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The Relationship Between Bullying And Students' Academic Achievement

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Abstract. This research aims to examine the impact of physical bullying on the academic achievements of 8th graders in mathematics. Another purpose of the study is to compare the incidence rates of physical bullying in different countries and examine the effect of physical bullying on achievement in different countries. TIMSS 2019 student data, which is available to everyone and can be downloaded from the TIMSS database, was used in the study. The study group was selected by a two-stage method among the students who participated in the TIMSS 2019 exam at the eighth-grade level. The selected countries are the UK, Turkey, and Qatar. 10927 students (3144 students from the UK, 4009 from Turkey, and 3774 from Qatar) constitute the study group. In this study, the relationship between bullying and academic achievement was examined using the correlational research method, which is one of the quantitative research methods. According to the findings, it was found that there was a statistically significant and negative relationship between the frequency of bullying and student success. Another finding is exposure to physical bullying by country. The results revealed that Qatari students were most likely to be physically bullied, while British students were the most unlikely to be physically bullied. Recommendations for parents, students, and school administrators are also included in the study to mitigate the impact of bullying in schools.

Keywords. Bullying, physical bullying, math achievement, TIMSS.

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Bullying has been a problem in schools in recent years. Bullying, which is frequently seen in almost every school and every class in Turkey and the world, negatively affects students. When defining bullying, researchers defined it as repetitive behaviors by one or more students to physically, psychologically, and verbally hurt students who are more vulnerable and incapable of defending themselves (Olweus, 1993 as cited in Gini, 2006; Nansel et al., 2001; Rigby, 2000). Bullying is a form of persistent violence with physical or psychological consequences, perpetrated by an individual or group against a person unable to protect himself or herself (Roland 1989). Bullying is an attack that causes stress and pain and recurrence to the victim, which occurs on a physical, psychological, social or verbal level against those who cannot resist for their gain and interests (Besag 1989).

Bullying is "a type of aggression that results in one or more students deliberately and constantly harassing students who are weaker than themselves, and the victim is unable to protect himself" (Piskin, 2002). Bullying at school, in other words, peer bullying, is a psychological, verbal, and physical attack or intimidation that the strong ones deliberately apply to the weaker ones at certain intervals, causing damaging effects such as fear and anxiety in the bullied person (Akgün, 2005; Baldry and Farington, 2000; Salmivalli, 1999; Pellegrini, 1998; Olweus 1994; Schwartz et al., 1997; Information for Parents, 2006). Students who are constantly bullied at school cannot feel safe in the school environment and may have a negative attitude towards the school. This feeling of insecurity can be reflected in teachers and lessons over time. Therefore, students can develop a negative attitude towards the courses. As a result, students may fail to show their potential in their courses. In bullying, the attacker does not cause physical harm to the victim, while the victim experiences feelings such as depression, low self-esteem, fear, sadness, frustration, and they are psychologically damaged (Erdur, Baker and Kavşut, 2007; Hinduja and Patchin, 2005). All these situations can also be negatively reflected in students' lessons. This study aims to examine the relationship between bullying and academic achievement. The research will examine this relationship by comparing the academic achievement of students that are bullien in different frequencies. In addition, the research will examine the incidence rates of bullying in different countries and compare the results with other countries.

The person who bullies is called a bully. People who are bullied are called victims. Bullying behaviors include physical (kicking, slapping, beating, pushing, etc.) (Austin & Joseph, 1996) and verbal bullying (giving a nickname, teasing, mocking, etc.), excluding from the group, spreading gossip (Crick, Casas, & Nelson, 1996), threatening with anything (Hawker & Boulton,

2000), or taking other people's things without permission (Nansel et al. 2001; Wolke et al., 2000; Woods et al., 2007).

According to Olweus, bullying is aggressive behavior. If there is a power imbalance in relationships, bullying can be seen. It is repeated over time by an individual or individuals, aimed at causing harm or distress to the person or people. Bullying can be carried out using physical, verbal, direct, or indirect methods (Alikasifoğlu, 2007). Such behavior is dealt with directly and indirectly in two groups. It includes direct physical and verbal bullying (mocking, threatening, etc.), spreading gossip (Crick, Casas, and Nelson, 2002), and excluding from the group (Crick and Grotpeter, 1995). Olweus (1999) emphasizes that for an action to be defined as bullying, there must be three basic criteria:

1. Aggressive behavior to harm
2. To have continuity, that is, to carry out such actions not once, but continuously
3. Unequal balance of power between the parties

When the literature is examined, it is seen that there are different types of bullying. These can be defined as physical bullying, verbal bullying, indirect bullying, school bullying, and cyberbullying.

