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Mehmet Buğra ÖZHAN¹, Galip YÜKSEL²

¹ Atatürk University

² Gazi University

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The Effect of School Burnout on Academic Achievement and Well-Being in High School Students: A Holistic Model Proposal**

Mehmet Buğra ÖZHAN^{1*}, Galip YÜKSEL²

¹Atatürk University

²Gazi University

Abstract

This study aimed to contribute to a holistic analysis of the effect of school burnout on academic achievement and well-being in high school students. For this purpose, a structural equation model made up of variables, including self-regulation, student-teacher relationships, peer relationships, family involvement to school, school burnout, academic achievement, and well-being, was tested. The sample of study consisted of 866 high school students from seven different types of high schools. The data of study were collected using a set of eight scales consisting of the Personal Information Form, Self-Regulation Scale, the Friendship Qualities Scale, the Self-Determination Theory-Based Student-Teacher Relationship Questionnaire-High School Form, the Perceived Parental and Teacher Academic Involvement Scale, the Maslach Burnout Inventory-Student Survey, the Academic Achievement (GPA), and the EPOCH Measure of Well-Being (EPOCH). Total six hypotheses were tested with the hypothetical model established within the scope of the study. As a result of the analysis, it was found that all of the hypotheses regarding the proposed hypothetical model were accepted, and the model was confirmed. The findings of the study revealed that each of the variables, namely, self-regulation, student-teacher relationships, peer relationships, and family involvement to school, had a direct and negative predictor effect on school burnout.

Key words: High school students, school burnout, academic achievement, well-being, structural equation modeling

Introduction

School is an important institution that provides children with cognitive, affective, behavioral, and social development opportunities and equips them with the necessary qualifications to take part in social and business life (Aypay, 2017; Yıldız and Kılıç, 2020). Considering also pre-school educational institutions, it can be said that school is an important social environment where individuals spend a large part of the day starting from an early age. During this time spent at school, individuals have the opportunity to experience a wide variety of life events for the first time. In other words, schools, which are a special environment created for children and young people to prepare for the adult world (Öğülmüş, 2006), provide students with an important developmental context (Eccles, 2004). However, in addition to this developmental opportunity they provide to students, schools are also an important environment where not only the desired outcomes that are consistent with the educational goals emerge, but also different and not-always-positive feelings, emotions, and problems arise and develop (Pilkauskaitė-Valickienė, Zukauskienė, and Raiziene, 2011). At this point, it can be said that school life and experiences have the potential to affect many important outcomes of the individual in both academic and social and emotional areas, depending on the quality of these experiences and life events. One of the main academic outcomes for students is academic achievement (Lunenburg and Ornstein, 2013; Sezgin, 2013), and the other is well-being, which is an important outcome in social and emotional areas. Many factors that are directly or indirectly related to students' academic achievement and well-being are defined in the literature. One of the

* Corresponding Author: Mehmet Buğra ÖZHAN, mehmet.ozhan@atauni.edu.tr

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factors that have the potential to affect students' academic achievement (Atik and Özer, 2020; Balkıs, Duru, Buluş, and Duru, 2011; Tuominen-Soini and Salmela-Aro, 2014; Madigan and Curran, 2020; Çelik ve Pesen, 2020) and well-being (Aypay and Eryılmaz, 2011; Parker and Salmela-Aro, 2011; Fiorilli, De Stasio, Di Chiacchio, Pepe, and Salmela-Aro, 2017; Salmela-Aro, Savolainen, and Holopainen, 2009; Tang, Upadyaya, Salmela-Aro, 2021) is stated to be school burnout.

The Holistic Conceptualization of School Burnout and It's Relation to Academic Success and Well-being

The concept of school burnout, which is used to explain the phenomenon of burnout that students experience with their school life, consists of three dimensions, namely, exhaustion at school, cynicism, and a sense of inadequacy at school (Bask and Salmela-Aro, 2013; Luo et al., 2016; May et al., 2015; Walburg, 2014). Exhaustion at school refers to burnout felt towards school and school-related work, cynicism refers to the belief that the school is not necessary or will not benefit, and inadequacy at school refers to students' thoughts that they will not be able to achieve the tasks required by school (Salmela-Aro, Kiuru, Leskinen, and Nurmi, 2009).

According to Hobfoll and Shirom (2001) and Brake, Eijkman, Hoogstraten, and Gorter (2005), burnout is not a phenomenon that occurs suddenly in the individual, but a condition that occurs as a result of the interaction of many factors cumulatively. Accordingly, the phenomenon of school burnout seen in students can be evaluated as a condition that occurs cumulatively in the developmental process with the effect of many factors, too. At this point, the theoretical orientation, which was raised by Bronfenbrenner in the 1970s (TEDMEM, 2014), provides an important perspective to describe the basic factors influencing human development (Bronfenbrenner and Morris, 2006). This theory draws attention to the interaction of the student with themselves and their environment, the effect of the environment on the development of the individual, and furthermore, many close and distant systems that affect the individual's environment to understand the behaviors of the individual and the development process. From this perspective, it is possible to conceptualize many individual characteristics and environmental systems that have the potential to affect school burnout and are the focus of this research.

Bronfenbrenner locates the individual at the center of all systems in his ecological theory, and names this system, which is at the center, as "organism (individual)". According to the ecological theory, many characteristics of the organism that can be evaluated within the system of the individual affect the development, behaviors, and many emotional, personal, and social outcomes of individuals. At this point, it can be said that one of the important individual characteristics that can have an effect on the school burnout that students experience is self-regulation skill. Self-regulation skill in the most general sense can be conceptualized as the observation of one's own behaviors, making judgments by comparing these behaviors with their own criteria, and adapting these behaviors to their own criteria when they are not compatible with these criteria. In other words, self-regulation skill refers to individuals' capacity to influence, direct, and control their own behavior (Senemoğlu, 2009). According to Bandura (1977), individuals regulate their behavior to a great extent, and in this context, if the performance standards set by the individual are too high for the individual to reach, this will turn into a source of unhappiness for the individual. On the other hand, when individuals see that they cannot reach their performance standards during self-evaluation, this leads the individual to feel increasingly worthless and experience a lack of purpose in life and negative situations such as depressive reactions. Setting goals that are too difficult and remote for the individual to reach may likewise disappoint individuals (Senemoğlu, 2009). Consistent with Bandura's theoretical explanations about self-regulation, the phenomenon of school burnout is also considered to be positively associated with high personal expectations, low control level, and low motivation (Duru, Duru and Balkıs, 2014). When all these are evaluated together, it can be said that the self-regulation skills of students have the potential to affect school burnout, which is the focus of this study, and academic achievement and well-being depending on school burnout.

