness to participate in academic activities. Thompson and Ungerleider (2004) argue that male students want to participate in learning activities when these activities are more competitive, active, and appropriate to their interests; when such conditions are not provided, they become more unsuccessful in the academic field. Similarly, the school engagement levels of these students in coed schools were also low. Previous research found that girls attending single sex schools had higher achievement levels and more positive school attitudes than the students of coed schools (Bryk et al., 1993; Collins et al., 2006; Riordan, 1985; Shmurak, 1998). The present study also achieved similar results. Other studies, on the other hand, found no significant difference between the academic activities of the students attending coed and single-sex schools (Britton, 2008; Scoggin, 2009).

The variable that predicted school engagement in the third and fifth model is achievement level. The findings showed no negative correlation between being unsuccessful and school engagement. That is to say, the more successful the students were, the higher levels of school engagement they had. It is assumed that as the school engagement level increases, the students take more responsibilities, become happier to be at school and take part in school activities, and these positive attitudes enable them to embrace their own schools, leading to higher school engagement levels. In most of the studies, it was observed that school engagement increased academic achievement (Eith, 2005; Finn and Rock, 1997; Lee and Smith, 1995; Osterman, 2000). The findings of this research showed that there was a negative correlation between opposite-sex attitude and school engagement. In other words, if the opposite-sex attitude was positive, the level of school engagement decreased. It should be borne in mind that in the research was conducted on adolescent students. It is thought that adolescents’ attitudes toward school are reduced by their increased interest in the opposite sex during this period. The typical developmental feature of this period is the increasing desire of adolescents to make friends with the opposite sex. As a result, it is assumed that the students who participated in this study had lower school engagement levels because they oriented their adolescent energy, interest, and pursuits towards the opposite sex.

It is generally expected that opposite-sex attitudes will be more positive in coed schools. Although there is no research on this subject, a study conducted by Yildirim (1998) in a coed school indicated that the students who had friends of the opposite sex had higher perceived social support. The study conducted by Dale (1969) found that the students in a coeducation environment became more socialized with the opposite sex. It is assumed that the reason why the students of coed schools had lower levels of school engagement is that opposite-sex attitudes among the coed school students are more positive than the attitudes of the single-sex school students. It is also thought that the coed school students’ levels of school engagement were lower due to their desire to be together with the opposite sex in the same environment rather than being in the school in the first place. The “negative correlation between opposite-sex attitude and school engagement” which is a finding of this research coincides with these assumptions.

Lastly, the students whose fathers are primary school graduates were found to have higher school engagement levels. As seen in the multiple regression analysis conducted in the study, parents’ low educational levels were observed to be a predictor of school engagement whereas the stepwise regression analysis concluded that the students whose fathers are primary school graduates were found to have higher school engagement levels. There may be many possible reasons for higher social engagement levels of the students whose parents’ have low educational levels. It is thought that the students of families with lower educational and financial levels had higher levels of school engagement because they believe that the best way to escape from their disadvantageous conditions is to receive a good education and acquire a good occupation. The research carried out by Arastaman (2006) showed that the lower the parents’ educational levels were, the lower school engagement levels the children had. Another study by Conchas (2001) found that the children of families with a low socio-economic level had high levels of school engagement. However, another study by Fullarton (2002) achieved a different result indicating that the children had higher levels of school engagement when their parents had higher educational and socio-economic levels. Different results achieved by studies necessitate carrying out even more research on the relationship between these two variables.

School engagement affects not only students’ sense of belonging to the school, but also their academic, mental and emotional development. According to the research results, positive attitudes towards learning increased school engagement. It is therefore considered important to perform studies at schools to inform students of learning how to learn. Efforts to increase school engagement undoubtedly increase students’ academic achievement. In this context, it can be recommended to organize programs that will enable school counseling services to play a more active role in increasing school engagement. The research findings showed that the girls’ school students had higher levels of school engagement in their schools. Contrary to expectations, the coed school students were found to have lower levels of school engagement. Given that it is important to consider individual differences and it is attempted to regulate contents of courses accordingly in today’s education systems, it is imperative to do research that take into consideration gender differences. Indeed, male and female students vary by their interests, attitudes, and behaviors. Hence, different studies on the effects of coeducation or single-sex education on student development are required. It is also considered important to establish pilot schools formed by single-sex classes and conduct research on their effects on developmental characteristics of students. The study showed that as the education level of parents increased, school engagement decreased. New research should be performed to explore the reasons and the precautions to be taken. Finally, the findings of the study should be interpreted with regard to the context where it was carried and the participants who took part in it. It is therefore important to conduct similar studies on different contexts and different sample groups.

Data availability
All data analyzed or generated are available in the paper.

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Competing interests
The authors declare no competing interests.

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