Types of Bullying

Physical Bullying. Beating, pushing, kicking, taking other people's things without permission, or damaging them, and hitting (Alikasifoğlu et al. 2007). Even though it is not very common in primary schools; shooting, raping, being attacked by group of students are other forms of physical bullying. Unfortunately, results of these types of physical bullying can be unrepairable for victims.

Verbal Bullying. Teasing, angering, mocking, swearing, intimidating, giving a nickname, humiliating, insulting, using bad words, insulting people or their relatives, saying hurtful words (Gündoğdu 2003).

Indirect Bullying. False rumors, excluding from activities, games, etc., ignoring, spreading rumors and gossip, writing bad words about the victim (İlhan Alper, 2008).

Cyberbullying. Cyberbullying is like other types of bullying in a physical environment. The main difference from other types of bullying is the use of information and communication

technologies such as computers, mobile phones, and the internet as intermediaries for virtual communication. Belsey (2006) described cyberbullying as "a type of bullying that involves intentional, repetitive and hostile behavior of an individual or group to harm others using information and communication technologies." According to Patchin and Hinduja (2006), cyberbullying is a deliberate and repetitive damaging behavior through electronic texts. These texts can include dangerous messages (death threats, swearing, insults, etc.) (Nelson, 2003).

School Bullying. "It is a type of aggression in which one or more students physically, verbally or indirectly, intentionally and continuously disturbs the weaker students who are unable to protect themselves" (Gündoğdu, 2003). Bullying at school, in other words, peer bullying, is a psychological, verbal, and physical attack or intimidation that the strong ones deliberately apply to the weaker ones at certain intervals, causing damaging effects such as fear and anxiety in the bullied person (Akgün 2005; Baldry and Fingleton 2000). ,17; Salmivalli 1999, 1268; Pellegrini 1998, 165; Olweus 1994, 1174; Schwartz et al. 1997, 665; Information for parents, 2006). Studies on bullying have been conducted in schools. The first study on bullying in schools was made by Norwegian researcher Dan Olweus in the 1970s. Olweus published his studies on bullying in his book "*Aggression in the Schools: Bullies and Whipping Boys*" in 1978 and later took part in commissions on the establishment of bullying prevention programs in Norway and other Scandinavian countries (Olweus and Mona, 2003).

Many studies have been carried out on bullying in schools in America, Austria, England, Canada, the Netherlands, and Japan (Olweus, 1993; Hughes, 2005; Berger 2007). According to data obtained from Piskin's surveys of the prevalence of bullying and victim incidents around the world, victim students' rates are 30-50% in Australia; 8-40% in Italy; 4-36% in the UK; 15-30% in Greece; 20-22% in Portugal; 21% in Canada; and 10% in the USA. Bully students' rates are 5-20% in Italy; 30% in the UK; 6% in Greece; 12% in Canada and 7% in Norway (Piskin, 2005; Piskin, 2010).

As a result of an international study by the World Health Organization, the lowest rate (28% for boys and 13% for girls) of bullying was in Wales and the highest rates (67% for girls and 78% for boys) was in Greenland. In the same study, when evaluated in terms of exposure to bullying, the lowest rate (15% in boys and 13% in girls) was found in Sweden and Greenland (77% for boys and 72% for girls) (Who, 2004).

Various studies have been conducted on bullying at school and academic achievement relationship. Bullying in the school environment has a significant impact on the academic

achievement of students (Akyüz, 2014; Buluç, 2014; Büyüköztürk, Çakan, Tan & Atar, 2014; Mohammadpour, 2012; Measureoğlu & Çetin, 2016; Yavuz, Demirtaşlı, Yalçın & Dibek, 2017). Buluç (2014) conducted a study on students in Turkey using TIMSS 2011 data, and it was seen that the rate of students in Turkey complaining about violence-bullying behaviors at schools is high. In addition, in all countries, including Turkey, where mathematics achievement is examined according to violence-bullying behaviors, it has been observed that the average of achievement scores is higher in schools, regions, and countries where violence-bullying is not seen, compared to schools, regions, and countries where violence-bullying is seen. Considering that, according to TIMSS 2011, as students are exposed to bullying, and this situation negatively affects their mathematics achievement, it is important to investigate the bullying in school environment and mathematical achievement.

