



| Research Article / Araştırma Makalesi |

Examination of Peer Bullying and Sense of Loneliness in Secondary School Students in Terms of Various Variables

Ortaokul Öğrencilerinde Akran Zorbalığı ve Yalnızlık Duygusunun Çeşitli Değişkenler Açısından İncelenmesi

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Keywords

1. Bullying
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Abstract

Purpose: This study aimed to examine peer bullying and loneliness levels of secondary school students in terms of various variables.

Design/Methodology/Approach: The study included 823 middle school students in the 5th, 6th, 7th, and 8th grades during the autumn semester of the 2021-2022 academic year. A correlational survey model was used as the research approach. The Peer Bullying Scale and the Loneliness Scale for Children were used to collect data.

Findings: The findings indicated that feelings of loneliness increased as peer bullying increased among secondary-school students. Gender-based differences were evident in the levels of loneliness and bullying. Additionally, there was a significant difference in loneliness levels according to the school type, grade level, parent's education level and mother's employment status.

Highlights: Furthermore, a significant disparity was observed in the bullying subdimension based on the mother's employment status. Conversely, there wasn't significant correlation between father's employment status and student's level of peer bullying and loneliness.

Öz

Çalışmanın amacı: Bu çalışmada ortaokul öğrencilerinin akran zorbalığı ve yalnızlık düzeylerinin çeşitli değişkenler açısından incelenmesi amaçlanmıştır.

Materyal ve Yöntem: Çalışmaya 2021-2022 eğitim-öğretim yılı güz döneminde 5, 6, 7 ve 8. sınıflarda öğrenim gören 823 ortaokul öğrencisi dâhil edilmiştir. Araştırma yaklaşımı olarak ilişkisel tarama modeli kullanılmıştır. Veri toplamak için Akran Zorbalığı Ölçeği ve Çocuklar İçin Yalnızlık Ölçeği kullanılmıştır.

Bulgular: Bulgular, ortaokul öğrencileri arasında akran zorbalığı arttıkça yalnızlık duygularının da arttığını göstermiştir. Cinsiyete dayalı farklılıklar yalnızlık ve zorbalık düzeylerinde belirgindir. Ayrıca, okul türü, sınıf düzeyi, ebeveynin eğitim düzeyi ve annenin çalışma durumuna göre yalnızlık düzeylerinde anlamlı bir fark bulunmuştur.

Önemli Vurgular: Ayrıca, zorbalık alt boyutunda annenin çalışma durumuna göre anlamlı bir farklılaşma gözlenmiştir. Buna karşılık, babanın çalışma durumu ile öğrencilerin akran zorbalığı ve yalnızlık düzeyleri arasında anlamlı bir ilişki bulunmamıştır.

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INTRODUCTION

Peer-bullying is a common problem in modern educational settings. It is the violent action of one student toward another, where there is an imbalance of power (Çankaya, 2011; Bjereld et al., 2020). As defined in further detail, bullying involves negative behaviors or acts that are purposefully performed by a more powerful person or people towards a weaker person or victim, with the intention of instilling fear or anxiety in victims and showing consistency over time within the same group (Olweus, 1993). The main underlying causes of peer bullying include the bully's need to feel more powerful and superior to other students, their need for violence to solve problems, and their conviction that the victim deserves to be bullied (Genç, 2007). Despite the fact that there are numerous definitions of the term, there is no universal consensus on it (Slattery et al., 2019; Younan, 2019).

The dimensions of peer bullying can be divided into two primary categories: direct and indirect bullying (Olweus, 1993). Direct bullying involves explicit attacks, mocking, and verbal abuse, whereas indirect bullying refers to behaviors that ignore or exclude the victim, which disrupts the relationship between the victim and bully. When it comes to physical bullying, this type of bullying involves actions such as pushing or hitting, causing physical harm or injury on the victim. Conversely, in verbal bullying, the bully or perpetrator makes derogatory comments, insults, or ridicules the victim. The relational part of peer bullying includes a variety of actions, such as exclusion and rumors, intended to damage the victim's relationships, social life, and sense of belonging (Bjereld et al., 2020; Wang et al., 2020).

