Article

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Cognitive and behavioral predictors of procrastination behavior in adolescents at a mental health clinic in Turkey

Ummugulsum Gundogdu
Child and Adolescent Psychiatry Department, Gebze Merkez Prime Hospital, Kocaeli, Turkey

Abstract

Objective: Procrastination behavior (PB) negatively impacts individuals' daily lives. Based on existing evidence that states executive function (EF) problems and internalizing symptoms (IS) are related to PB, this study examined IS, EF problems, and sluggish cognitive tempo (SCT) symptoms in adolescents, and their relationships with PB and gender.

Methods: The sample consisted of 78 adolescents (56.4% female) aged 12–18 years. Participants and their families completed the Children's Depression Inventory (CDI), Screen for Child Anxiety Related Disorders (SCARED), Barkley Sluggish Cognitive Tempo Scale-Children and Adolescent (BSCTS-CA), General and Academic Procrastination Scales, Behavior Rating Inventory of Executive Function (BRIEF), and Strengths and Difficulties Questionnaire (SDQ).

Results: The scores for academic PB were significantly positively associated with the CDI, SCARED, subscales comprising the metacognitive index of the BRIEF, and all four subscales of the SDQ but not with SCT. General and academic PB yielded similar results except for the conduct problems. Academic PB and EF problems were more prevalent in males. Lack of organizational skills, a part of EF; IS; and attention problems were associated with academic and general PB in girls and boys.

Conclusion: Adolescents who have difficulty organizing their work and attention problems may have higher PB.

Keywords

Sluggish cognitive tempo, procrastination, internalizing behavior problems, adolescents, executive function

Corresponding author:
Ummugulsum Gundogdu, Department of Child and Adolescent Psychiatry, Faculty of Medicine, Marmara University, Istanbul, Turkey.
Email: glsmgndgd2@yahoo.com

Introduction

Procrastination is defined as the act of as putting off starting or completing a task; people tend to delay the intended action even though they know that procrastination will lead to a worse outcome. Procrastination behavior negatively impacts individuals' daily lives. For some individuals, procrastination is habitual and can cause psychological stress (Stead et al., 2010; Steel, 2007). Although the topic of procrastination has attracted considerable research interest, its scientific definition remains controversial (Van Eerde, 2003). Engberding et al. (2011) noted that it is critical to conceptualize procrastination as a psychological disorder because such a conceptualization was necessary for the diagnosis and treatment of the disorder. They suggested that a procrastination duration of more than 6 months, with an intensity of more than half a day, that causes physical and psychological problems, can be used to classify it as a disorder (Engberding et al., 2011).

Studies on the clinical consequences of procrastination have shown that it is associated with depression, anxiety, and stress (Beutel et al., 2016; Stöber & Joormann, 2001). A study also found a significant association between obsessive-compulsive disorder and procrastination behavior (Ferrari et al., 1995). However, it is not only internalizing problems such as anxiety and depression that are related to procrastination. It has been found that people who have problems with executive functioning show more procrastination behavior than people without such problems (Barkley, 2012; Dewitte & Lens, 2000; Dewitte & Schouwenburg, 2002). Furthermore, research has shown that procrastination behaviors are more common in individuals with ADHD symptoms (Ferrari, 2001; Ferrari & Sanders, 2006).

ADHD is a neurodevelopmental disorder characterized by hyperactivity, attention deficits, and impulsivity (Association, 2013). Sluggish cognitive tempo (SCT) is characterized by inattention, daydreaming, mental confusion, and slowness in thinking and behavior (Becker et al., 2016). It is estimated that 30−50% of individuals diagnosed with ADHD with a predominant attention deficit have SCT symptoms. SCT includes cognitive symptoms such as daydreaming, sleepiness, staring, and mental confusion; and motor symptoms such as hypoactivity, lethargy, and passivity. Although there is no consensus on whether SCT is a separate disorder or a subtype of ADHD, studies show that these two are distinct conditions with a high rate of coexistence (Hartman et al., 2004; Lee et al., 2014; McBurnett et al., 2001; Penny et al., 2009). Factor analyses indicate that SCT has underlying characteristics distinct from attention deficits in ADHD (Becker, et al., 2016; Garner et al., 2010). In addition, the symptoms of SCT have been found to have different effects on everyday functioning than the symptoms of ADHD. ADHD and SCT also show differences in terms of comorbidities; SCT symptoms are strongly associated with internalizing symptoms (Becker, et al., 2016).