As mentioned in the literature, there is a negative relationship between bullying and students' academic achievement. (Cetin, Bilbay, Kaymak, 2001; Chen & Others, 2008; Lubber & Others, 1996). This study aims to determine the relationship between the frequency of being bullied at school and the students' academic achievement. When the literature is examined, it is seen that violence-bullying behaviors seen at school affect academic achievement. For this reason, the question "Is there a relationship between the frequency of bullying and student success?" was tried to be answered. The research also sought an answer to the question of how this relationship is in 3 different countries selected from different success levels.

Purpose

This research aims to examine the effect of physical bullying on the academic achievements of eighth graders in math. Another purpose of the study is to compare the incidence rates of bullying in different countries and to determine and evaluate the effect of physical bullying on academic achievement in different countries. TIMSS data, the international academic achievement measurement organization, was used to achieve the above-mentioned objectives. Since the TIMSS exam was held in 2019, 2019 data were used in the study. Using TIMSS 2019 data, it was aimed to reveal the relationship between the physical bullying of eighth-grade students in England, Qatar, and Turkey and their academic achievement. Various sub-problems were also considered while revealing the relationship.

1. Is there a relationship between the level of physical bullying that students are exposed to and their academic achievement?

2. Do the levels of physical bullying that students are exposed to change according to countries?
3. Do the effects of the physical bullying that the students are exposed to on academic achievement vary according to the countries?

This research was conducted to find answers to these three questions.

Method

In this study, the relationship between the bullying that students are exposed to and their academic achievement was examined with relational screening method, which is one of the quantitative research methods. TIMSS 2019 student data, which is available to everyone and can be downloaded from the internet, was used in the study. TIMSS researchers especially encourage the determination of factors affecting student academic achievement by using these data (TIMSS, 2019). Therefore, no ethics committee approval is required for this study.

Study Group

The data of this research were obtained from the 2019 TIMMS 8th grade students scale and the students' mathematics achievement scores. In TIMMS studies, the sample group is formed by using the maximum diversity method. According to this method, individuals in the sample group are selected in a ratio and quality that can represent the general population (Şehirlioğlu and Sarıbay; 2010). The study group of this research was selected from the eighth-grade students who participated in the TIMMS 2019 exam with a two-stage method. In the first stage, countries are ranked according to their success. In the second stage, one country from each success level was selected by random selection method and included in the research.

Table 1.

Distribution of the number of students selected from countries

Countries	N	%	SCORE	RANKING	CATEGORY
England	3144	28.77	515	13	Medium
Turkey	4009	36.68	496	20	Medium
Qatar	3774	34.53	443	30	Low
	10927	100			

Data Collection Tool

In the study, the student scale and mathematics achievement test were used to determine the versatile knowledge and skill levels of students in TIMMS 2019. TIMSS also applies a variety of scales to determine the factors that influence students' academic achievement. One of these surveys, the student questionnaire, and the success scores of the students, comprises the data source of the study. In the student questionnaire, some statements take the students' opinions on the situations they can experience during a day at school. As a dependent variable, the success scores of the students from the mathematics exam were examined. Student questionnaires were used as the independent variable.

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During this school year, how often have other students from your school done any of the following things to you, including through texting or the Internet?

Fill one circle for each line.

	At least once a week	Once or twice a month	A few times a year	Never
a) Said mean things about my physical appearance (e.g., my hair, my size) -----	○	○	○	○
b) Spread lies about me -----	○	○	○	○
c) Shared my secrets with others -----	○	○	○	○
d) Refused to talk to me -----	○	○	○	○
e) Insulted a member of my family ---	○	○	○	○
f) Stole something from me -----	○	○	○	○
g) Made me do things I didn't want to do -----	○	○	○	○
h) Sent me nasty or hurtful messages online -----	○	○	○	○
i) Shared nasty or hurtful things about me online -----	○	○	○	○
j) Shared embarrassing photos of me online -----	○	○	○	○
k) Threatened me -----	○	○	○	○
l) Physically hurt me -----	○	○	○	○
m) Excluded me from their group (e.g., parties, messaging) -----	○	○	○	○
n) Damaged something of mine on purpose -----	○	○	○	○

Figure 1. The question of determining the frequency of physical bullying.