It is important to note that the effects of bullying are not limited to the victims' school years, as victims of bullying can have long-term sociological and psychological consequences. A variety of negative emotions, including rage, powerlessness, anxiety, despair, decline in academic performance, and feelings of unworthiness, exclusion, and loneliness can be experienced by both bullies and victims (Gökler, 2009; Mutlu-Bayraktar, 2024). Peer bullying in schools can cause students to feel isolated and disconnected, leading to a sense of alienation (Duyan et al. 2010). Given that social isolation can be viewed as a form of relational bullying, it can also be classified as a component of peer bullying (Tanrikulu et al., 2021).

Loneliness is a widespread phenomenon experienced by every individual throughout their lifetime, which can stem from various reasons, such as losing a significant person in their lives or relocating. While it may be difficult to avoid loneliness entirely, individuals can learn to live with it (Rokach & Brock, 1998). Several studies on elementary school students have found that more than 10% of them experience loneliness during their early childhood years. Young people and teenagers are also vulnerable to feelings of loneliness, with an impact ranging from 20% to 50% during the transition to adulthood (Asher & Paquette, 2022).

Haskaya (2016) found that the degree of bullying was correlated with school alienation in a study examining the relationship between school alienation and peer bullying among secondary school students. In another study investigating peer bullying among primary school students, Çankaya (2011) reported that verbal and physical bullying were the most common types of bullying predominantly experienced by male students. Additionally, Lereya et al. (2013) suggested that experiencing bullying at a young age increases the risk of self-harm in later years, and may impede the establishment of a healthy family environment.

Existing literature has revealed studies on the phenomenon of peer bullying and loneliness across the lifetime, from preschool-age children to adults. Many studies have shown changes in students' social-emotional perceptions after the pandemic (Taylor & Asmundson, 2020; Rathnayake et al., 2021). Disruption of education during this process has led to a loss of motivation among students and teachers. To handle the process with technological assistance, knowledge accumulation is necessary (Murphy, 2020). During this period, students were obligated to continue their education in front of the screens, resulting in virtual socialization and subsequent isolation (Türker & Dündar, 2020). The implications of such perceptions of peer bullying and loneliness are critical. Furthermore, studies investigating peer bullying and loneliness among secondary school students with diverse adolescent developmental characteristics are limited.

The goal of this study was to examine the peer bullying and loneliness situations of secondary school students in terms of various variables after the pandemic by reviewing the literature and evaluating relevant research results. For this purpose, the following research questions were identified.

Purpose of Research and Research Questions

1. Is there a significant relationship between peer bullying and loneliness among secondary school students?
2. Do peer bullying and loneliness levels of secondary school students differ significantly by gender?
3. Do peer bullying and loneliness levels of secondary school students differ significantly according to their grade levels?
4. Do peer bullying and loneliness levels of secondary school students differ significantly according to school type?
5. Do peer bullying and loneliness levels of secondary school students differ significantly according to the education level of the mother?
6. Do peer bullying and loneliness levels of secondary school students differ significantly according to the education level of their fathers?
7. Do peer bullying and loneliness levels of secondary school students differ significantly according to the working status of the father?
8. Do peer bullying and loneliness levels of secondary school students differ significantly according to the working status of their mothers?

METHOD

Research Design

This study implemented a quantitative research design that specifically utilized a relational survey model. The survey model aims to collect a large amount of information to describe a situation that has existed in the past (Fraenkel & Wallen, 2008). The person, event, connection, or object under investigation is tried to be determined in its own right, and there is no possibility of changing or affecting this existing situation in any form. By contrast, the relational survey model is used to determine the link between two or more variables, their co-changes, and the extent to which this trend exists (Kaya et al., 2012).