Based on the existing evidence that problems with executive functioning and internalizing problems are related to procrastination behavior, this study examined internalizing behavior problems, executive functioning, and SCT symptoms in adolescents, and their relationships with procrastination behavior and gender. In addition, to further clarify the association between executive functioning and procrastination, the subdomains of executive functioning were evaluated separately.

Materials and methods

Participants and procedure. Adolescents aged 12–18 years who applied to the child psychiatry outpatient clinic with the problem of procrastination were included in the study. The children and their guardians were informed about the purpose of the study, details of the study procedure, and the method of filling in the questionnaires. Written informed consent was obtained from the guardians

of each child. Individuals with neurological problems, autism spectrum disorders, psychotic symptoms, and intellectual problems were excluded from the study. Individuals over 18 years of age who had not consented to participating in the study, and those who left more than 10% of the questionnaires incomplete were also excluded.

The research procedures were in accordance with the universal ethical standards and principles of the 1975 Helsinki Declaration, revised in 2000. The research ethics committee approved the study under protocol number 2021/17.

Sociodemographic data (sex, age, school attendance, chronic illnesses, and medication) were collected through face-to-face interviews with a child psychiatrist.

The Behavior Rating Inventory of Executive Function (BRIEF) (Gioia, Isquith, Guy, & Kenworthy, 2000)

The BRIEF is used to assess the behavior of children and adolescents aged 5−18 years in home and school environments, taking into account their executive functioning. The forms have a two-factor structure: the Behavioral Regulation Index and the Metacognition Index. The BRIEF consists of two forms: "Parent Form" and "Teacher Form." In both forms, 86 questions indicate a specific behavior. The items are scored on a 3-point Likert scale, based on the child's or adolescent's behavior over the last 6 months. The BRIEF parent and teacher forms include eight clinical subscales; the Inhibition, Shift, and Emotional Control subscales form the index of behavior regulation, whereas, the Initiation, Working Memory, Planning/Organization, Organizing Materials, and Monitoring subscales yield the metacognitive index. When the metacognitive index and the behavioral regulation index are added, a global scale is obtained. The validity and reliability for this scale were confirmed in a Turkish sample by Koylu (Koylu, 2010).

The strengths and difficulties questionnaire (SDQ)

The SDQ is an instrument designed to assess emotional and behavioral problems in children and adolescents. It consists of four subscales: conduct problems, hyperactivity-inattention, emotional problems, and peer problems; it also includes items that inquire about social behaviors as strengths. (Goodman, 1997)The validity and reliability study in our country was performed by Güvenir et al. (2008) (Güvenir et al., 2008).

The children's depression inventory (CDI)

The CDI is used by mental health professionals to measure symptoms of depression in children and adolescents aged 7–17 years. Kovacs (1981) recommended different cut-off scores on the CDI for screening for depression in children. In populations with a low prevalence of depression, a cut-off score of 20 (i.e., 19/20) is recommended for screening. For a population with a higher prevalence of depression, a score of 12 or 13 (i.e., 11/12 or 12/13) is recommended as the cut-off point (Kovacs, 1981). A validity and reliability study for this scale was carried out in Turkey by Oy (1991), and the pathological cut-off score was determined to be 19 points (Oy, 1991).

