



## RESEARCH

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## ARAŞTIRMA

Açık Erişim

## An Examination of the Relationship between Anger, Aggression, and Problem Solving Skills in Secondary School Students

*Ortaokul Öğrencilerinde Öfke, Saldırganlık ve Problem Çözme Becerileri Arasındaki İlişkinin İncelenmesi*

Bilge Fidan , Nergüz Bulut Serin 

### Authors Information

#### Bilge Fidan

Psychological Counselor, Ministry of National Education, Manisa, Turkey  
[bilgefidan45@gmail.com](mailto:bilgefidan45@gmail.com)

#### Nergüz Bulut Serin

Professor, Department of Guidance and Psychological Counseling, European University of Lefke, Northern Cyprus, TR-10, Mersin, Turkey  
[nserin@eul.edu.tr](mailto:nserin@eul.edu.tr)

### ABSTRACT

The purpose of this study was to examine if there is a connection between anger, aggression, and problem-solving abilities in secondary school students. The study's sample includes 273 students enrolled in secondary schools in Manisa for the 2020-2021 academic year. The convenience sampling method, which is one of the non-random sampling methods, was used to determine the study's sample. The data for the study was collected using the Anger Scale for Children, the Aggression Scale, and the Problem-Solving Inventory for Children. The t-test, Spearman Correlation analysis, and multiple regression analysis were conducted to analyse the data. Looking at the data, it was determined that the anger levels of female students were higher than those of male students. The aggression levels of male students are higher than female students. It was discovered that anger and aggression have a positive relationship, whereas anger levels have a negative relationship with self-control, avoidance, and total problem solving. Another outcome of the study is that problem-solving abilities predict anger and aggression. A negative association was shown between problem solving, anger, and aggression among students.

### Article Information

#### Keywords

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#### Anahtar Kelimeler

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### ÖZET

Bu araştırma, ortaokul öğrencilerinde öfke, saldırganlık ve problem çözme becerileri arasındaki ilişkiyi incelemek amacıyla yapılmıştır. Araştırmanın örneklemini 2020-2021 Eğitim Öğretim yılında Manisa ilinde ortaokullarda öğrenim görmekte olan 273 öğrenciden oluşmaktadır. Araştırmanın örneklemini seçkisiz olmayan örnekleme yöntemlerinden olan uygun örnekleme yöntemi ile belirlenmiştir. Araştırmanın verilerinin elde edilmesinde Çocuklar İçin Öfke Ölçeği, Saldırganlık Ölçeği ve Çocuklar İçin Problem Çözme Envanteri kullanılmıştır. Verilerin analizi, t-testi, Spearman Korelasyon Analizi ve Çoklu Regresyon Analizi ile incelenmiştir. Araştırmanın bulgularına bakıldığında, kız öğrencilerin öfke düzeyleri erkek öğrencilerden daha yüksek düzeyde olduğu bulunmuştur. Erkek öğrencilerin saldırganlık düzeyleri kızlardan daha yüksektir. Öfke ile saldırganlık arasında pozitif yönlü, öfke düzeyleri ile öz denetim, kaçınma ve toplam problem çözme arasında negatif bir ilişki saptanmıştır. Çalışmanın bir diğer bulgusu da öfke ve saldırganlık problem çözme becerileri tarafından yordandığıdır. Öğrencilerde problem çözme ile öfke ve saldırganlık ilişkisi negatif yönde anlamlı bulunmuştur.

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**Ethical Statement:** This research was completed in line with the Helsinki Declaration. In line with this, the study was investigated and permitted by European university of Lefke Scientific Research and Ethical Review Board.

## INTRODUCTION

In recent years, it has been observed that violent behavior among students in schools has become more widespread (Bacıoğlu & Özdemir, 2012). Violence in schools has the potential to negatively impact students' development. Students who are unable to establish a respectable personality may become violent in school (Akan, 2021). Students face a wide range of issues in their daily lives and in many social environments. To deal with these challenges, students must use their problem-solving skills (Ocak, Doğruel, & Tepe, 2021). The World Health Organization defines adolescence as the first period of growth and development between childhood and adulthood (Sarıdağ, 2014). Adolescence is a period of rapid maturation and development in terms of psychological, biological, social, and cognitive aspects (Steinberg, 2007). Adolescence is a risky period in which emotional intensities vary a lot (Traş and Atış, 2020). Some knowledge, skills, and experiences that should be acquired during adolescence are extremely important in the process of teenagers participating in society and assuming their place among adults (Duran & Eldeleklioğlu, 2005). Individuals with problem-solving skills are more likely to seek out constructive solutions rather than displaying aggressive behaviors (Uzun & Avcı, 2021).

