



## RESEARCH ARTICLE

# The effect of childhood trauma on alcohol and non-alcohol substance use in a Turkish sample of university students: The mediating role of dissociative experiences

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### ABSTRACT

**Objective:** The aim of this study was to examine the relationship between childhood trauma and alcohol and non-alcohol substance use among university students. A secondary objective was to determine whether dissociative experiences have a mediating role in a possible relationship between childhood trauma and substance use.

**Method:** The study sample comprised 300 university students studying in the Istanbul and Nevşehir provinces of Turkey. Once informed consent was obtained, a sociodemographic information form, the Childhood Trauma Questionnaire (CTQ), the Dissociative Experiences Scale (DES), the Alcohol Use Disorders Identification Test (AUDIT), and the Drug Use Disorders Identification Test (DUDIT) were administered to all of the participants.

**Results:** The rate of hazardous alcohol consumption was 45.2% for male students and 35.4% for female students, and 8.4% of men and 9% of women were found to use other hazardous substances. Correlation analysis revealed that the CTQ total score and all of the subdimension scores were correlated with the DES, AUDIT, and DUDIT scores. The results of regression analysis indicated that the effect of physical abuse on the AUDIT score was partially mediated by the DES score, while the effect of physical abuse on the AUDIT score was fully mediated by the DES score.

**Conclusion:** The findings suggest that dissociative symptoms associated with childhood trauma should be handled carefully. Students with dissociative symptoms should be evaluated in order to better understand the use and risk of misuse of alcohol and other substances among university students.

**Keywords:** Alcohol use, childhood traumas, dissociation, substance use, university students

## INTRODUCTION

Dissociative experiences and dissociative disorders are known to be quite common in individuals with alcohol and non-alcohol substance use disorders (1,2). It has been reported that 9% to 17% of patients with an

alcohol or other substance addiction had a dissociative disorder and that these patients had dissociative symptoms before the onset of substance use (2,3). Dissociative experiences have also been associated with depression and anxiety in patients with a substance dependency (1). Dissociative symptoms in patients with

**How to cite this article:** Hoktem B, Karas H, Yalcin M. The effect of childhood trauma on alcohol and non-alcohol substance use in a Turkish sample of university students: The mediating role of dissociative experiences. *Dusunen Adam The Journal of Psychiatry and Neurological Sciences* 2021;34:375-382.

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**Received:** June 04, 2021; **Revised:** July 21, 2021; **Accepted:** November 02, 2021

an alcohol addiction has also been shown to have a complex relationship to social anxiety and self-harming behaviors (4,5). Furthermore, dissociative symptoms in those with a substance addiction have been associated with the severity of self-harming behavior, depression, anxiety, and borderline personality traits (6,7). Dissociative experiences associated with childhood trauma have also been shown to be correlated with impulsivity and hostility in patients with substance use disorders (8).

Dissociative experiences are typically a defense against painful emotions or memories associated with traumatic experiences, resulting in a disruption in the integration of consciousness, memory, identity, and perception (9,10). Dissociation is an effort to disconnect the mind from reality in order to temporarily provide protection from a traumatic experience that exceeds the information processing capacity of the individual. It is a disconnection designed to keep memories, feelings, thoughts, and behaviors related to the trauma separate in the mind (compartmentalization). However, when dissociative experiences become the primary response to stress, they can become pathological and pave the way for psychopathology (11). The neurobiological effects of dissociative experiences may complicate cognitive and affective information processing and pose a risk for many psychiatric disorders, including substance use disorders (11,12).

Childhood trauma is a well-known predictor of dissociation. In both clinical and community samples, it has been reported that individuals with dissociative symptoms frequently have a history of childhood trauma that predisposes them to dissociation (13,14). Childhood trauma and dissociation are also commonly seen in individuals with substance use disorders (1,15). Studies have demonstrated an association between dissociative symptoms and childhood trauma in individuals with a substance dependency (16-18).

The objective of this study was to examine the relationship between childhood trauma and substance use among university students, as well as the potentially mediating role of dissociative experiences in the relationship between childhood trauma and substance use.