Participants

The research was conducted in the autumn term of the 2021-2022 academic year. The sample group was formed from 821 secondary school students studying in Adana province using a random sampling method. During the data collection phase, the scales were administered digitally. The form was sent to different schools and 823 students responded. Of these, 465 (56.5%) were girls and 358 (43.4%) were boys. In terms of grade level, 26.5% of the students were in the 5th grade, 26.5% were in the 6th grade, 28.9% were in the 7th grade, and 18.2% were in the 8th grade (see Table 1).

Table 1. Students' Gender Distribution According to Class Level.

Class Level	Girl		Boy		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
5th Grade	107	13,0	107	13,0	214	26,0
6th Grade	123	14,9	96	11,6	219	26,5
7th Grade	133	16,1	106	12,8	239	28,9
8th Grade	102	12,3	49	5,9	151	18,2
Total	465	56,5	358	43,4	823	100

Data Collection Tools

Peer Bullying Scale

Kutlu and Aydın (2010) developed a 45-item scale to assess bullying and victimization among 6th grade middle school students. The scale consists of three sub-dimensions: bullies, victims and general interests. Each subscale demonstrated high internal consistency, with Cronbach's alpha reliability coefficients of .83, .86, and .70 for bully, victim, and general interest, respectively. The scale is a 5-point Likert type scale. The study found a significant relationship between the victim and bully dimensions. The final version of the scale consisted of 19 items (Kutlu & Aydın, 2010). The Cronbach alpha value was calculated as .82 for the victim sub-dimension and .87 for the bullying sub-dimension.

Loneliness Scale for Children

Kaya (2005) conducted validity and reliability studies of the scale's adaptation to Turkish. The scale was first developed for grades 3-6 and then validity and reliability studies were conducted for 7th and 8th grades. As a result of the factor analysis of the scale, the factor analysis of the 3rd and 4th grades was determined as 11 items, while the factor analysis of the 5th, 6th, 7th and 8th grades was determined as 15 items and one dimension. The scale is a 5-point Likert type scale. The internal consistency coefficient of the scale for both the grades was .87. The reliability coefficient analyzed by the test-retest method and it was calculated as .76 for 3rd and 4th grades and .87 for the 5th, 6th, 7th, and 8th grades, respectively.

Data Collection and Analysis

The scales designed by the researchers in conjunction with a personal information form were administered digitally through remote access. Participants were given a voluntary consent form and an information form before they completed the scales. Each participant took approximately 10 minutes to complete the scales. Before the study, the number of participants was determined by applying the G Power Analysis Test, and statistical analyses that were carried out based on the data obtained from the participants were determined. Normality test was performed to determine whether the data were normally distributed. With the normal distribution of the data, the percentage frequency distribution, t-test, ANOVA, and correlation analysis were performed,

and the effect levels were determined. Ethical permission to conduct this study was obtained from Istanbul University-Cerrahpasa Ethics Committee.

FINDINGS

This section presents the findings and subsequent interpretations that emerged from the investigation of the research questions.

Pearson's correlation tests were performed to examine the relationships between victimization, bullying, and loneliness scores (Research Question 1). Table 2 shows a significant positive correlation between victimization and bullying scores of secondary students ($r = .527$, $p < .001$), indicating that higher victimization scores were associated with higher bullying scores. Additionally, a significant negative correlation emerged between victimization and loneliness scores ($r = -.465$, $p < .001$), suggesting that students experiencing more victimization also reported higher levels of loneliness. Finally, a significant negative correlation was found between bullying and loneliness scores ($r = -.209$, $p < .001$), implying that increased bullying was associated with greater loneliness.

Table 2. Correlation Test Results on Peer Bullying and Loneliness Emotion Levels in Secondary School Students.