It is important for adolescents to acquire positive problem-solving skills in terms of reducing anger and aggression behaviors (Arslan, Hamarta, Arslan, & Saygın, 2010; Memnun & Kanbur, 2020). Problem solving, according to Durmaz and Altun (2014), is "understanding what to do in the face of challenging situations where you don't know what to do." When a person faces a problem, problem solving is a process that incorporates cognitive explanations of the problem and begins to draw conclusions about the solution, leading to the person to take an action (Robertson, 2017). The content of the problem-solving process includes a number of activities. These activities are behavioral, cognitive, and emotional activities. Changing the individual's problem status and emotions is quite beneficial in solving the situation (Sophonhiranraka, et al., 2015; Loksa & Ko, 2016). The acquisition of problem-solving skills during childhood ensures the acquisition of skills that will serve as the foundation for maturity (Uzak and Baran, 2021). A great number of studies on problem solving were found when the related literature was studied (AlMutairi, 2015; Arslan et al., 2010; Balkan & Eliöz (2020); Deniz, Arslan and Hamarta, 2002; Mulrey, 2017; Mahulae, Sirait & Sirait, 2017; Sumitha and Jose, 2016; Serin, 2019; Ocak, Gürbüz and Tepe, 2021; Yavuzer, Karataş, Gündoğdu, 2013; Yıldız and Ekşisu, 2011).

Adolescence is seen as a difficult period for the development of anger feelings (Reck et al., 2019). There is a link between anger and other feelings. Anger is associated with increased anxiety and concerns, as well as feelings of grief and guilt (Cassioello-Robbins & Barlow, 2016). Anger is an emotional reaction to unfulfilled goals, unfulfilled wishes, and unfavorable outcomes. However, it is recognized as an emotion that, if not managed properly, can cause significant harm (Kunzmann & Thomas, 2014; Shields et. al., 2016; Karataş & Çelikkaleli, 2018). Anger can manifest itself in a variety of psychological, verbal, and actionable ways (Averill, 2012). The trivialization of personal rights, humiliation, oppression, cynical and contemptuous attitudes, and violations of recognized social norms are all reasons that can provoke anger (Moon & Cho, 2015). Anger reactions can be perceived as dangerous, aggressive, suppressed, and threatening behaviors by people from various cultures, according to Gerhart et al., (2020). Anger and aggression have an impact on the individual who is angry first, then on those around him. In this regard, anger that is not communicated in a healthy manner might be viewed as a major threat to human life (Batgün, 2004). Anger is more closely linked to feelings and behaviors. Aggression, on the other hand, refers to activities that are destructive or harmful to other people or things.

Aggressive behaviors are frequently related to emotional anger states and intentionally cause physical harm, psychological harm, or discomfort to others (Krahé, 2013; Colasente et al., 2015, Cui, et al., 2016). Anger and aggression have negative short-and long-term outcomes, including direct fighting and violence, as well as indirect learning difficulties and social adjustment issues (Ladd et al., 2014). As a result, educators must address the anger-aggression link in order to improve children's and adolescents' behavioral functioning and well-being (Cooley et al., 2012; Malti et al., 2012; Colasente et al., 2015). Reactive aggression is more prevalent in primary schools, but intentional aggression is more prevalent in secondary schools (Uz-Baş, z, & Topçu Kabasakal, 2012). Intentional aggression, as opposed to reactive aggression, has been related to advanced antisocial behaviors and guilt (Miller & Lynam, 2006).

Aggression is related to a variety of major difficulties in people of all ages, according to Hicks (2018), particularly in young children, adolescents, and developing adults. School counselors providing appropriate psychological counseling services, particularly during the pre-adolescent period, will assist in the positive change and development of adolescents throughout this time (Ladd, et al.,2014; Hosseinpour et al., 2021; Serin, 2019). According to studies, students are exposed to some aggressive behaviors in the school environment. According to Uz Baş & Kabasakal (2010), nearly 40% of students at pre-adolescent age participated in physical violence at least once in eighth grade. It is observed that violent behavior among students in schools is becoming more and more prevalent (Bacıoğlu & Özdemir, 2012). It is important for young people to gain awareness and insight into their own lives and learn how to deal with destructive emotions in some way for their happiness in later life (Kara ve Deniz, 2021).