## METHOD

### Participants and Procedure

The study was approved by the Local Ethics Committee (IRB:30.40.2020/2020-12-24) and conducted in accordance with the Declaration of Helsinki. All of the participants provided written, informed consent.

The first author invited 500 university students to participate in the research, and study scales were administered to 374 university students who agreed to take part. The students completed the Childhood Trauma Questionnaire (CTQ), the Dissociative Experiences Scale (DES), the Alcohol Use Disorders Identification Test (AUDIT), and the Drug Use Disorders Identification Test (DUDIT), as well as a sociodemographic data form. The data of 74 participants were not included in the study due to incomplete information. The research sample consisted of 300 university students: 180 in Istanbul and 120 in Nevsehir.

### Measurement Tools

- Sociodemographic Data Form: A form was used to request information about the participants' age, gender, employment status, and the socioeconomic status of the family.
- Childhood Trauma Questionnaire: The CTQ is a self-report scale developed by Bernstein et al. (19) to retrospectively measure experiences of trauma or neglect during childhood and adolescence. In this study, a 28-question Turkish form adapted and validated by Sar et al. (20) was used. Five items are scored using a 5-point Likert-type scale in each of 5 subdimensions: emotional neglect, physical neglect, sexual abuse, emotional abuse, and physical abuse. There are also 3 items designed to assess minimization-denial, yielding a total possible score of 28.
- Dissociative Experiences Scale: Dissociative symptoms were evaluated with the DES, a self-report scale consisting of 28 questions (21). The DES is not a diagnostic tool, however, it can be used to screen for dissociative disorders and detect dissociative symptoms. The participants were asked to only consider the frequency of the experiences described when they were not under the influence of alcohol or drugs. The scale has 3 subscales: amnesic dissociation (items 3, 4, 5, 6, 8, 10, 25, and 26), absorption (items 2, 14, 15, 16, 17, 18, 20, 22, and 23), and depersonalization/derealization (items 7, 11, 12, 13, 27, and 28). The scoring for each item ranges from 0 to 100 (% never-always) and the total is then divided by 28, the number of questions. The validity and reliability of the Turkish version of the scale is quite high, similar to that of the original form (22).
- Alcohol Use Disorders Identification Test: The AUDIT was first developed in 1989 as an outcome of a World Health Organization (WHO) project to provide a simple means to screen for signs of

**Table 1: Distribution of alcohol and non-alcohol substance use according to demographic variables**

	No hazardous alcohol use		Hazardous alcohol use		No hazardous substance use		Hazardous substance use		Total	
	n	%	n	%	n	%	n	%	n	%
Sex										
Female	95	65.5	50	34.5	132	91	13	9	145	100
Male	85	54.8	70	45.2	142	91.6	13	8.4	155	100
Age (years)										
18-22	106	63.9	60	36.1	154	92.8	12	7.2	166	100
22-25	74	55.2	60	44.8	120	89.6	14	10.4	134	100
Employment status										
Yes	140	60.9	90	39.1	210	91.3	20	8.7	230	100
No	40	57.1	30	42.9	64	91.4	6	8.6	70	100
Family income (monthly, TL)										
≤3000	61	50.9	59	49.1	110	91.7	10	8.3	120	100
3000-4500	100	69	45	31	132	91	13	9	145	100
≥4500	19	54.3	16	45.7	32	91.4	3	8.6	35	100
Total	180	60	120	40	274	91.3	26	8.7	300	100

excessive alcohol use and early intervention. Babor et al. (23) subsequently published guidelines for use. This 10-item scale measures assess alcohol intake (questions 1-3), alcohol dependence (questions 4-6), and alcohol-related problems (questions 7-10). Questions 1-8 are scored 0-4 points, questions 9 and 10 are scored 0, 2, or 4 points, yielding a maximum score of 40. A cutoff score of 8 suggests a hazardous pattern of alcohol use, and >20 points indicates likely alcohol dependence. Saatcioglu et al. (24) conducted a validity and reliability study of a Turkish version of the instrument.