Screen for child anxiety related disorders (SCARED)

The SCARED is a 41-item questionnaire. It is scored on a Likert scale, with scores ranging from 0 to 2 (0 = rarely, 1 = sometimes, and 2 = often). A cut-off score of 25 on the SCARED for screening for

anxiety in children is recommended. It measures anxiety using four domains: panic/somatic, separation anxiety, generalized anxiety, and school phobia. (Birmaher et al., 1999) Karaceylan (2004) conducted a validity and reliability study for this scale in Turkey (Karaceylan Çakmakçı, 2004).

Barkley sluggish cognitive tempo scale-children and adolescent (BSCTS-CA)

Barkley developed the BSCTS-CA, which consists of 12 items and two sub-dimensions: day-dreaming and slowness. The slowness dimension consists of seven symptoms, including low activity, lethargy, and slow behavior. The daydreaming dimension consists daydreaming, staring, and mental confusion. (Barkley, 2013) A validity and reliability study was conducted in Turkey by Firat et al. (2018) (Firat et al., 2018).

General, and academic procrastination scale

General and academic procrastination scales were developed by Çakıcı (2003) to determine the general procrastination tendencies of high school students, that is, whether or not they procrastinate their daily work. General Procrastination Scale consists of 18 items, of which 11 are negative and seven are positive. Academic Procrastination Scale consists of 19 items, of which 12 are negative and seven are positive. It includes tasks that students are responsible for in their academic life (e.g., studying, preparing for exams, doing homework). The responses options include: "1-this does not reflect me at all," "2-this reflects me very little," "3-this reflects me a little," "4-this reflects me moderately," and "5-this reflects me completely." The total score ranges from 18 to 90, with higher scores indicating general and academic tendency to procrastinate (Çakıcı, 2003).

Statistical analysis

The Statistical Program for Social Sciences ver. 21 was used. Descriptive statistics (frequencies, percentages, means, and standard deviations) and correlation analyses were performed. Linear regression analysis was performed to identify the associations. For all analyses, the significance level was set at $p < 0.05$, with the corresponding 95% confidence intervals.

Results

The sample comprised 78 adolescents between 12 and 18 years of age (M = 15.4, SD = 1.8); there were 44 girls (56.4%) and 34 boys (43.6%). Table 1 summarizes the correlations between the study variables. Bivariate correlation analyses showed that most of the correlations were statistically significant. Academic procrastination and general procrastination were positively correlated with each other. The scores for academic procrastination were significantly positively correlated with the CDI, SCARED, and the subscales comprising the metacognitive index of the BRIEF, as well as all four subscales of the SDQ ($p < 0.05$) (Table 1). However, no correlation was found between academic procrastination and SCT ($p > 0.05$) (Table 1). The General Procrastination Scale yielded similar results as the Academic Procrastination Scale with all the other scales, except for the conduct problems subscale of the SDQ. There was a significant correlation between the general procrastination scale and SCT ($p < 0.05$) (Table 1).

Table 1. Descriptive statistics and correlations among all variables (N = 78).

	Academic procrastination	General procrastination
SCARED	0.295**	0.348**
CDI	0.422**	0.451**
Inhibit	0.146	0.240*
Shift	0.208	0.339**
Emotional control	0.231*	0.385**
Behavior control	0.250*	0.411**
Initiate	0.343**	0.294**
Working memory	0.347**	0.281*
Plan/Organize	0.316**	0.389**
Organization of materials	0.431**	0.502**
Monitor	0.348**	0.246*
Metacognition	0.440**	0.433**
Global	0.410**	0.460**
Emotional	0.411**	0.482**
Conduct problem	0.278*	0.180
Hyperactivity	0.567**	0.682**
Peer problem	0.433**	0.295**
Total	0.601**	0.592**
Sluggish cognitive tempo	0.183	0.309**

r scores given- pearson correlation
*$p < 0.05$ **$p < 0.01$.
CDI, Children's depression inventory; SCARED, screen for child anxiety related emotional disorders child version.