Variable	Victim	Bullying	Loneliness
Victim	-		
Bullying	.527**	-	
Loneliness	-.465**	-.209**	-
Mean	17.99	12.70	52.22
SD	4.26	2.45	6.79
Minimum	8.00	6.00	24.00
Maximum	37.00	30.00	63.00
Variable	Victim	Bullying	Loneliness
Victim	-		
Bullying	.527**	-	
Loneliness	-.465**	-.209**	-
Mean	17.99	12.70	52.22
SD	4.26	2.45	6.79

Minimum	8.00	6.00	24.00
Maximum	37.00	30.00	63.00

**** $p < .001$.**

When the results of the Independent Sample t-test for the second research question were examined, a significant difference was observed between peer bullying scores according to gender ($t_{821}=4.22$, $p < .05$). According to these results, it was concluded that the mean score of male students ($M=18.69$) was higher than that of female students ($M=17.44$). As a result of this analysis, Cohen's d value of 0.302 indicates that it is moderately effective. In addition, there was a significant difference between genders in terms of bullying scores, which is another subdimension of peer bullying ($t_{821}=3.57$, $p < .05$). According to this result, the mean bullying score of boys ($M=13.05$) was higher than the mean bullying score of girls ($M=12.43$). As a result of this analysis, the effect size was determined as Cohen's d 0.243, which was found to be moderate. Loneliness scores showed a significant difference according to gender ($t_{821}=2.59$, $p < .05$). In line with these results, the mean loneliness scores of male students ($M=52.91$) were higher than those of female students ($M=51.68$). Cohen's d value for this analysis was calculated as 0.191. The effect of gender on loneliness was also examined.

Table 3. Independent Sample t-Test Results Regarding the Gender of Bullying, Victim and Loneliness, Sub-Dimensions of Peer Bullying in Secondary School Students.

	Gender	n	M	SD	t	df	p																				
Victim	Girl	465	17.44	3.60	4.22	821	.000																				
	Boy	358	18.69	4.90				Bullying	Girl	465	12.43	1.86	3.57	821	.000	Boy	358	13.05	3.01	Loneliness	Girl	465	51.68	6.93	2.59	821	.010
Bullying	Girl	465	12.43	1.86	3.57	821	.000																				
	Boy	358	13.05	3.01				Loneliness	Girl	465	51.68	6.93	2.59	821	.010	Boy	358	52.91	6.54								
Loneliness	Girl	465	51.68	6.93	2.59	821	.010																				
	Boy	358	52.91	6.54																							

In the analysis of secondary school students' victimization and bullying scores, which are sub-dimensions of peer bullying, no significant difference was found according to grade level ($p > .05$, Table 5). However, there was a significant difference in loneliness scores according to grade level ($p < .05$, $F=5.995$). There was a significant difference between the 5th grade loneliness mean score ($M=53.79$) and 6th grade mean score ($M=52.19$) in favor of 5th grade, between 6th grade mean score ($M=52.19$) and 7th grade mean score ($M=51.43$) in favor of 6th grade, and between 7th grade mean score ($M=51.43$) and 8th grade mean score ($M=51.28$) in favor of 7th grade (Table 4). There was a moderate effect ($\eta^2 = .056$) between the grade level of secondary school students and their loneliness scores.

Table 4. Results of Bullying and Victim Bullying and Loneliness, Sub-Dimensions of Peer Bullying in Secondary School Students According to Class Levels.

Score	n	M	sd
Grade Level			
	214	53.79	5.79
5.th Grade			
Loneliness	219	52.19	6.47
6.th Grade			
	239	51.43	7.34
7.th Grade			
	151	51.28	7.29
8.th Gradee			
	823	52.22	6.79
TOTAL			

Table 5. ANOVA Results of Secondary School Students' Bullying and Victim and Loneliness in Relation to Class Levels.