The students were asked a 4-point Likert statement: "They hurt me physically". Students were asked to answer this statement as "1. at least once a week, 2. once or twice a month, 3. a few times a year, 4. never".

Data Analysis

The relationship between the amount of pressure in the teacher questionnaire and the student academic achievement was made with the help of the IDB Analyzer program developed by the IEA and the SPSS 20 package program, which is frequently used in quantitative research. The achievement levels of students in each country were evaluated separately with the support of IDB analysis. IDB analyzer is a software program (IEA, 2020) that is used to analyze many data collected by educational organizations that conduct large-scale evaluations.

Ethical Permissions of Research

In this study, all the rules specified to be followed within the "Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions specified under the heading "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, have been carried out.

Discussion and Conclusion

Descriptive and meaningful statistics were obtained as a result of the statistical operations performed with the multiple linear regression analysis method. Descriptive findings are shown in Table 2 and Table 3. The findings showing the relationship between the frequency of peer bullying and student academic achievement are presented in Table 4.

Table 2.

Frequency of Bullying

Frequency of Bullying	England		Qatar		Turkey	
	Number of Students	Rate (%)	Number of Students	Rate (%)	Number of Students	Rate (%)
At least once a week	88	2.8	263	6.97	138	3.44
Once or twice a month	106	3.37	254	6.73	145	3.61
A few times a year	391	12.43	462	12.24	373	9.30
NEVER	2559	81.39	2795	74.05	3353	83.64
Total	3144	% 100	3774	% 100	4009	% 100

When Table 2 is examined, it is seen that the frequency of bullying varies according to the countries. Among 3 countries, the highest rate in terms of the number of students who have never been bullied is in Turkey with 83.64%, while it is 81.39% in England and 74.05% in Qatar. The rate of students who are bullied several times a year is 81.39% in England, 12.24% in Qatar and 9.30% in Turkey. In terms of the number of students who are bullied once or twice a month, the country with the highest rate is Qatar with 6.73%, while it is 3.61% in Turkey and 3.37% in England. In terms of the number of students who are bullied at least once a week, the country with the highest rate is Qatar with 6.97%, while it is 3.44% in Turkey and 2.8 in England. It has been found that the rate of students who have never been bullied is higher than the other rates in these 3 countries.

Table 3.

Frequency of Exposure to Bullying

Countries	Mean	Sd
England	3.72	.656
Qatar	3.53	.899
Turkey	3.73	.690

The average frequency of exposure to bullying in these 3 countries is shown in Table 3. When the frequencies of 3 selected countries were compared, the least mean ($\bar{X}=3.73$) was in Turkey. On the other hand, the highest mean ($m=3.53$) was in Qatar, while this rate was almost same with Turkey with $m=3.72$ in England.

Findings, obtained as a result of multiple linear regression analysis, of the relationship between the frequency of exposure to bullying and student achievement are presented in the regression table (Table 4). When the regression results were examined, it was found that there was a statistically significant and negative relationship between the frequency of students' exposure to bullying and academic achievement in 3 selected countries.

Table 4.

Regression analysis results

Country	R ²	Frequency of Bullying	Success rate	SE B	B	t-score
England	.02	At least once a week	474.00	12.47	-	-
		Once or twice a week	476.70	13.77	.03	.19
		A few times a year	523.44	12.37	.05	4.03*
		Never	520.64	12.34	.05	3.91*
Qatar	.02	At least once a week	400.71	10.29	-	-
		Once or twice a week	424.63	13.45	.04	1.75
		A few times a year	456.93	11.52	.04	4.84*
		Never	449.04	9.67	.04	5.11*
Turkey	.01	At least once a week	474.20	16.02	-	-
		Once or twice a week	496.59	16.54	.03	1.39
		A few times a year	520.99	17.35	.05	2.69*
		Never	494.63	16.05	.05	1.27

* Indicates a statistically significant relationship.