A linear regression analysis was conducted to examine the relationship between general and academic procrastination and symptoms of cognitive slowness, internalizing behavior problems, and executive functioning in adolescents. The CDI scores, hyperactivity-inattention and peer problems scores of the SDQ, and Organizing Materials were significantly related to academic procrastination ($p < 0.05$) (Table 2). In addition, the CDI scores, hyperactivity-inattention scores of the SDQ, and organizational skills were significantly related to general procrastination ($p < 0.05$) (Table 2).

Table 3 compares the results of the scales for girls and boys. The inhibition subscale of the BRIEF scale was significantly different for girls and boys. The scores for inhibition were higher in males, indicating that males may have more problems with inhibition. The BRIEF questionnaire's Monitoring, Planning/Organizing, Metacognition, and Global Problems subscales were higher in males. The abilities of the EF subscales, which were significantly different in girls, were better in girls than in boys. The prosocial score was higher in girls and social skills were better in girls ($p < 0.05$) (Table 3).

Table 4 examines the correlation of procrastination scores of girls and boys with other scales. When the significant scores of the scales were evaluated by linear regression analysis, we found that girls' scores for general procrastination behavior increased with higher anxiety, emotional problems, and problems in peer relationships ($p < 0.05$) (Table 5). Scores for inhibition, behavioral control, metacognition, and global subscales of the BRIEF were positively correlated with scores for general

Table 2. Linear regression analysis of procrastination scales.

	Standardized coefficients beta	t	*p*
Academic procrastination scale			
CDI	0.311	3.271	0.002**
BRIEF- organization of materials	0.35	3.847	<0.001**
SDQ- hyperactivity-inattention	0.284	2.959	0.004**
SDQ-peer problem	0.215	2.521	0.014*
General ProcrastinationScale			
CDI	0.359	4.537	<0.001**
SDQ-hyperactivity-inattention	0.403	4.929	<0.001**
BRIEF-organization of materials	0.439	5.806	<0.001**

*$p < 0.05$; **$p < 0.01$

Brief, the behavior rating inventory of executive function; SDQ, strength and difficulties questionnaire; CDI, Children's depression inventory.

Table 3. Evaluation of scales according to gender.

	Partial eta squared	F	*p*
Academic procrastination scale	1975.815	9.505	0.003**
General procrastination scale	322.660	1.679	0.199
SCARED	821.035	3.531	0.064
CDI	136.844	1.556	0.216
Inhibit	100.471	6.411	0.013*
Shift	14.041	0.822	0.367
Emotional control	0.792	0.027	0.870
Behavior control	165.913	1.424	0.237
Initiate	14.572	0.537	0.466
Working memory	39.688	1.568	0.214
Plan/Organize	164.108	6.722	0.011*
Organization of materials	39.247	3.227	0.076
Monitor	224.654	13.053	0.001**
Metacognition	1780.009	5.369	0.023*
Global	3256.017	4.796	0.032*
Emotional	5.548	0.779	0.380
Conduct problem	6.990	1.726	0.193
Hyperactivity	22.649	4.268	0.042*
Peer problem	8.181	1.577	0.213
Total	45.617	1.193	0.278
Prosocial	130.657	4.630	0.035*
Sluggish cognitive tempo	19.309	0.300	0.586

p-values calculated MANOVA,
*$p < 0.05$ **$p < 0.01$.

Table 4. Correlations among all variables according to gender.