In the ecological theory, environmental factors as well as individual characteristics are effective in the development process of the individual. Accordingly, it can be said that school burnout is not only and directly limited to the qualifications of the student. As stated by Kutsal and Bilge (2012), in addition to students' own factors, strengths, and wishes, a balance of the expectations from the student by their family, friends and teachers, as well as the support and guidance of their immediate circles, are significantly effective in the occurrence of burnout in the student. Consistent with this perspective, various studies in the literature (Halbesleben, 2006) also reveal that the support provided by peers and teachers, who are important social actors in the close environment of the individual, is associated with the burnout in the context of the school ecosystem. Accordingly, the social support provided to students by their teachers and friends and the positive quality of the communication and interaction that individuals have with their teachers and friends reduce the burnout experienced by individuals. For example, Salmela-Aro, Tynkkynen, and Vuori (2011) revealed that social context played an important role in the burnout experienced by the student. At this point, in addition to self-

regulation, which is one of the personal characteristics directly related to the student, the roles of important social actors with whom the student directly interacts in school burnout are considered to be important factors worth investigating. Accordingly, considering the school ecosystem, it can be said that the two important actors with whom the student interacts directly and intensely are teachers and peers. For this reason, it can be said that (i) the relationship and interaction between student and teacher and (ii) the relationship and interaction the student establishes with peers are significant variables that may have the potential to affect school burnout and students' academic achievement and well-being depending on school burnout.

According to the ecological theory, the environmental systems close to the individual and also the connections and interactions between systems affect the development process of the individual. This situation is expressed in the ecological theory as the meso-system step. The meso-system involves the interaction between two or more micro-systems that the individual has a direct relationship and interaction with (TEDMEM, 2014). At this point, the relationship between family and school micro systems, with which high school adolescents have a direct and one-on-one communication throughout their developmental process, can be considered as an important variable related to the meso-system level. The relationship between family and school systems, which are two micro-systems that play an important role in individuals' lives in the developmental process, can be considered as family involvement to school. In the most general terms, family involvement to school includes the involvement and monitoring of the student's parents in academic life in school (Dündar, 2014). Various studies in the literature have stated that family involvement to school plays an important role in increasing students' academic achievement and learning motivation, and supporting school engagement and class participation, developing a positive attitude towards school, and reducing absenteeism and discipline problems (Castro et al., 2015; Jeynes, 2003, 2005, 2007; Kim and Hill, 2015; Zorbaz, 2018). From this point of view, it can be said that family involvement to school is an important variable that is potentially effective in primarily reducing the level of burnout experienced by students and also increasing academic achievement and well-being.

Context and Hypotheses of the Research

In this study, it is thought that examining the relationship between the student himself (organism) and other factors directly related to the educational process (environmental systems) with school burnout is important in understanding school burnout in a holistic way. Moreover, the study examining the effects of school burnout on the well-being and academic achievement of students together with other factors related to the educational process, which is directly related to school burnout, is expected to contribute to the reduction of school burnout and thus to provide a basis for studies aimed at increasing academic success and well-being. At this point, in this research with the support of ecological theory proposals, investigating the phenomenon of school burnout experienced by high school students and the effect of this phenomenon on academic achievement and well-being holistically in the context of the school ecosystem made up the main problem of this research. Accordingly, this study tested a structural equation model which was created based on the literature and included variables, such as self-regulation, student-teacher relationships, peer relationships, family involvement to school, school burnout, academic achievement, and well-being. Hence, the hypotheses related to the model tested within the scope of the study and the major studies in the literature used to form the basis for these hypotheses can be listed as follows:

H1: *Self-regulation is a negative and significant predictor of school burnout* (Kapıkıran et al., 2016; Duru et al., 2014; Schaufeli et al., 2002a).

H2: *Peer relationships are a negative and significant predictor of school burnout* (Zhang & Zhu, 2007; Kutlu and Bilge, 2012; Walburg, 2014).

H3: *Student-teacher relationships are a negative and significant predictor of school burnout* (Shih 2012, 2015; Aypay, 2012; Çam and Öğülmüş, 2021).

H4: *Family involvement to school is a negative and significant predictor of school burnout* (Gonzalez-DeHass, Willems, and Holbein, 2005; Alarcon, Edwards, and Menke, 2011; Durmuş, Aypay, and Aybek, 2017).

H5: *School burnout is a negative and significant predictor of academic achievement* (Seibert, Bauer, May, and Fincham, 2017; Lee et al., 2010; Salmela-Aro et al., 2008).

H6: *School burnout is a negative and significant predictor of well-being* (Cadime et al., 2016; Murdock, 2013; Aypay and Eryılmaz, 2011).

Method

Research Model

In this study, the relationships between self-regulation, student-teacher relationships, peer relationships, family involvement to school, school burnout, academic achievement, and well-being in high school students were analyzed. In this respect, the study used a correlational research design. Correlational studies are conducted to explain the relationship between two or more variables and to make inferences about the cause-effect relationships between these variables (Fraenkel, Wallen, and Hyun, 2012). The structural equation modeling was used as a data analysis method in examining the relationships between variables within the scope of the study (Kline, 2011). The structural equation modeling is a technique that helps examine the causal relationships between many variables related to the structure simultaneously, moreover, clarifies whether the expected relationships of the studied structure are observed in terms of the theory on which it is based (Tavşancıl, 2014).

Population and sampling

The population of the study consisted of students attending public high schools in Yakutiye, Palandöken, and Aziziye districts, which are the central districts of Erzurum province, in the 2018-2019 academic year. The sample of the study, on the other hand, was determined using the stratified random sampling method from the schools in the population. In determining the sample group of the study, the school type was accepted as the main strata. The research was ultimately carried out with 10th and 11th -grade high school students from 7 different school types. These two qualifications arising from the classification of the sample group of the study regarding the school types and grade levels were considered as a limitation of the study.