When looking through the related literature, it has been found that there are numerous studies on aggression and anger (Akan, 2021; Akbaş, 2021; Balcı and Kırkıç, 2019; Colasente et al. 2015; Çavdar, 2018; Deniz et al., 2018; Fives et al., 2011; Gresham et al., 2016; Kaplan, 2007; Kılıç, 2020; Özdoğan, Haspolat, Çelik, & Yalçın, 2021; Öztaban and Adana, 2015; Serin and Genç, 2011; Serin, 2019; Warburton, and Anderson, 2015.).

There was no study that dealt with anger, aggression, and problem-solving skills in secondary school students when the studies on anger, aggression, and problem solving were reviewed. The fact that adolescents in secondary school are undergoing rapid and unpredictable physical, psychological, and social changes poses a health risk for this group of people. In this context, it is critical to identify the health risks associated with this group's behaviors, to reveal protective measures, to take the appropriate precautions, and for all adults to have sufficient knowledge of the developmental characteristics of this period. Few research, especially in secondary school children, is known to exist on the association between anger, aggression, and problem-solving skills. The findings of this study are expected to provide vital hints to school counselors on how to reduce anger and violent behaviors in secondary school students while maintaining improvement in problem-solving skills. Reduced levels of aggression and anger, as well as individuals who can effectively cope with aggression and anger and learn positive problem-solving skills, are all thought to be important in protecting society's psychological health. The goal of this study is to discover the links between anger and aggression behaviors and problem-solving skills in secondary school students in this context. From this point of view, these variables can be considered as important clues in studies to be carried out especially to determine risk groups. In other words, if there is an inadequacy in the problem-solving skills of the individuals, problem-solving skills of adolescents can be increased by considering that this person may also have high feelings of anger and aggression. Students with high anger management skills and feelings of aggression can be reached. In the

screening studies to be carried out, risk groups that perceive themselves as inadequate in terms of problem solving skills and have high levels of anger and impulsivity can be identified.

## METHOD

### Research Model

The goal of the study was to discover the connection between secondary school students' levels of anger, aggression, and problem-solving. Accordingly, the correlational survey method was used in the study. This model is a method of empirical analysis used to evaluate the interactions between more than one components, and examines the interaction between variables (Karasar, 2012).

### Participants

The sample of the research consists of students studying in secondary schools in Akhisar province of Manisa city. The study included 273 students, with 146 (53%) girls and 127 (46.5%) boys. The convenience sampling method was used to determine the sample size in this study. In the convenience sampling method, the people who will be included in the sample are chosen by the researcher using non-random methods, and each person must meet the inclusion criteria.

### Ethical Statement

This research was completed in line with the Helsinki Declaration. In line with this, the study was investigated and permitted by European university of Lefke Scientific Research and Ethical Review Board. Additionally, data tools in the study were only distributed to volunteer participants. All participants provided informed consent. Additionally, participants were informed that they could withdraw from the study at any time during data collection.

### Procedure

This research was carried out in the 2020-2021 academic year. Access to students was provided through their parents and students were provided to fill out the online questionnaire. The questionnaire form was prepared through an online questionnaire platform.

### Data Collection Tools

**Anger Scale for Children:** It was developed by Bulut Serin and Serin (2011) to determine the anger levels of primary school 4th, 5th, 6th, 7th and 8th grade students. There are 23 items on the one-dimensional scale. The scale is in the form of "I never do, I do it occasionally, and I always do" and is rated on a three-point Likert scale. In the study of Bulut Serin and Serin (2011) the Cronbach Alpha reliability coefficient of the scale was found to be 0.92. The Cronbach Alpha reliability coefficient of the scale was determined as .91 in this study. The total score obtained from the scale indicates that the anger level is high.

**Aggression Scale.** It was created by Şahin (2001) to determine the level of aggression. The scale is one-dimensional and has 18 items. The scale is in the form of "I never do, I do it occasionally, and I always do" and is rated on a three-point Likert scale. The Cronbach Alpha reliability coefficient of the scale was found to be .77 in a study by Şahin (2001). The Cronbach Alpha reliability coefficient of the scale was found to be .76 in this study. The scale's total score indicates that the level of aggression is high.