		Female (*n*:44)		Male (*n*:34)	
		Academic procrastination	General procrastination	Academic procrastination	General procrastination
SCARED	r	0.653**	0.593**	−0.029	0.100
CDI	r	0.694**	0.677**	0.082	0.111
Inhibit	r	0.393**	0.489**	0.388*	0.103
Shift	r	0.303*	0.290	0.043	0.397*
Emotional control	r	0.486**	0.503**	0.178	0.217
Behavior control	r	0.504**	0.539**	0.259	0.201
Initiate	r	0.520**	0.310*	0.066	0.240
Working memory	r	0.504**	0.291	0.137	0.212
Plan/Organize	r	0.379*	0.475**	0.001	0.194
Organization of materials	r	0.357*	0.445**	0.477**	0.563**
Monitor	r	0.589**	0.503**	0.221	0.157
Metacognition	r	0.568**	0.493**	0.020	0.257
Global	r	0.567**	0.514**	0.149	0.292
Emotional	r	0.549**	0.518**	0.308	0.480**
Conduct problem	r	0.366*	0.305*	0.014	0.077
Hyperactivity	r	0.739**	0.777**	0.022	0.441**
Peer problem	r	0.550**	0.391**	0.077	0.046
Total	r	0.736**	0.659**	0.191	0.414*
Prosocial	r	0.152	0.365*	0.381*	0.459**
Sluggish cognitive tempo	r	0.258	0.325*	0.064	0.292

r scores given- pearson correlation
*$p < 0.05$ **$p < 0.01$.
CDI, Children's depression inventory; SCARED, screen for child anxiety related emotional disorders child version

procrastination ($p < 0.05$) (Table 5). Increase in depressive symptoms, attention problems, and peer relationship problems were associated with academic procrastination behavior ($p < 0.05$) (Table 5).

Among boys, the behavioral control, planning, and organizing materials subscales of the BRIEF were positively related to general procrastination ($p < 0.05$) (Table 5). In addition, increases in general procrastination were positively associated with the ability to organize materials, attention problems, and emotional problems ($p < 0.05$) (Table 5). Academic procrastination, on the other hand, was only related to the ability to organize materials ($p < 0.05$) (Table 5).

Discussion

This study examined the symptoms of SCT, internalizing behavior problems, and executive functioning in adolescents, and their relationships with procrastination. The results provide several noteworthy findings.

Procrastination behavior can affect a person's physical and emotional well-being (Sirois et al., 2003). If it becomes chronic, it can lead to severe learning problems, work interruptions, and internalizing behaviors (Stöber & Joormann, 2001). Beutel et al. (2016) found that procrastination was associated with increased stress, fatigue, depression, anxiety, and low life satisfaction (Beutel, et al., 2016). Similar

Table 5. Linear regression of procrastination scales according to gender.

		B	t	*p*
Female				
General Procrastination	SCARED	0.333	2.917	0.007**
	Emotional	0.959	2.991	0.006**
	Hyperactivity	1.549	5.549	<0.001**
	Peer problem	1.275	4.458	<0.001**
	SDQ total	1.266	2.783	0.010*
	Inhibit	0.667	2.099	0.046*
	Behavioral control	1.695	3.767	0.001**
	Metacognition	3.887	3.994	0.001**
	Global	6.121	5.624	<0.001**
Academic procrastination	CDI	0.537	4.177	0.000
	Hyperactivity	0.643	2.230	0.034
	Peer problem	0.667	2.705	0.012
	Behavior control	0.785	2.921	0.007
	Plan/Organize	0.520	2.158	0.040
	Organization of materials	0.383	2.733	0.011
Male				
General Procrastination	Organization of materials	0.478	4.940	<0.001**
	Emotional	0.662	4.519	<0.001**
	Hyperactivity	0.449	4.055	<0.001**
	SDQ total	0.724	3.646	0.001**
	Prosocial	0.442	3.602	0.001**
Academic procrastination	Organization of materials	0.369	2.558	0.016*

*$p < 0.05$ **$p < 0.01$.
CDI, Children's depression inventory; SCARED, screen for child anxiety related emotional disorders child version; SDQ, strength and difficulties questionnaire.

results were found by Sirois et al. (2003), who showed that procrastination could affect physical health, medical control, and mental health (Sirois, et al., 2003). Notably, procrastination has been found to be associated with rumination, depression, anxiety, generalized anxiety disorder, and clinical perfectionism (Shafran & Mansell, 2001; Stöber & Joormann, 2001). In the present study, both academic procrastination and general procrastination showed a significant relationships with the CDI scores. Thus, it can be said that the tendency to procrastinate work increases with an increase in depressive symptoms. General procrastination problems were associated with anxiety, emotional problems, and difficulties in peer relationships in girls. In addition, increase in depressive symptoms, attention problems, and peer relationship problems were associated with girls' academic procrastination behaviors.