While calculating the sample size required for testing the model established within the scope of the research, Kline's (2011) suggestion that the sample size in structural equation modeling studies should ideally be 20 times, at least 10 times, the number of parameters was taken into consideration. There were a total of 62 parameters in the final model of the research (Figure 1). Accordingly, considering that a sample size of at least 620 [62 x 10] was needed to properly test a model with 62 parameters, the scale was administered to a total of 1008 students from 18 different schools by taking erroneous, incomplete data and extreme values into account. As presented under the process and data analysis section in detail, the scales belonging to 142 students were removed from the data set of the study, and the data obtained from 866 students formed the final data set. Considering the suggestion of Kline (2011), the eventual sample size of the study was satisfactory.

Table 1. The distribution of the sample group by school type

School type	Population		Sample	
	N	%	N	%
Anatolian High School	5280	46.55	385	44.5
Science High School	518	4.57	42	4.8
Social Sciences High School	420	3.70	38	4.4
Fine Arts High School	109	0.96	18	2.1
Sports High School	199	1.75	22	2.5
Vocational High School	2655	23.41	189	21.8
Imam Hatip High School	2161	19.05	172	19.9
Total	11342	100	866	100

Table 1 presents a comparative distribution of the students in the sample group of the study by school types and the population and the sample. The examination of the distribution of high school students in the sample group presented in Table 1 according to the type of school indicated that different school types were represented in the sample group at a rate close to their rate in the population (with a maximum deviation of 2 %). Moreover, 530 of the high school students constituting the sample group of the study were 10th-grade students (61.2%), and the remaining 336 were 11th-grade students (38.8%). The sample group of the study consisted of 440 female

(50.8%) and 402 male (46.4%) high school students. Besides, 24 (2.8%) students in the sample group of the study had not stated their gender. The ages of the students in the sample varied between 14 and 18, and the mean age was 16.29 years.

Data collection tools

In this study, a scale set consisting of eight parts was used to collect data. Information on each scale is presented in order below.

The Personal Information Form (PIQ): This form was developed to collect information about the demographic characteristics of the high school students participating in the study. The form contains a total of 4 questions regarding the type of school that the students attend, their sex, age, and grade levels.

The Self-Regulation Questionnaire (SRS): The original form of this scale was created by Brown, Miller, and Lawendowski (1999), and the short form was developed by Carey et al. (2004). The Turkish adaptation study of the scale was carried out over the short form by Ay (2014) within the scope of the doctoral dissertation study conducted on university students, and the scale was found to be valid and reliable. The SRS, which consists of 5 sub-dimensions, namely, receiving information, focusing on alternatives, formulating a plan, implementing the plan, and assessing the plan, and a total of 30 items, was used in a sample group in the present study that was different from that of the adaptation study in terms of development level; therefore, the validity of the scale in this study was re-analyzed with confirmatory factor analysis, and its reliability was re-evaluated by calculating Cronbach's Alpha internal consistency coefficient. Accordingly, the SRS was determined to be valid for the data obtained from the sample of the present study [$\chi^2 / df = 3.29$; GFI = ,91; AGFI = ,88; CFI = ,91; RMSEA = .065]. Besides, Cronbach's Alpha internal consistency coefficient regarding the reliability of the SRS in this research sample was calculated as $\alpha = .87$.

The Friendship Qualities Scale (FQS): The original form of this scale, consisting of 23 items and 5 sub-dimensions, was developed by Bukowski et al. (1994), and the Turkish adaptation study of the scale was carried out by Erkan-Atik et al. (2014). The Turkish form of the scale, adapted within the scope of a project carried out on secondary school students, consists of a total of 22 items and 5 sub-dimensions, namely, companionship, conflict, help, security, and closeness. The reliability of the scale was re-analyzed since the FQS was re-used in a sample group in this study different from that of the adaptation study. Cronbach's Alpha internal consistency coefficient regarding the reliability of the FQS in this study sample was calculated as $\alpha = .88$.

The Self-Determination Theory-Based Student-Teacher Relationship Questionnaire-High School Form (SD-STRQ): Developed by Özhan (2019) based on the Self-Determination Theory to learn about the quality of the relationship that high school students establish with their teachers, the SD-STRQ consists of 15 items and three sub-dimensions, namely, autonomy, competence and relatedness. Since the SD-STRQ was re-used in a different sample group in this study, the reliability of the scale was re-analyzed. Cronbach's Alpha internal consistency coefficient regarding the reliability of the SD-STRQ in the present study sample was calculated as $\alpha = .94$.

The Perceived Parental and Teacher Academic Involvement Scale (PPTAIS): The original form of this scale was developed by Rêgner, Loose, and Dumas (2009), and it was adapted into Turkish by Dündar (2014). The validity of the scale in the Turkish adaptation study was examined separately in two different sample groups consisting of 302 primary-secondary school and 393 high school students. The PPTAIS, which consists of 16 items and 4 sub-factors, namely, perceived parental academic monitoring, perceived parental academic support, perceived teacher academic monitoring, and perceived teacher academic support, was used to measure family involvement to school in this study. For this reason, only the two sub-dimensions of the PPTAIS, namely, perceived parental academic monitoring and perceived parental academic support, which measure parental academic involvement, were combined and used under a latent variable named family involvement. Since the PPTAIS was re-used in a sample group in this study different from that of the adaptation study by combining only the items related to parental involvement under the family involvement variable, the reliability of the scale was re-analyzed within the scope of this study. Cronbach's Alpha internal consistency coefficient regarding the reliability of the PPTAIS in this study sample was calculated as $\alpha = .86$.

The Maslach Burnout Inventory-Student Survey (MBI-SS): The original form of this inventory was developed by Maslach, and its adaptation study was carried out by Schaufeli et al. (2002b) on university students. The scale consists of 15 items under three sub-factors called exhaustion, cynicism, and efficacy. The Turkish adaptation of the inventory for high school students was carried out by Kutsal (2009), and with this study, the scale was concluded to consist of 3 sub-dimensions called exhaustion (5 items), cynicism (4 items) and self-efficacy (6 items) and 15 items. Since the MBI-SS was re-used in a different sample group in this study, the reliability of the scale was re-analyzed in the present study. Cronbach's Alpha internal consistency coefficient regarding the reliability of the MBI-SS in this study sample was calculated as $\alpha = .89$.