Variable	Group	SS	df	MS	F	p	η^2	Fark
Victim	GA	44.811	3	14.937	0.821	.483	.022	
	Gi	14905.112 14949.922	820 823	18.199				
Bully	GA	19.532	3	6.511	1.084	.355	.019	
	Gi	4917.719 4937.252	820 823	6.005				
Loneliness	GA	814.638	3	271.546	5.995	.000	.056	5>7 5>8
	Gi	37097.671 37912.309	820 823	45.296				

For the analysis of another research question, it was observed that there was no significant difference in the victimization and bullying scores according to school type, which are sub-dimensions of peer bullying ($p>.05$, Table 6). In contrast, there was a difference in loneliness scores according to school type ($t_{821}=2.38$, $p<.05$). According to these results, the mean loneliness score of private school students ($M=54.51$) was higher than that of the public-school students ($M=52.08$). According to the effect size analysis, Cohen's d value was 0.380, which was found to be moderate.

Table 6. Independent Sample t-Test Results of Bullying and Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students by School Type.

	School Type	n	M	SD	t	df	p																				
Victim	State	776	18.01 17.61	4.23	0.79	821	.537																				
	Private	44		4.71				Bully	State	776	12.68	2.33	-0.85	821	.395	Private	47	13.00	3.90	Loneliness	State	776	52.08	6.81	2.38	821	.017
Bully	State	776	12.68	2.33	-0.85	821	.395																				
	Private	47	13.00	3.90				Loneliness	State	776	52.08	6.81	2.38	821	.017	Private	47	54.51	5.97								
Loneliness	State	776	52.08	6.81	2.38	821	.017																				
	Private	47	54.51	5.97																							

According to the ANOVA test conducted for the fifth research question, it was observed that the level of mother's education did not affect the victimization and bullying scores of secondary school students ($p>.05$, Table 7). However, a significant difference was found in terms of loneliness scores according to the mother's education level ($p<.05$, Table 8). The loneliness score of students whose mother's education level was higher ($M=53.76$) was higher than that of students whose mother's education level was primary school ($M=51.95$). The mean loneliness score of the students whose mother's education level is primary school ($M=51.95$) is significantly higher than the loneliness score average ($M=51.69$) of the students whose mother's education level is secondary school (Table 7).

Table 7. Results Related to the Mother's Education Level of Bullying and Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students.

Loneliness Scores	N	M	SD
Primary Education	455	51.95	7.02
Secondary Education	216	51.69	6.66
Higher Education	152	53.76	6.04
TOTAL	823	52.22	6.79

Table 8. Results Related to the Mother's Education Level of Bullying and Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students.

	VK	KT	sd	KO	F	p	η^2	<i>Difference</i>
Being Victim	GA	24.886	3	12.443	0.684	.505	.022	
	Gi	14925.036 14949.922	820 823	18.201				
Bullying	GA	9.756	3	2.476	0.412	.663	.019	
	Gi	5133.016 5142.772	820 823	6.015				
Loneliness	GA	11.86.979	3	226.398	4.956	.007	.056	Higher Education> Primary Education
	Gi	39174.9708 40361.949	820 823	45.682				Primary Education > Secondary Education

No significant difference was found in secondary school students in terms of victimization and bullying according to fathers' education levels ($p > .05$, Table 9). However, a significant difference was found between the loneliness scores of secondary school students according to the father's educational level ($p > .05$, $F = 7.247$, Table.10). Between the loneliness scores of students whose fathers' education level was higher education ($M = 53.76$) and the loneliness scores of the students whose fathers' education level was secondary education ($M = 51.95$), the score of the student whose father is a graduate of higher education is high. It was found that the loneliness score average of students whose fathers' education level was secondary school ($M = 51.95$) and the loneliness point average of students whose father's education level was primary school ($M = 51.69$) was higher than that of students whose father was a secondary school graduate (Table 9). According to the father's education level, the loneliness scores of secondary school students had a moderate effect size statistically ($\eta^2 = .065$).

Table 9. Results Related to Father's Education Level of Bullying and Victimization and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students.

Loneliness Score	N	M	SD
Primary Education	340	51.42	7.27
Secondary Education	278	52.12	6.73
Higher Education	205	53.68	5.76
TOTAL	823	52.22	6.79

Table 10. ANOVA Test Results of Bullying and Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students according to Father's Education Level.