- Drug and Substance Use Disorders Identification Test: The DUDIT is an 11-item self-report scale developed to screen for drug use problems. The scale assesses the frequency of substance use, problems related to substance use, and substance use-related symptoms within the last year (25). The maximum score is 44; a score of ≥6 for men and ≥2 for women indicates that there may be a problem with substance use, and a score of ≥25 has been established as a cutoff for substance dependence with 1 or more substances. Turkish validity and reliability study was carried out by Evren et al. (26).

### Statistical Analysis

The statistical analysis of the data was performed using IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY, USA). Examination of the kurtosis and skewness values indicated that all of the scales and

subscales showed a normal distribution. The analysis provided is based on a 95% confidence level. A t-test was used to analyze the difference between 2 parametric groups of quantitative data. The relationship between the scales was tested using Pearson correlation analysis. In separate analyses, hierarchical multilinear (stepwise) regression models were created using the AUDIT and DUDIT scores as dependent variables, and childhood trauma and dissociation scores were used as independent variables. A p value of <0.05 was considered significant in all of the statistical analyses.

## RESULTS

### Sociodemographic Variables

Table 1 presents the distribution of the rate of hazardous alcohol and substance use according to sociodemographic variables. The results indicated that 40% of the participants consumed a hazardous quantity of alcohol, and 8.7% used other substances. In the group, excessive alcohol use was reported by 45.2% of the male students, and 35.4% of the female students. The rate of use of other hazardous substances was 8.4% in men and 9% in women. The unsafe use of alcohol was reported by 36.1% of students aged 18-22 and 44.8% of students aged 22-25, and 39.1% of working university students and 42.9% of non-working students. Hazardous substances were used by 8.7% of working students and 8.6% of non-working students. The rate of potentially dangerous alcohol consumption

**Table 2: Relationship between Childhood Trauma Scale subdimension scores and AUDIT, DUDIT, and DES scores**

	1	2	3	4	5	6	7	8
1- Emotional abuse	–							
2- Physical abuse	0.406*	–						
3- Physical neglect	0.571*	0.218*	–					
4- Emotional neglect	0.587*	0.463*	0.593*	–				
5- Sexual abuse	0.328*	0.400*	0.317*	0.406*	–			
6- AUDIT	0.271*	0.405*	0.239*	0.342*	0.420*	–		
7- DUDIT	0.467*	0.261*	0.256*	0.219*	0.310*	0.358*	–	
8- DES	0.440*	0.351*	0.453*	0.407*	0.405*	0.486*	0.552*	–

AUDIT: Alcohol Use Disorders Identification Test; DES: Dissociative Experiences Scale; DUDIT: Drug Use Disorders Identification Test. \*:  $p < 0.01$ .

was 49.1% among those with a monthly family income of  $\leq 3000$  TL, 31% among students whose family income was 3000-4500 TL/month, and 45.7% among those with a family income of  $\geq 4500$  TL/month. The rate of hazardous substance use was 8.3% among those with a family income of  $\leq 3000$  TL/month, 9% among students with a family income of 3000-4500 TL/month, and 8.6% among students with a family income of  $\geq 4500$  TL/month.