**Problem Solving Inventory for Children.** Serin, Bulut Serin, and Saygılı (2010) generated it to evaluate primary school students' problem-solving abilities. There are 24 items in the inventory, with three sub-

dimensions. "Confidence in problem-solving ability" is the first sub-dimension; "Self-control" is the second sub-dimension; and "Avoidance" is the third sub-dimension. The scale scores items in the sub-dimensions of self-control and avoidance in reverse order. The Cronbach alpha reliability coefficients for confidence in problem-solving skills were .85; .78 for self-control, and .66 for avoidance in Serin, Bulut Serin, and Saygılı's (2010) study.

### **Data Collection and Analysis**

The Kolmogorov Smirnov test was implemented to measure the normal distribution of the scores acquired from the scales during the analysis of the research data. The t-test was used to determine whether the scores obtained by the students from the scales were differentiated according to various parameters. Spearman Correlation method was conducted to analyse the relationship between the scores obtained from the measures in the study. The students' levels of anger and aggression were examined using multiple regression analysis to predict the Children's Problem-Solving Inventory and its sub-dimensions scores. The statistical significance level of the data was accepted as  $p < .05$ .

## **RESULTS**

### **Findings on the Difference between Middle School Students' Anger, Aggression and Problem-Solving Levels by Gender**

Table 1 summarizes the results of the t-test, which was used to examine if there was any gender difference in the participants' scores on the anger, aggression, and problem-solving inventory.

**Table 1. T-test Results Regarding Anger, Aggression and Problem-Solving Levels in terms of Gender Variable**

<b>Scales</b>	<b>Gender</b>	<b>n</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>t-value</b>	<b>p-value</b>
Anger	Female	146	46.821	9.734	2.482	<b>.014*</b>
	Male	127	44.015	8.818		
Aggression	Female	146	26.205	4.030	1.903	.058
	Male	127	27.212	4.713		
Problem solving Confidence	Female	146	38.890	5.440	.950	.343
	Male	127	38.212	6.345		
Problem solving Self-Control	Female	146	20.431	4.378	2.995	<b>.003*</b>
	Male	127	22.102	4.838		
Problem solving Avoidance	Female	146	18.068	3.204	1.910	.051
	Male	127	18.803	2.900		
Total problem solving	Female	146	77.390	8.408	1.854	.065
	Male	127	79.118	6.747		

\* $p < .05$

In Table 1, a significant difference was found between the anger and problem solving self-control sub-dimensions according to the gender of the students ( $t=2.482$ ,  $p < .05$ ;  $t=2.995$ ,  $p < .05$ ). It was observed that the anger levels of female students were higher than male students (mean=46.821). It was found that male students' self-control sub-dimension scores were higher than female students (mean=22.102).

### **Findings Regarding the Relationships between Anger, Aggression, and Problem-Solving Skills of the Participants**

To see the relationship between the variables in the study and to help with interpretations and regression analysis evaluations, correlation analysis was conducted. Pearson Product-Moment Correlation was used



to investigate the relationship between the variables of Anger, Aggression, and Problem-Solving Skills. The analysis findings are presented in Table 2.

**Table 2. The Anger, Aggression and Problem-Solving Relationship of the Participants**

Variables	Anger	Aggression	Confidence	Self-control	Avoidance	Total problem solving
Anger	r 1.000	.369**	.004	-.450**	-.351**	-.350**
	p	<b>.000</b>	.954	<b>.000</b>	<b>.000</b>	<b>.000</b>
Aggression	r	1.000	.021	-.264**	-.356**	-.269**
	p		.725	<b>.000</b>	<b>.000</b>	<b>.000</b>
Confidence	r		1.000	-.240**	.128*	.602*
	p			<b>.000</b>	<b>.034</b>	<b>.000</b>
Self-control	r			1.000	.438**	.513**
	p				<b>.000</b>	<b>.000</b>
Avoidance	r				1.000	.689**
	p					<b>.000</b>
Total Problem Solving	r					1.000
	p					

In Table 2, there was a positive relationship between participants' anger and aggression ( $r=.369$ ;  $p<.01$ ), negative relationship between problem-solving self-control ( $r= -.450$ ;  $p<.01$ ), negative relationship between problem-solving avoidance sub-dimension ( $r= -.350$ ;  $p<.01$ ), and a negative relationship between total problem solving ( $r= -.351$ ;  $p<.01$ ).