Procrastination also negatively affects academic success, career, and financial success (Klingsieck, 2013). Studies that examined the influence of behavioral regulation and motivation on procrastination found that procrastination behavior is related to executive functioning. Executive functions are essential for initiating and maintaining goal-directed behaviors. Working memory, planning, emotional and motivational self-regulation, strategy development, and order actions are all executive functions. Considering that procrastination is associated with psychological disorders, emotions, impulse control problems, attention deficits, and poor strategy development, it can be linked to executive dysfunction (Barkley, 2012; Dewitte & Lens, 2000; Dewitte & Schouwenburg, 2002). In

the current study, a deficiency in the organizational abilities measured by the BRIEF scale was associated with increased academic and general procrastination scores. Thus, people who have difficulty organizing their work may exhibit higher procrastination behavior. Procrastination is a behavior that can be managed and overcome with the proper knowledge, tools, and support. For example, the higher procrastination rate among youth with organization problems indicates the need to develop organizational skills to interrupt procrastination behavior (Niermann & Scheres, 2014). Adolescents with problems with organization sometimes feel overwhelmed and put off a particular project because it is "too much." It has been shown that improving planning skills when working with these children, breaking the activity into smaller, more digestible pieces, can help them finish the work more quickly (van Eerde, 2015; Won & Shirley, 2018). Explaining the concept of time management to adolescents at school and home and creating personalized solutions to time management problems can curb procrastination. Listing tasks, setting priorities, and planning deadlines can be essential strategies for adolescents to cope with procrastination (van Eerde, 2015; Won & Shirley, 2018).

The Material Organization scale measures how organized the child's school, play, and storage areas are. It includes questions to determine how regularly he uses his desk, backpack, bedroom, and closets. The Planning/Organization scale assesses the child's ability to manage their tasks. The scale consists of two components. The first component assesses planning ability. Planning ability involves setting goals and determining the appropriate sequential steps to achieve the goal. Organizational ability involves organizing information and grasping the main idea in learning and communicating information. In the Monitor subscale, two types of monitoring are assessed. The first is referred to as task tracking. This component assesses whether the child has completed the task and adequately achieved the goal. The second component involves the child's self-monitoring, assessing the impact of their behavior on others (Gioia, et al., 2000). In our study, boys had high scores in the inhibition, planning skills, monitoring, and metacognition subscales of BRIEF and the overall EF. Since high scores were associated with increases in problems in this area, boys were found to have more problems in these subscales of EF. Academic procrastination behavior was more common in males. Increases in general procrastination in boys were positively related to the disability to organize materials; difficulties in planning, behavioral control, and attention; and emotional problems. Academic procrastination in boys was only associated with the ability to organize materials.

Researchers have also examined the relationship between ADHD and procrastination. Niermann and Scheres (2014) showed a positive association between symptoms of inattention and general procrastination and procrastination related to decision-making (Niermann & Scheres, 2014). In a study that explored the association between attention deficits and three types of procrastination, Ferrari found that decision-related procrastination was associated with inattention, impulsivity, and hyperactivity. In addition, behavioral procrastination (i.e., avoidance and arousal) was also associated with inattention and impulsivity (Ferrari & Sanders, 2006). In this study, the inattention and hyperactivity subscales of the SDQ were related to general and academic procrastination. Thus, it can be concluded that people with attention problems procrastinate more. However, the SCT scale showed no significant association with either type of procrastination. This suggests that SCT does not affect procrastination as much as attention problems do. This is in line with the results of studies showing that ADHD and SCT are two different conditions (Garner, et al., 2010).