The Academic Achievement (GPA): The academic achievements of the students participating in the study were measured based on the weighted final grade averages for the fall semester of the 2018-2019 academic year. Final grade point averages were assumed to be valid and reliable in measuring academic achievement.

The EPOCH Measure of Well-Being (EPOCH): Based on the PERMA theory proposed by Seligman (2011), the scale aims to measure well-being in a holistic way. PERMA stands for the acronym created based on the initials of the components in the multidimensional structure of well-being. In this acronym, P represents positive emotions; E, engagement; R, positive relationships; M, meaning; and A, achievement/accomplishment. This conceptualization proposed by Seligman (2011) regarding this holistic structure of well-being is considered as rather a suitable structure for adults. Therefore, Kern et al. (2016) adapted the PERMA model for adolescents to measure the well-being levels of adolescents holistically. As a result of this adaptation, the dimensions of well-being were named as E: Engagement, P: Perseverance, O: optimism, C: Connectedness, and H: happiness, and were expressed with the acronym EPOCH, which consists of the initials of these dimensions. The EPOCH Scale, which was found to be valid and reliable in the adaptation study conducted by Demirci and Ekşi (2015), was re-used in a sample group in this study different from that of the adaptation study; therefore, the reliability of the scale was re-analyzed within the scope of this study. Cronbach's Alpha internal consistency coefficient regarding the reliability of EPOCH in this study sample was calculated as $\alpha = .88$.

The process and data analysis

The set of scales used to collect the research data was administered face-to-face by the researcher in the classroom and as a paper-pencil test. Due to the large number of items on the scale set administered in the study, the scale set was applied in two steps as part I and part II. In the scale set used in the study, students were asked to use a nickname (code name) so that the first and second parts of the scale could be matched. During the administration of the first part of the scale set, the students were asked to determine a nickname (code name) and to write this code in the place specified in the form. To prevent students from forgetting their nicknames, the first and second parts of the scale set were administered with a minimum of one lesson and a maximum of one-day interval so that the education in the school would not be interrupted. At this point, 82 students who did not complete the first part of the data collection phase of the research but did not complete the second part were excluded from the sample group of the study.

The analysis of the data was carried out in two stages, namely the "preliminary analysis", which was carried out to examine whether the model established was suitable for structural equation analysis, and "the analysis of the model", which included the testing of the model. In the "preliminary analysis" stage, firstly, missing data, extreme values, and normality of the distribution were examined. Then, after determining that the presence of significant relationships between variables and that this was not due to multicollinearity, the analysis phase of the model was initiated. In the analysis phase of the model, the two-stage approach suggested by Anderson and Gerbing (1988) and Kline (2011) was adopted. In this context, firstly, the measurement model established based on the research variables and then the structural model were tested. In the evaluation of the model fit, goodness of fit indices, including χ^2 (Chi-Square), df (degrees of freedom), χ^2 / df , GFI, AGFI, CFI, RMSEA, and SRMR, were taken into consideration. In addition to all these, two different statistical software packages were employed in the analysis of the data. The basic statistics [frequency, percentage, mean, standard deviation, kurtosis and skewness, and reliability analysis based on correlation and internal consistency (α)] were carried out on IBM SPSS 22, and the test of the structural equation model was performed on IBM AMOS Graphics software package.

In the analysis of the data, first, the missing data in the data set were examined. The rate of acceptable unanswered items was determined as 5% as a criterion for the analysis and evaluation of the missing data (Tabachnick and Fidell, 2013). Accordingly, scale sets of 33 students containing more than 5% unanswered items were removed from the general data set. Also, the missing data on scales with less than the acceptable limit of 5% unanswered items were made up based on the arithmetic average. After examining the missing data, the data set was examined in terms of extreme values to avoid problems caused by extreme values in the analysis of the data. Univariate extreme values in the data set were analyzed using histogram graphs, box graphs, and calculated z scores on the IBM SPSS software package. The multivariate extreme values deviating from the normal distribution were analyzed by calculating the Mahalobonis distance coefficients. Accordingly, scale sets of 27 students that were determined to have extreme values were excluded from the data set of the study.

After the univariate and multivariate extreme values in the data set had been analyzed, the kurtosis and skewness coefficients regarding whether the variables in the study showed normal distribution were examined. In the evaluation of kurtosis and skewness coefficients, especially in studies conducted with large samples, it has been stated that the location of these coefficients in the range of ± 2 is satisfactory for the distribution to be considered normal (Tabachnick and Fidell, 2013). Accordingly, it was observed that the kurtosis and skewness coefficient values of the research variables provided the necessary criteria for the acceptance of the normal distribution of the data for both the latent variables (total scores) of the research and the observed variables (sub-dimensions). After determining that the variables in the study showed a normal distribution, the Maximum Likelihood method was chosen as the estimation method for testing the structural equation model (Kline, 2011).

Results and Discussion

First, the descriptive analyses of the variables included in the model were performed, and then the findings regarding the correlations between variables were revealed through correlation analysis. Table 2 presents the results of the descriptive analysis of the variables in the model and correlation coefficients between variables.

Table 2. Results of the descriptive analyses and correlation coefficients between variables

Variable	\bar{X}	Ss	1	2	3	4	5	6	7
1. Self-Regulation	109.74	15.03	1	.21*	.19*	.27*	-.42*	.13*	.47*
2. Student-Teacher Relationships	46.93	13.75		1	.29*	.29*	-.52*	.38*	.38*
3. Peer Relationships	78.79	14.27			1	.25*	-.25*	.17*	.35*
4. Family Involvement to School	30.92	6.22				1	-.37*	.12*	.44*
5. School Burnout	42.38	16.20					1	-.37*	-.55*
6. Academic Achievement	75.68	11.90						1	.23*
7. Well-Being	67.06	12.83							1

* $p < .001$

As seen in Table 2, there were significant correlations between all the variables in the structural equation model established within the scope of the study, namely, self-regulation, student-teacher relationships, peer relationships, family involvement to school, school burnout, academic achievement, and well-being. Accordingly, there was a moderate and significant negative correlation between school burnout scores, which is one of the basic dependent/independent variables of the research, and the scores of self-regulation ($r = -.42$; $p < .001$), student-teacher relationships ($r = -.52$; $p < .001$), and family involvement to school ($r = -.37$; $p < .001$), and a low level, significant negative correlation with the score of peer relationships ($r = -.25$; $p < .001$). Besides, a moderate and significant negative correlation was found between the school burnout scores of the students participating in the study and their academic achievement ($r = -.37$; $p < .001$) and well-being ($r = -.55$; $p < .001$) scores. In the evaluation of the correlations between variables in the model, the correlations were evaluated in accordance with the criteria suggested by Cronk (2008), based on an absolute value as follows: .30 or less as low correlation; between .30 and .70 as moderate; values greater than .70 as high.