There was a negative correlation between aggression scores and problem-solving self-control sub-dimension ( $r= .264$ ;  $p<.01$ ); a negative correlation between problem solving avoidance sub-dimension ( $r= -.356$ ;  $p<.01$ ); and a negative correlation between total problem solving ( $r= -.269$ ;  $p<.01$ ).

**Table 3. Multiple Regression Analysis Results for Predicting Problem Solving Scores**

Dependent Variable	Independent Variable	Non-Standard Coefficient		$\beta$	t	p	F	Model (p)	Adjusted R <sup>2</sup>
		B	Std. Error						
Problem Solving	Sabit	96.466	2.932	-	32.898	<b>.000</b>	23.890	<b>.000</b>	.144
	Anger	-.258	.049	-.315	-5.128	<b>.000</b>			
	Aggression	-.245	.106	-.139	-2.305	<b>.022</b>			

In Table 3, at the end of the multiple regression analysis of participants' Anger and Aggression scores predicting their Problem-Solving scores, the percentage of anger ( $\beta= -.315$ ,  $p<.01$ ; negative) and aggression ( $\beta= -.139$ ,  $p<.01$ ; negative) levels were determined to have an effect at 95 confidence level ( $R^2=.144$   $p<.01$ ). The standardized regression coefficient (B) revealed that the scores for "anger" and "aggression" were statistically significant ( $R=.404$ ,  $R^2=.163$ ,  $p<.001$ ). The definition percentage of independent variables of regression analysis to the dependent variable was 14%.

## DISCUSSION

It was discovered that individuals' anger levels changed greatly depending on their gender. As a result, female students' anger levels were shown to be higher than male students'. According to the studies of Evren, et al., (2015); Kılıç (2020); Traş and Atış (2020), the anger level of women was found to be higher than that of men. This discovery could be due to a variety of factors. It is considered that the oppressive,

authoritarian, and restrictive parental attitudes that are more prevalent in girls than in boys may lead to higher anger feelings in girls. Male students scored higher on aggression than female students, although the difference was not significant (Deniz, Arslan, & Hamarta, 2002), and Serin and Mutluoğlu (2010) reached a similar conclusion in their studies. The fact that female students' aggression scores are similar to male students' aggression scores is a significant finding in terms of demonstrating that girls' aggressive behaviors in secondary school are similar to those of male students. In some studies, aggression levels of male students were found to be higher than female students (Balat & Akman, 2006; Giles & Heyman, 2005; Fives et al., 2011; Özdoğan, Haspolat, Çelik, & Yalçın, 2021; Uz-Bas, Öz and Topçu Kabasakal, 2012). These studies have come up with a variety of results when it comes to these variables. When the available data on anger and aggression is analyzed by gender, adolescent problems like anger and aggression may become permanent over time, leading to bad scenarios like violent actions in the future. As a result, preventive psychological counseling services, such as anger management programs, can help students express themselves without resorting to violence throughout the secondary school period, which includes the pre-adolescent years.

In the problem-solving "self-control" dimension of the participants, there was a substantial gender difference. Accordingly, male students were found to have a higher level of self-control than female students (Serin, et al., 2012; Sumitha & Jose, 2016). In the study conducted by Sevgi and Karakaya (2020), male and female students were found to have the same level of problem-solving skills. Adult attitudes that men should be more self-disciplined may explain this outcome. Between the total problem-solving skills of the participants and the sub-dimensions of confidence and avoidance, there was no significant gender difference. Some investigations (Deniz, Arslan, and Hamarta, 2002 Boldachev, 2014; Ocak, Gürbüz, and Tepe, 2021; Saygılı, 2014; Şeb and Serin, 2017; Serin, 2019; Uzak and Baran, 2021) found similar results. It was found that problem solving behavior did not differ according to gender. Self-control behavior, which is one of the problem-solving skills that should be developed in all students in order to have a healthy adolescence, make healthy decisions, and fulfill their responsibilities, is an important ability that should be developed in all students.