	VK	KT	sd	KO	F	p	η^2	<i>Difference</i>
Being Victim	GA	91.630	3	44.815	2.528	.080		
	Gi	14858.293	820	18.120				
Bullying	GA	12.035	3	6.018	1.002			
	Gi	4925.216	820	6.006		.368		
Loneliness	GA	658.469	3	329.234	7.247			Higher Education > Primary Education > Secondary Education
	Gi	37253.840	820	45.432		.001	0.65	

For another research question, no significant difference was found between peer bullying and loneliness levels of secondary school students in terms of the working status of the mother ($p > .05$, Table.11).

Table 11. Independent Sample t-Test Table of Bullying, Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students in Relation to Father's Employment Status.

	Father's Employment Status	n		ss/SD	t	sd/df	p
Being Victim	Yes	727	17.89	4.18	-1.681	821	.145
	No	96	18.67	4.80			
Bullying	Yes	727	12.73	2.49	0.871	821	.068
	No	96	12.50	2.09			
Loneliness	Yes	727	52.35	6.73	1.526	821	.158
	No	96	51.22	7.18			

The t-test results for the last research question showed a significant difference between the peer bullying scores according to the working status of the participants' mothers ($t_{821}=6.909$, $p < .05$). The mean victimization score of students whose mothers were employed ($M=12.92$) was higher than that of students whose mothers were unemployed ($M=12.63$). According to the obtained Cohen's d value of 0.107, the effect size could be classified as low (Table.12).

Table 12. Independent Sample t-Test Table of Bullying, Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students in Relation to Mother's Employment Status.

Variable	Mother's Employment Status	n	ss/SD	t	sd/df	p	
Being Victim	Yes	196	18.04	4.61	1.411	821	.235
	No	627	17.97				
Bullying	Yes	196	12.92	3.13	6.909	821	.009
	No	627	12.63				
Loneliness	Yes	196	52.45	6.63	0.315	821	.575
	No	627	52.14				

DISCUSSION

Bullying is a widespread problem that is characterized by deliberate, sustained hostility and an unequal power relationship between the perpetrator and the victim (Yury et al., 2013). Being bullied by peers at school can have various consequences for students. Peer victimization contributes to adverse health and well-being outcomes among students (Rigby, 2003). The studies have shown that bullied students are more prone to mental health problems, substance abuse, and problems in their academic lives (Pham & Adesman, 2015) while some children display resilience and recover from bullying relatively unaffected (Ismaili, 2014). Furthermore, the adverse effects of bullying have been found to continue into adulthood (Ismaili, 2014). In addition, there is a higher likelihood that those who engage in bullying behavior will continue to engage in anti-social and violent behavior in their adult lives (Rigby, 2003). It is evident that the possibility of serious consequences, including suicide in extreme situations, emphasizes the importance of addressing this issue in educational settings (Ismaili, 2014; Pham & Adesman, 2015). The aim of the present study was to examine the phenomenon of peer bullying and loneliness among secondary school students in relation to a number of variables. This section will present the findings of the study.

The primary school period is mostly under the supervision of parents (Zerinou et al., 2020). On the other hand, the middle school years are a time when children have their own choice of peers for communication and interaction and the peer influence become more prominent (Wang & Eccles, 2012). During this period, some of the students speak out about the bullying they are being subjected to, but most of the time they are reluctant to speak out for fear of being isolated (Dake, et al., 2003). The psychological and social dynamics of bullying form the basis of this phenomenon. Those who have been subjected to bullying may believe that disclosing their experiences will result in feelings of further isolation and a heightened hostility from their peers. A fear of potential marginalisation or retaliations resulting from the disclosure of bullying may lead to continued silence on the part of those subjected to it. This perpetuates the victimisation cycle. Reluctance to report instances of bullying may therefore be attributed to the fear of potential consequences (McDougall & Vaillancourt, 2015). In line with that, in the present study, a positive relationship was found between peer bullying and levels of loneliness among secondary school students. Based on this finding, it can be concluded that an increase in peer bullying leads to an increase in loneliness. Acquah and colleagues (2016) found that adolescent loneliness increased the risk of victimization by their peers, with social loneliness being a stronger predictor than emotional loneliness. In a 2021 meta-analysis, Fitriah and colleagues observed that bullying significantly elevated the likelihood of loneliness among adolescents. Pavri (2015) investigated the bidirectional relationship between loneliness and peer victimization, concluding that children who are lonely are more vulnerable to bullying, whereas chronic victimization can lead to an increase in loneliness. These studies highlight the importance of addressing bullying and loneliness in adolescents to promote positive social and emotional outcomes.