Testing of the Measurement Model

In the analysis of the structural equation model established within the scope of the research, first, the measurement model was tested, as detailed under the data analysis title. The established measurement model was first tested without any modifications. The results of the analysis showed that the measurement model established did not comply with the data set, especially in terms of some criteria [$\chi^2 / df = 4.845$; GFI = .896; AGFI = .866; CFI = .904; RMSEA = .067; SRMR = .066]. Subsequently, the proposed modifications of the model were examined, and in line with these suggestions and the theoretical basis stated in the literature, a total of two modifications, including the first between “exhaustion” and “cynicism” items (MI = 42.592) and the second between “optimism” and “happiness” items (MI = 42.675), were administered to the related items by drawing and correlating the bidirectional covariance path of errors of the related items. After these modifications applied, it was observed that the model provided the necessary goodness of fit criteria, in other words, the established model and the data fitted adequately, and the established measurement model was confirmed [$\chi^2 (N = 866) = 906.398$; $p < .001$; $df = 230$; $\chi^2/df = 3.941$; GFI = .914; AGFI = .888; CFI = .927; RMSEA = .058; SRMR = .0568].

There was no statistically insignificant path in the measurement model tested. Also, observed variables in the model were found to do enough loading to the measurement model they were related to. In other words, the findings related to the measurement model showed that the observed variables of the study described the latent variables validly. After the measurement model was tested and confirmed, the structural model established in line with the research hypotheses was tested.

Testing of the Structural Model

In this study, which aimed to analyze the effect of school burnout on academic achievement and well-being, first, the structural model established in line with the research hypotheses was tested without applying any modifications. The results of the analysis showed that the structural model established did not fit the data set in terms of some criteria [$\chi^2/df = 5.277$; GFI = .882; AGFI = .853; CFI = .889; RMSEA = .070; SRMR = .071]. Therefore, some solutions were tested to strengthen the fit of the structural model established with the data set.

Accordingly, first, the proposed modifications were examined, and the theoretical and statistical appropriateness of these proposed modifications was evaluated. Among these proposed modifications, the recommended modification (MI = 166.634) between the error terms for “cynicism” and “exhaustion” variables was noteworthy. When the variables observed to be related with the errors were examined, the emotional exhaustion experienced by the student due to school activities and school life and cynicism were evaluated as processes that could be theoretically related to each other. Statistically, the proposed modification index value was quite high (the highest modification index among the proposed ones), it was considered to make a significant contribution to the chi-square (χ^2) value of the model to increase the model fit, and the proposed modification was among the observed variables of the same latent variable. For these reasons, we decided to take this proposal into consideration and to perform the modification, and to retest the model. Thus, the bidirectional covariance path for these two error terms represented by e16 and e17 was drawn and correlated, and then the model was retested. After the application of this modification, it was observed that the model met the necessary goodness of fit criteria, in other words, the model and the data fitted satisfactorily, and the established structural model was confirmed [$\chi^2 (N = 866) = 1069.099$; $p < .001$; $df = 240$; $\chi^2/df = 4.455$; GFI = .900; AGFI = .875; CFI = .911; RMSEA = .063; SRMR = .0655]. Accordingly, this structural model, which was tested after the modification and included in Figure 1, was determined as the ultimate structural model of the research, and the research hypotheses were evaluated based on this model.

After examining the outputs of the structural model established in line with the hypotheses of the research and deciding that the model was confirmed, the paths in the model and the parameter estimates related to the model were also analyzed. The parameter estimates including the non-standardized regression coefficients and standard errors, standardized regression coefficients, critical ratios (Critical Ratio: Cr), and significance values of the paths in the model are presented in Table 3.