Finally, the present study found that girls with peer problems tend to show greater academic and general procrastination. Peer problems do not affect boys' procrastination behavior. Adolescents generally form more relationships with peers in the school. Therefore, the problems

experienced in the school environment may also be reflected in academic procrastination behavior.

Steel (2007) claimed that one of the reasons for the emergence of procrastination behavior is the fear of failure (Steel, 2007). Steel suggested in this study that procrastination behavior may be a mask for fear of failure. Individuals who procrastinate may be sensitive to evaluation by others (Steel, 2007). They tend only to perform their duties when others view them as successful and competent. Therefore, when combating procrastination, it is essential to recognize the problem behind adolescents' behavior.

Strengths and clinical considerations

Thus, this study showed that a lack of organizational skills, a part of executive functions, is associated with academic procrastination in both girls and boys. Internalized behavior problems and attention problems were found to be related to procrastination behaviors in both genders. In contrast, peer relationships were significantly associated with academic and general procrastination behaviors in girls. Among the findings found in the study, academic procrastination and executive function problems were more prevalent in males. In summary, people who have difficulty organizing their work and attention problems may have higher procrastination behaviors.

Limitations

Although this study contributes significantly to the literature, it has some limitations. First, because the results were obtained through a cross-sectional analysis of the data, causal and temporal relationships could not be determined. Verification of causal mechanisms will be possible through longitudinal and experimental studies. Second, the present study used a limited sample of adolescents presenting to the child psychiatric outpatient clinic, which limits the generalizability of the results. It will be necessary to replicate these findings in future studies using a wider variety of samples.

Conclusion

Adolescents who have difficulty organizing their work and attention problems may have higher procrastination behaviors. It is emphasized that depression, self-efficacy disorders, and anxiety are not only causes of procrastination but can also occur as a consequence (Stead, et al., 2010). At this point, it can be said that the entanglement of the individual in such a process manifests itself as a vicious circle. The fact that adolescents procrastinate more, the more anxious and depressed they feel, and that confronting the consequences of procrastination causes more depressive and anxious symptoms in adolescents shows the importance of examining the variables associated with procrastination behavior (Stead, et al., 2010; Steel, 2007). These variables can help us when studying with procrastination behavior. Behavioral and psychological interventions to reduce attention and depressive problems in adolescents could be helpful strategies to minimize procrastination behavior. In addition to examining problems such as attention and depressive problems, it may be beneficial to improve adolescents' organizational skills such as dividing work into small parts, and developing time management while working with adolescents to manage procrastination behaviors.

Declaration of conflicting interests

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Data sharing and declaration

The data supporting the findings of this study are available upon reasonable request from the corresponding author.

Ethical approval

Research procedures complied with universal ethical standards and the tenets of the Helsinki Declaration of 1975, as revised in 2000. Bolu Izzet Baysal Research and Training Hospital Ethics Committee approved the study by the protocol number 2021/17

Informed consent

A number of measures were taken in order to ensure compliance with ethical standards. The participating children and their legal guardians were informed about the research protocol and provided written informed consent. Both the children and their legal guardians were then told that they could withdraw from participation at any time. Children who did not want to participate, or who were unable to fill in the questionnaire, were not included.

ORCID iD

Ummugulsum Gundogdu https://orcid.org/0000-0001-6327-4808

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Author biography

Ummugulsum Gundogdu graduated from the Hacettepe Faculty of Medicine in 2011. She completed her specialization in Child and Adolescent Psychiatry and Diseases from Marmara University in 2016. She is an assistant professor at Marmara University Faculty of Medicine, Department of Child and Adolescent Psychiatry. His current research interests include behavioral addiction, psychopharmacology, and neurobiology.