Previous studies revealed that there was a significant gender difference in peer bullying (Carbone-López et al., 2010; Lehman, 2014). The findings of the present study are consistent with those of previous studies. The findings of the present study shows

that boys were more likely to be exposed to peer bullying than girls at the school setting. A large number of studies have reported results that contradict the present findings (Bayraktar, 2009; Craig & Pepler, 2003). It was concluded that boys are more likely to engage in bullying actions because they are prone to violence and want to show their power and courage to their peers (Raustevon Wright, 1989). In addition, in the gender-based comparison, the mean score for boys was higher than that for girls. Numerous studies have also reported similar results (Duyan et al. 2010; Certel et al. 2016). On the other hand, there are also studies in which loneliness levels of female students were high (Karakuş, 2012), and no significant difference was found (Eldeleklioğlu, 2008; Çeçen, 2008). The reason for the differences between the results of the studies can be explained by the fact that the sample groups were at different age levels and that these studies were conducted in different cultural settings and geographies. In addition, girls specifically tend to engage in more indirect forms of bullying such as social isolation and spreading rumours, whereas boys are more likely to engage in physical bullying. Furthermore, the discrepancies in the results may be attributed to the gender-based differences in the types of bullying behaviours exhibited by students (Atik, 2006; Carbone-López et al., 2010).

When the loneliness scores of students were analyzed in terms of their grade levels, we observed a significant difference. The highest loneliness scores were observed in 5th grade students, whereas the lowest average score was observed in 8th grade students. This can be interpreted as students felt lonelier in the first year, they started secondary school and that this feeling gradually decreased towards the end of their secondary school years due to the gradual improvement of peer interactions and friendship formation. In contrast to our finding, other studies did not find any significant differences in the level of loneliness in terms of class levels or age variables (Çakır & Oğuz, 2017).

When the school types were analyzed, a significant difference was observed in terms of loneliness levels. This difference was interpreted as students studying in a private school having a considerably higher average loneliness score than students studying in public schools. The findings of the study conducted by Ayas and Piskin (2011) with high school students revealed that students from vocational high schools were the most frequently victimised group, whereas those from private high schools constituted the greatest number of bullies. In comparison to the other categories, the Anatolian high school students experienced the least victimisation and had a smaller group of bullies. Anatolian high schools in Turkey are distinguished by their high academic standards, selective admissions policies, and a curriculum that frequently includes advanced courses and foreign language study. The results are not in line with another study that children's experiences of bullying did not vary by school type. Similarly, the size of the school did not affect students' bullying behaviour, as students' experience of bullying was similar in small, medium, and large schools (Lodge & Bexter, 2012). In Turkey, private schools are likely to be relatively small in size. An interpretation of the present findings suggests that school size and social structure may have an impact on the experiences of secondary school students in Turkey with regard to bullying, in contrast to the situation in other countries.