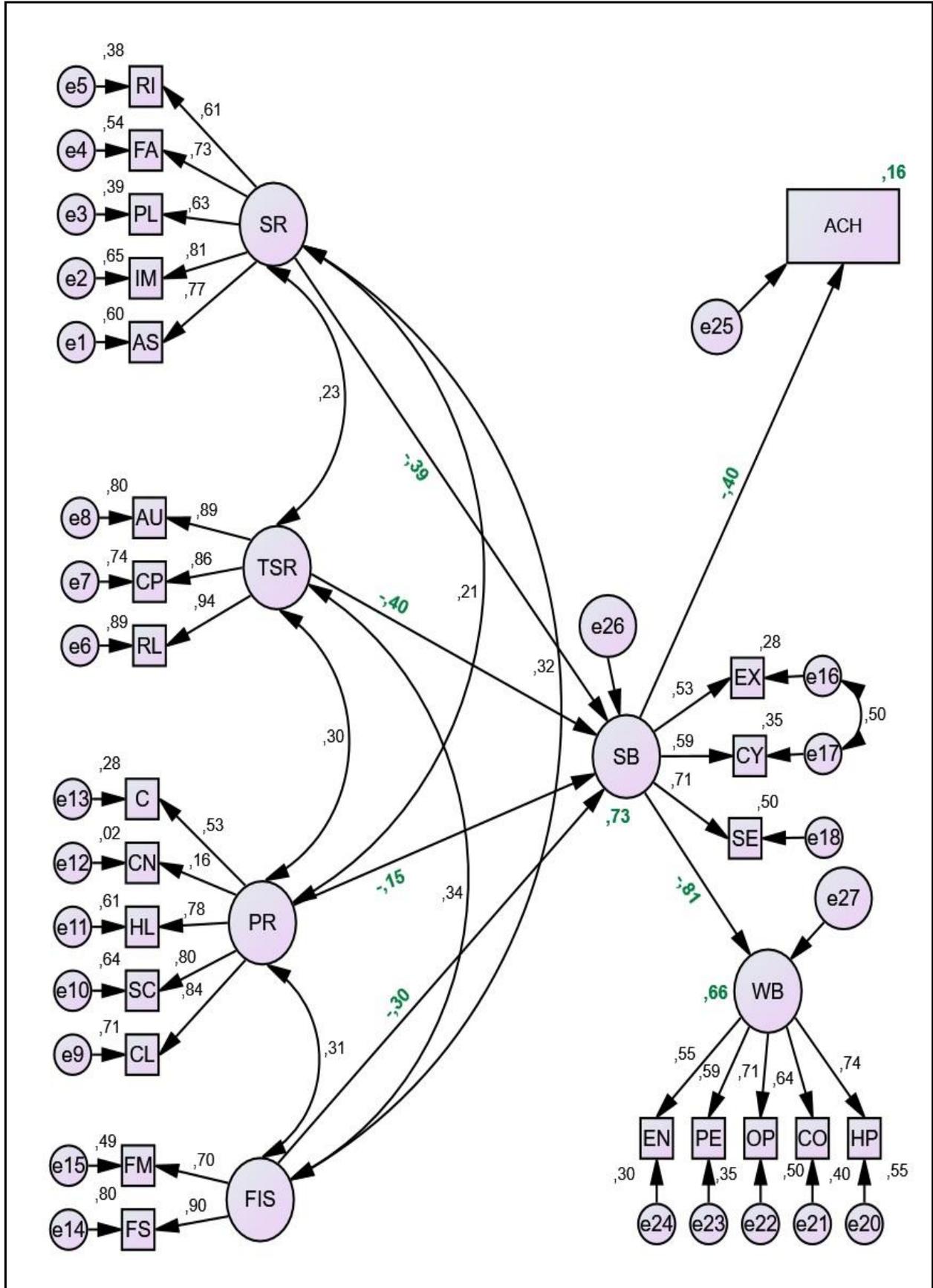


Figure 1. The structural model that was tested (the final version)

Table 3. Parameter estimates of the structural model tested (the final version)

Variables	Unstandardized Coefficients		Standardized Coefficients	C.R.	p
	B	S. E.	β		
SB <--- SR	-.46	.05	-.39	-9.56	***
SB <--- TSR	-.31	.03	-.40	-10.02	***
SB <--- PR	-.13	.03	-.15	-4.24	***
SB <--- FIS	-.36	.05	-.30	-6.86	***
ACH <--- SB	-1.29	.14	-.40	-9.49	***
WB <--- SB	-.65	.05	-.82	-12.99	***
Receiving information <--- SR	.70	.04	.61	17.41	***
Focusing on alternatives <--- SR	.61	.03	.74	21.06	***
Planning <--- SR	.86	.05	.63	17.76	***
Implementing <--- SR	1.22	.05	.81	23.00	***
Assessment <--- SR	1.00	---	.78	---	
Autonomy <--- TSR	.91	.02	.89	41.89	***
Competence <--- TSR	.88	.02	.86	38.67	***
Relatedness <--- TSR	1.00	---	.94	---	
Companionship <--- PR	.43	.03	.53	15.51	***
Conflict <--- PR	.13	.03	.16	4.29	***
Help <--- PR	.89	.04	.78	24.15	***
Security <--- PR	.77	.03	.80	24.65	***
Closeness <--- PR	1.00	---	.84	---	
Family monitoring <--- FIS	.81	.06	.70	14.01	***
Family support <--- FIS	1.00	---	.90	---	
Exhaustion <--- SB	1.00	---	.53	---	
Cynicism <--- SB	1.03	.06	.59	17.86	***
Self-efficacy <--- SB	1.30	.09	.71	13.94	***
Engagement <--- WB	.64	.04	.55	14.73	***
Perseverance <--- WB	.63	.04	.59	15.82	***
Optimism <--- WB	.87	.05	.71	18.69	***
Connectedness <--- WB	.79	.05	.64	16.92	***
Happiness <--- WB	1.00	---	.74	---	

*** p < .001

As seen in Table 3, all the paths that indicated predictive causal relationships between the research variables in the model were meaningful. According to this model, each of the variables, namely, self-regulation ($\beta = -.39$; Cr = -9.56; $p < .001$), student-teacher relationships ($\beta = -.40$; Cr = -10.02; $p < .001$), peer relationships ($\beta = -.15$; Cr = -4.24; $p < .001$) and family involvement to school ($\beta = -.30$; Cr = -6.86; $p < .001$) had a direct and negative predictor effect on school burnout. The relative importance rank of the predictor effects of the variables included student-teacher relationships ($\beta = -.40$), self-regulation ($\beta = -.39$), family involvement to school ($\beta = -.30$) and peer relationships ($\beta = -.15$). These four predictor variables (self-regulation, student-teacher relationships, peer relationships and family involvement to school) explained 73 % of the total variance regarding school burnout ($R^2 = .73$).

Besides, according to the final model, school burnout, which is both the dependent and independent variable of the study, had a direct and negative predictive effect on both academic achievement ($\beta = -.40$; Cr = -9.49; $p < .001$) and well-being ($\beta = -.82$; Cr = -12.99; $p < .001$). Also, school burnout explained 16% ($R^2 = .16$) of the total variance regarding academic achievement and 66% ($R^2 = .66$) of the total variance relating to well-being. Another important finding here was that the predictive effect of school burnout on well-being ($\beta = -.82$) was relatively higher than its predictive effect on academic achievement ($\beta = -.40$). In addition to all of these, the total, direct, and indirect effects of the variables in the model on each other were also examined. Table 4 presents the total, direct, and indirect effects.

Table 4. Total, direct, and indirect effects of the variables in the model on each other

	SB			ACH			WB		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
SR	-.39	---	-.39	---	.16	.16	---	.32	.32
TSR	-.40	---	-.40	---	.16	.16	---	.32	.32
PR	-.15	---	-.15	---	.06	.06	---	.12	.12
FIS	-.30	---	-.30	---	.12	.12	---	.24	.24
SB	---	---	---	-.40	---	-.40	-.81	---	-.81

The examination of the standardized total, direct, and indirect effects presented in Table 4 regarding the final structural model of the study indicated that variables, such as self-regulation ($d = -.39$), student-teacher relationships ($d = -.40$), peer relationships ($d = -.15$) and family involvement to school ($d = -.30$) had direct and negative effects on school burnout. According to Cohen (1988), the effect size assessment includes the following classification: low when the value is less than .20; moderate when the effect value is between .30 and .50 and high when the effect value is .60 or greater. Based on this classification, the effects of the variables of self-regulation, student-teacher relationships and family involvement to school on school burnout were moderate, and the peer relationships variable had a low effect. When the effects of the variables on academic achievement were examined, it was found that the school burnout variable ($d = -.40$) had a moderate and direct effect, while variables, such as self-regulation ($d = .16$), student-teacher relationships ($d = .16$), peer relationships ($d = .06$) and family involvement to school ($d = .12$) had a low and indirect effect. The examination of the effect values of the variables on well-being, another dependent variable of the study, indicated that the school burnout variable ($d = -.81$) had a high and direct effect, whereas self-regulation ($d = .32$) and student-teacher relationships ($d = .32$) variables had an indirect and moderate effect, and peer relationships ($d = .12$) and family involvement to school ($d = .24$) had a low and indirect effect.