When Table 4 is examined in detail, it was seen that as the frequency of exposure to bullying increases, the mathematics achievement of the students decreases. This relationship was almost linear in all three countries. The number of students in different groups can be shown as the reason that prevents full linearity. This is because the number of students who have never been bullied is much higher than the number of students who are bullied at least once a week, once or twice a month, once a year, or a few times a year. In England, the average achievement score of students who are bullied at least once a week is 474.00, who are bullied once or twice a month is 476.70, and who are bullied once or twice a year is 523.44, and who have never been bullied was 520.64.

In Qatar, the average achievement score of students who are bullied at least once a week is 474.20, who are bullied once or twice a month is 496.59, and who are bullied once or twice a year is 520.99. The average achievement score of students who have never been bullied is 494.63.

In Turkey, the average achievement score of students who are bullied at least once a week is 400.71, who are bullied once or twice a month is 424.63, and who are bullied once or twice a year is 456.93. The average achievement score of students who have never been bullied is 449.04. As can be seen, in three countries selected for the study, as the frequency of students' exposure to bullying increases, their achievement scores decrease. In other words, it was concluded that students who have never been bullied are more successful in their lessons.

Discussion and Conclusion

The study is conducted to determine the relationship between the frequency of students' exposure to bullying and their academic achievement, it was determined that there was a negative relationship between the frequency of exposure to bullying and academic achievement. When other studies are examined, it is also seen that there is a negative relationship between bullying and academic achievement of students (Patchin and Hinduja, 2006; Şahin, Sarı, Özer and Er, 2010; Arıcak, 2011; Kumpulainen et al., 2001; Natvig et al., 2001; Slee, 1923; Arslan. and Savaşer, 2009; Baker and Kavşut, 2007). In all countries included in this study, it was determined that there was a significant but negative relationship between exposure to physical bullying and students' mathematics course achievement. In other words, it was observed that the academic achievement of the students increased significantly as the rate of being bullied decreased. It is inevitable that students who are bullied are more unsuccessful because these students develop a negative attitude towards school, teachers, classes, and friends. According to Ayas (2007), incidents of violence in schools affect the general perception about the school, while also negatively affecting the learning processes. Studies on this subject have revealed that physical bullying has negative effects on the academic achievement of students. Students' academic achievement is negatively affected because as it is stated by Gökler (2009), physical bullying causes to be alienated from school and not attending classes to avoid bullying. In another study, Due (2005) concluded that bullying is associated with physical symptoms such as headache, stomachache, acne, dizziness, and psychological symptoms such as bad mood, anger, sleep disorders, morning fatigue, loneliness, and desperation.

This research also revealed bullying rates in the three selected countries. When the frequency of exposure to bullying in 3 selected countries was compared, the least rate was seen in England with $m=3.72$. The rate in Turkey was $m=3.73$. While these rates in both countries show that most of the students have never been exposed to physical bullying, the highest rate was in Qatar with $m=3.53$. Although this rate shows that most of the students are exposed to very little physical bullying, it is still higher than England and Turkey.

Recommendations

Measures that can be taken to reduce the impact of bullying in schools;

- School administrators can determine the bullying behavior map of the school by conducting periodic surveys to determine the bullying behaviors faced by the students in cooperation with the school counselors.
- School administrators, in cooperation with guidance research centers, can direct students who are constantly exposed to bullying to these centers.
- The level and the causes of the bullying problem at school should be determined.
- Accurate and comprehensive information should be given to students, teachers and parents about the prevalence, the causes, and consequences of bullying at school.
- School and classroom rules should be determined by the students.
- Assertiveness training should be given to students.
- Protective and intervening guidance issues should be included.
- Empathic skill development activities should be done with students.
- Families should be made aware of bullying, and parents should be involved in the intervention process.
- Students who are prone to bullying can be identified and those students can be directed to group work and social activities.

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Conflict of Interest

No conflict of interest was declared by the authors.

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Ethical Standards

I have carried out the research within the framework of the Helsinki Declaration; the participants were volunteers, informed consent has been obtained, etc. All measures have been taken regarding ethics.

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