A significant difference was found in the relationship between loneliness scores and maternal education level. The loneliness level of the mother's child who graduated from higher education was found to be the highest, while that of the mother's child who graduated from secondary education was found to be the lowest. When the literature is examined, results in the opposite direction are found (Yılmaz, et al., 2008; Körler, 2012). Moreover, a significant difference was found in the relationship between loneliness scores and fathers' educational levels. While the loneliness level score of children whose fathers graduated from higher education was the highest, that of children whose fathers graduated from primary education was the lowest. As the father's educational level increased, the child's loneliness score also increased. Studies parallel to the results of this study can be found in the literature (Albayrak, 2012; Arıman, 2007). However, there are also studies with findings contrary to those of this study (Körler, 2012; Eni, 2017). A higher level of education among parents is associated with a greater probability of providing their children with the social and emotional skills that are negatively associated to bullying behavior of the children (Tattum & Herbert, 1997). In addition, these earned skills, in turn, would reduce levels of loneliness levels of their children. The fact that the findings differ from expectations also shows us that there could be other dynamics affecting parent-child interaction. The variation in results based on the education levels of mothers and fathers in these studies might be attributed to global changes, their impact on children, and the cultural and social differences within the study group. In addition, the fact that children spend more time on computers, phones, and tablets in today's world may be the cause of an increase in loneliness scores (Ertemel & Aydın, 2018; Lissak, 2018).

Another important finding of the present study was that there was no significant difference in exposure to peer bullying in terms of fathers' employment statuses. The literature shows contradictory findings. Looking at the literature, in the study examining the father's employment status of young people together with the tendency to violence, it was found that students whose fathers were unemployed were more prone to engage in violent actions and being a bully (Özgür et al., 2011). In low-income families, instability in parents' employment may be a barrier to healthy investment in social capital for children's outcomes (Christie-Mizell, 2004). It has also been demonstrated that when fathers engage in full-time or overtime work while their children believe that they do not spend sufficient time with their father, the likelihood of bullying behavior displayed is increased (Christie-Mizell et al., 2011). Another study found that children whose fathers reported that their family experienced adverse situations, including parental distress, hostility, or harsh disciplinary practices, were more likely to engage in bullying behaviors (de Vries et al., 2017).

Children and young people at the bottom and the highest end of the family income scale are more likely to be involved in bullying than their peers in the middle-income group, with children on low incomes being the most likely to be involved in bullying (Christie-Mizell, 2004). These findings suggest that fathers' stress or negative emotions related to their work situation are reflected in their interactions with their children which in turn can be influential on their children's bullying behavior against their peers.

Additionally, a difference was found between mothers' employment status and bullying. It was observed that children whose mothers worked engaged more in bullying actions. Family income might play an important role both in the initiation of bullying and in the level of bullying over time (Christie-Mizell, 2004). The working status of the mother, her material wealth, causes the child to feel psychologically stronger (Enderstein & Boonzaier, 2015; McNeill, 2004), which in turn causes the child to feel stronger in general. Nevertheless, the mother's working life may influence the child's behavioral issues. This emphasizes the necessity for working mothers to effectively manage their professional and familial responsibilities to ensure the well-being of their children (Jacob, 2016).

Based on the results of the present study, several recommendations are proposed with the intention of addressing peer bullying among secondary school students. In order to provide students with a better awareness of the problem and techniques for prevention and intervention, it is first advised that information seminars on peer bullying be held. School counselors should also be proactively educating parents about peer bullying, with the intention of encouraging a team approach to solving the issue. It is also recommended that the number of social events for students be increased, as these activities have the potential to reduce instances of bullying and strengthen peer relationships. In our study, we found some contradictions between our results and previous findings in the literature. A further study should be conducted in order to gain a more in-depth understanding of the phenomenon of student loneliness and to identify the underlying causes of peer bullying. Such studies would provide valuable insights into the root causes of these issues and inform more effective interventions.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Examples of author contribution statements

B.B. and D.M.B. conceived of the presented idea. B.B. developed the theory and performed the computations. B.B. and A.S.T. verified the analytical methods. D.M.B. supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

Ethics committee approval for this study was obtained from Istanbul University-Cerrahpaşa Social and Human Sciences Research Ethics Committee (dated 12.04.2022 and numbered E-74555795-050.01.04-392098).

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