Conclusion and Discussion

In conclusion, the holistic evaluation of the analysis results of the hypothetical structural equation model established in this study indicated that all the hypotheses tested were accepted. The results obtained within the scope of this research regarding the tested hypotheses can be interpreted as follows based on the literature: the first hypothesis of the study was established as '*self-regulation is a negative and significant predictor of school burnout*' and as a result of the analysis, this hypothesis was accepted. When the literature was examined, there were studies that revealed the relationships between students' school burnout levels and self-regulation skills, though few in number. Kapıkıran et al. (2016) found that self-regulation in high school students predicted school burnout negatively and significantly. Similar results were found by Duru et al. (2014). Based on the results of this research, it is possible to say that as the self-regulation skills of the students increase, they may experience less school burnout. Moreover, Edelmich and Brodsky (1980) stated that individuals might experience burnout when their high-level expectations were not met, that is, when their expectations resulted in disappointment. At this point, self-regulation skill comes into play as a protective factor in the emergence of burnout or in preventing the negative effects of burnout on the individual. Self-regulation refers to the individual's spontaneous action, sorting out redundant information and taking the responsibility to make a choice among numerous options and to implement this decision (Baumeister and Vohs, 2007; 2012). Accordingly, it is possible to say that students with high self-regulation skills can primarily form healthier goals and expectations. Healthy goals and expectations based on the individual's own abilities and limitations will prevent disappointments that may occur afterwards. Moreover, these students will be able to make healthier choices among the alternatives

thanks to their ability to organize their own emotions, thoughts, and behaviors and to turn these choices into correct and timely behavior. As a result of all these, they will be protected from the negative effects of school burnout.

Another hypothesis tested within the scope of the study was established as '*student-teacher relationships are a negative and significant predictor of school burnout*' and as a result of the analysis, this hypothesis was accepted, as well. In this study, the student-teacher relationship refers to how and to what extent the basic psychological needs (such as i. autonomy, ii. competence and iii. relatedness) which are central to the theory of self-determination are met in the relationship established between students and teachers. From this point of view, based on the data obtained from this research, it can be said that as the level of meeting the basic psychological needs (such as i. autonomy, ii. competence and iii. relatedness) in the relationship established between students and teachers increases, the level of school burnout that students will experience will decrease, as well. According to Santrock (2012), the development of adolescents is greatly influenced by teachers, and when teachers make efforts to make their school and classroom environments more personal, less formal, and more motivating, especially middle and high school students can be positively affected by this situation. Besides, there are various studies in the literature that can be a source of information about the interaction between students' school burnout and their relationships with their teachers. For example, Shih (2012; 2015) found that there was a negative relationship between the autonomy support perceived by students from their teachers and the burnout they experienced, and significant positive relationships between the psychological control perceived from the teacher and school burnout. Based on the results of this study, it can be said that the increase in the perceived autonomy support in their relationships with their teachers decreases the burnout experienced by the students, while the increase in perceived psychological control increases burnout. Salmela-Aro et al. (2008) concluded that the positive motivation perceived from the teacher had a significant negative relationship with school burnout. Also, Raufelder et al. (2014) and Reeve (2012) found that perceived self-determination in the student-teacher relationship (the satisfaction of autonomy, competence, and relatedness needs) had a positive relationship with students' school attachment, which was especially noteworthy. This finding suggests that students who get more satisfaction with autonomy, competence, and relatedness needs in their relationships with their teachers than their peers will be more connected to the school, and that students who are more connected to school will indirectly experience less school burnout. The evaluation of all these research results together indicate that when the level of meeting the basic psychological needs (such as i. autonomy, ii. competence and iii. relatedness) in the relationship established between students and teachers increases and when the positive quality of these relationships becomes stronger, the school burnout that students experience will tend to decrease (Cho ve Jeon,2019).

The third hypothesis tested within the scope of the study was '*peer relationships are a negative and significant predictor of school burnout*' and this hypothesis was accepted as a result of the analyses done in the study. Accordingly, it can be said that as the positive supportive relationships that students establish with their peers increase, their school burnout will decrease. There are various studies in the literature on the interaction between the relationships that students have with their peers and the burnout they experience related to school. At this point, studies that especially reveal the relationship between social support that students receive from their peers and school burnout stand out. For example, Zhang and Zhu (2007) concluded that there was a negative and significant relationship between perceived social support from peers and burnout experienced by students. This finding, which shows that school burnout decreases as the perceived social support from friends and peers increases, is also supported by other studies in the literature (Kutsal, 2009; Çam and Öğülmüş, 2021). There are also various studies that show the social support students perceive from their friends and peers reduces school burnout and that those who receive social support experience more burnout than those who do not (Beltran, Moreno, Estrada, Lopez, and Rodriguez, 2009; Gündüz, 2005; Jacobs and Dodd, 2003). Cırcır (2018) found that there were significant negative relationships between student interactions sub-dimension of school climate and school burnout. Also, Kim, Yoon, and Jung (2016) similarly concluded that there were significant negative relationships between positive relationships that students had with their classmates and the academic burnout they experienced in general terms. When the results of all these studies aiming to reveal the relationship between the support received from peers and the quality of the relationships established with peers and school burnout were evaluated together, students' ability to establish positive peer relationships as well as the increase in social support perceived from their peers and friends can be considered as a protective factor in reducing the negative effects of school burnout.