Another finding of the study is that there is a link between students' levels of anger and aggression. As the anger level of the student increases, their aggression level also increases. Similar studies have identified a favorable association between anger and aggression in the literature. Özdoğan, et al. (2021), found a positive and high-level relationship between aggression and constant anger. Aggression and anger have a considerable association, according to Colasente et al. (2015) and Fives et al. (2011). Krahe and Krahe (2013); Gresham et al., (2016) found a positive link between anger, direct aggression, and indirect aggression in a sample of teenagers aged 12-17 years. Inadequate learning environments, safety and health concerns can lead to destructive behaviors among students and educators, increasing emotional and mental difficulties (Osai, Amponsah and Acommey-Mintah, 2021).

The participants' anger levels were found to have a negative link with their self-control, avoidance, and problem-solving abilities. Another study on problem solving skills indicate that problem solving skills training reduces anger levels and improves problem solving skills (Öztaban & Adana, 2015).

Another finding of the study is that problem-solving skills are associated with lower levels of anger and aggression. As a result, it was discovered that positive problem-solving skills diminish anger and aggression. Uzun and Avcı (2021) found that problem-solving skills were a negative predictor of aggressive behavior in children in their study. According to Arslan, et al., (2010), experienced problems

in life promote aggression. When looking at studies on violence, aggression, and anger, it is found that adolescent students, in particular, are inefficient problem solvers and have difficulties controlling their anger and aggression (Faupel, Herrick, and Sharp, 2017; Tambunan, 2019; Akan, 2021). When the findings of this study on problem solving are evaluated, school psychological counselors should implement preventive programs such as problem solving and anger management, which raise awareness of reducing anger, violence, and aggressive behaviors, so that students can develop a healthy personality and character starting in secondary schools.

The link between anger, aggression, and problem-solving skills in secondary school students was examined in this study. The research study group was made up of students from secondary schools in Manisa. This condition can be viewed as a limitation in terms of the generalizability and representativeness of the study results. Because only secondary school students were included in the study, generalization of the findings is limited to this participant group. Other levels and age groups were not included. Online questionnaires were used to collect data for the study. This can also be viewed as a limitation. On the other hand, the findings of this study are expected to make original contributions to the field.

The following recommendations are given in light of the study's findings. Female students were found to have higher levels of anger than male students in the study. Aggression levels of male students and aggression levels of female students were found to be similar to each other. Another finding of the study is that problem-solving skills are associated with lower levels of anger and aggression. For students to grow up as a healthy developing generation, psychological counselors must undertake preventive, protective, and intervention programs in schools. In order to improve students' problem-solving skills and reduce their anger and aggression levels, school counselors in schools must plan and conduct individual and group guidance programs for female and male students. It is suggested that experimental research be planned to improve the problem-solving and conflict-resolution skills of students who are prone to violence and display anger and aggressive behaviors. Practitioners who are planning to conduct studies on a comparable topic may be advised to try out different models. Qualitative studies can be conducted on the development and prevention of anger and aggression. In the future researches, experimental studies can be done on large inter-regional samples and different age groups. It is recommended to carry out studies and practices on a similar subject in a way that includes students' school, friends and families.



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### **About Authors**

**Bilge Fidan** received her bachelor's degree in North Cyprus at European University of Lefke, Guidance and Psychological Counselling Department. She completed her master's degrees in Guidance and Psychological Counselling Department. She is working as a school counselor in Turkey (Ministry of National Education, Akhisar Eksen Okulları, school psychologist, Akhisar, Manisa, Turkey).

**Nerguz Bulut Serin** works as a Professor at the European University of Lefke, Faculty of Education, Department of Educational Sciences, Department of Counselling and Psychology. Dr. Serin, together with graduate and doctoral students, has worked on cognitive behavioural therapy, depression, anxiety, anger management, stress management, problem solving abilities, social acceptance, cyberbullying, attachment styles in children, social gender roles, social media and internet addiction at national and international level. She has many published articles and notifications.

### **Author Contributions**

This study was conducted by all the authors working together and cooperatively. All of the authors substantially contributed to this work in each step of the study.

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It has been reported by the authors that there is no conflict of interest.

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### **Ethical Statement**

This research was completed in line with the Helsinki Declaration. In line with this, the study was investigated and permitted by European university of Lefke Scientific Research and Ethical Review Board. Additionally, data tools in the study were only distributed to volunteer participants. All participants provided informed consent. Additionally, participants were informed that they could withdraw from the study at any time during data collection.

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