Another hypothesis tested within the scope of the study was *'family involvement to school is a negative and significant predictor of school burnout'* and the analyses indicated that this hypothesis was accepted, too. Family involvement plays an important role in healthy adolescent development, as frequently stated in the literature. At this point, family (mother and father) involvement is considered as an important predictor of adolescents' mental health (Kuzucu and Özdemir, 2013) and a factor that plays an important role in adolescents' well-being (Flouri and Buchanan, 2003). Accordingly, it can be said that family involvement to school can play a protective role for various academic, social, and emotional problems that students may encounter during their education process and thus bring about a positive effect on their development process. In the literature, it is noteworthy that studies on family involvement at high school level are quite limited (Lindberg and Demircan, 2013). For this reason, no study that directly examined the effect of family involvement on school burnout at high school level was found, but there were various studies that gave an idea about the relationship between school burnout and family involvement, though indirectly. For example, Gonzalez-DeHass, Willems, and Holbein (2005) stated that as family involvement to school increased, students exhibited more attention, effort, and concentration towards school and lessons. Moreover, it is stated that as family involvement increases, students are more intrinsically interested in learning processes, feel more perceived efficacy, are more resistant to academic difficulties, and experience more satisfaction with school assignments.

In other studies drawing attention to the interaction between school burnout experienced by students and family involvement to school, studies examining the role of families as an important source of social support are remarkable. In various studies in the literature, perceived social support from the family is evaluated as an important factor in reducing school burnout (Alarcon, Edwards, and Menke, 2011; Çam and Öğülmüş, 2021; Kutsal and Bilge, 2012). When the results of these studies, which examine the role of parents as an important source of social support, are evaluated together, it can be said that the social support provided by parents to students will reduce school burnout. In addition to family involvement and perceived social support from parents, the relationships between parental monitoring and school burnout have also been examined, and it has been concluded that school burnout decreases as parental monitoring increases (Durmuş, Aypay, and Aybek, 2017). When all these research results are evaluated together, it can be said that family (mother and father) involvement to the education and school life of the student will reduce the school burnout of students both directly and indirectly through school engagement, adaptation, and involvement.

The fifth hypothesis of the study aimed to examine the relationship between academic achievement and school burnout, which is one of the main educational outcomes of the education system. The analyses revealed that the hypothesis that *'school burnout is a negative and significant predictor of academic achievement'* was accepted. In the literature, school burnout is considered as an important factor affecting the academic success of students from various educational levels (Walburg, 2014). Seibert, Bauer, May, and Fincham (2017) concluded that there were significant negative relationships between students' burnout levels and their academic achievement. However, it is stated in the literature that as the academic achievement perceived by students increases, the school burnout they experience decreases (Kutsal and Bilge, 2012). Research results have revealed that the burnout experienced by students is related to the decrease in academic performance (May, Bauer, and Fincham, 2015) and that students with less burnout show more academic success (Lee et al., 2010). When all the results of these studies examining the relationship between school burnout and academic achievement are evaluated together, it can be said that school burnout has a significant negative effect on academic achievement (Salmela-Aro et al., 2008; Yang, 2004, Külekçi-Akyavuz, 2020). In other words, it can be stated that as school burnout experienced by students increases, their academic success may decrease. In this respect, the school burnout experienced by students can be considered as an important risk factor for academic success.

The sixth and last hypothesis of the study was established as *'school burnout is a negative and significant predictor of well-being'* and this hypothesis was also accepted as a result of the analyses. In the literature, school burnout is considered as an important factor that negatively affects the well-being of students studying at various educational levels (Cadime et al., 2016; Kara, 2014; Murdock, 2013). Raiziene et al. (2014) concluded that there were significant negative relationships between students' school burnout and their subjective well-being. This finding showing a negative relationship between students' school burnout and their subjective well-being has also been supported by various studies in the literature (Aypay, 2017; Aypay and Eryılmaz, 2011). Similar to these findings, Tuominen-Soini and Salmela-Aro (2014) concluded that there were negative significant relationships between students' school burnout and self-esteem, positive significant relationships between students' school burnout and depressive symptoms which they considered as indicators of general well-being, and there were significant positive relationships with depressive symptoms. Based on all these findings, it can be said that the increase in the level of school burnout experienced by students will negatively affect their well-being.

The evaluation of the findings obtained in line with the hypotheses of this study, which aimed to examine the effects of school burnout on academic achievement and well-being holistically, suggested that school burnout was an important risk factor that negatively affected both academic achievement and well-being. Besides, the results of the present study revealed that school burnout was affected by the developmental context that students were in.

Limitations and Recommendations

In addition to all these findings, the research had some limitations. To eliminate these limitations and increase the bulk of knowledge about the problem of the research, the following issues are recommended for future researchers: (i) The generalizability of the model established within the scope of this research can be increased by retesting this research with data collected from students at different educational levels (e.g. secondary school) and from different regions. (ii) The research can be repeated with the support of qualitative research design to obtain more in-depth data about the relationships between variables in the model tested in the research. (iii) In this study, the propositions of the ecological theory were used to provide theoretical support to the research, but the theory was not tested directly in the study. From this point of view, the scope of the research can be expanded by using all steps of the ecological theory directly and different data sources related to these steps (students themselves, family, peers, teachers, etc.). (iv) In addition, different studies can be planned to reveal the mediator and moderator variables that have the potential to affect the relationship between school burnout and well-being and academic achievement, as well as the relationships between self-regulation, peer relationships, student-teacher relationships and family involvement to school.

Based on the findings of the present research, we recommend the following issues to practitioners, especially those who work in the field of psychological counseling and guidance: (i) Various applications can be planned and implemented to develop self-regulation skills in accordance with the developmental, protective, and preventive function of psychological counseling and guidance. Accordingly, psycho-education, peer counseling, individual guidance, and group guidance activities can be utilized. (ii) Social skills and/or assertiveness training programs can be used to improve the positive quality of students' peer interactions. (iii) In addition to these studies to be carried out with peers, studies can be conducted with teachers, in accordance with the consultation function of guidance (consultancy), to ensure the satisfaction of the need for autonomy, competence and relatedness in the relationship particularly between students and teachers. These studies are thought to be especially important for adolescents to establish healthy relationships with both their peers and teachers. (iv) When the literature is examined, it can be seen that especially at the secondary education level, family involvement to school is not at the desired level, and there is not enough research on family involvement to school. Accordingly, various studies that support the family involvement to school can be planned and implemented to reduce the school burnout experienced by students and to support academic success and well-being.

Notes

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