### Correlations Between Scale Scores

Pearson correlation analysis performed to evaluate the relationship between the CTQ subdimensions and the AUDIT, DUDIT, and DES scores revealed a significant statistical correlation between the AUDIT score and emotional abuse ( $r=0.271$ ,  $p < 0.01$ ), physical abuse ( $r=0.405$ ,  $p < 0.01$ ), physical neglect ( $r=0.239$ ,  $p < 0.01$ ), emotional neglect ( $r=.342$ ,  $p < .01$ ), and sexual abuse ( $r=0.420$ ,  $p < 0.01$ ) scores. There was also a statistically significant relationship between the DUDIT score and emotional abuse ( $r=0.467$ ,  $p < 0.01$ ), physical abuse ( $r=0.261$ ,  $p < 0.01$ ), physical neglect ( $r=0.256$ ,  $p < 0.01$ ), emotional neglect ( $r=0.219$ ,  $p < 0.01$ ), and sexual abuse ( $r=0.310$ ,  $p < 0.01$ ) scores. The relationship between the DES score and emotional abuse ( $r=0.440$ ,  $p < 0.01$ ), physical abuse ( $r=0.351$ ,  $p < 0.01$ ), physical neglect ( $r=0.453$ ,  $p < 0.01$ ), emotional neglect ( $r=0.407$ ,  $p < 0.01$ ), and sexual abuse ( $r=0.405$ ,  $p < 0.01$ ) scores was also statistically significant. In addition, a statistically significant correlation was found between the DES score and the AUDIT ( $r=0.486$ ,  $p < 0.01$ ) and DUDIT ( $r=0.552$ ,  $p < 0.01$ ) scores (Table 2).

### Predictors of AUDIT and DUDIT

Regression analysis using the AUDIT score as the independent variable, and sex, a possible confounding factor, and the CTQ subdimensions separately as dependent variables, indicated that only physical

**Table 3: Effect of physical abuse and DES scores on AUDIT score**

	B	SD	Beta	t	p
(Constant)	-5.406	1.971		-2.743	0.006
Sex	2.831	0.907	0.164	3.119	0.002
Physical abuse	0.772	0.096	0.422	8.034	0.000
(Constant)	-5.473	1.826		-2.998	0.003
Sex	1.681	0.856	0.097	1.963	0.051
Physical abuse	0.520	0.096	0.284	5.422	0.000
DES	3.818	0.539	0.373	7.084	0.000

AUDIT: Alcohol Use Disorders Identification Test; DES: Dissociative Experiences Scale.

abuse had an effect on the AUDIT score. The regression analysis findings for the effect of physical abuse and the DES score on the AUDIT score are provided in Table 3. It was determined that male sex ( $t=3.119$ ,  $p < 0.05$ ) and physical abuse ( $t=8.034$ ,  $p < 0.05$ ) were significant variables in the first step, and that physical abuse ( $t=5.422$ ,  $p < 0.05$ ) and the DES score ( $t=7.084$ ,  $p < 0.05$ ) in the second step had a significant effect on the AUDIT score. When the DES score was included in the analysis in the third step, it was observed that there was a decrease in the regression coefficient of the physical abuse variable ( $B=0.422 > B=0.284$ ), which was considered to reflect partial mediation, as the  $p$  value was  $< 0.05$ .

In the regression analysis using the DUDIT score as the independent variable, and sex, a possible confounding factor, and the CTQ subdimensions separately as dependent variables, only physical abuse was found to have an effect on the DUDIT score. Table 4 presents the regression analysis findings of the effect of physical abuse and the DES scores on the DUDIT score. The analysis determined that in the first step, male sex ( $t=2.505$ ,  $p < 0.05$ ) and physical abuse ( $t=4.947$ ,  $p < 0.05$ ) had a significant effect on the DUDIT score,

**Table 4: Effect of physical abuse and DES scores on DUDIT score**

	B	SD	Beta	t	p
(Constant)	-1.930	0.564		-3.423	0.001
Sex	0.650	0.260	0.140	2.505	0.013
Physical abuse	0.136	0.027	0.276	4.947	0.000
(Constant)	-1.955	0.491		-3.986	0.000
Sex	0.222	0.230	0.048	0.965	0.335
Physical abuse	0.042	0.026	0.085	1.633	0.104
DES	1.422	0.145	0.515	9.818	0.000

DES: Dissociative Experiences Scale; DUDIT: Substance Use Disorders Identification Test.

and physical abuse ( $t=1.633$ ,  $p<0.05$ ) and the DES ( $t=9.818$ ,  $p<0.05$ ) score were significant in the second step. When the DES score was included in the third step, it was observed that there was a decrease in the regression coefficient of the physical abuse variable ( $B=0.276>B=0.085$ ) and full mediation was determined with a  $p$  value of  $>0.05$ .

## DISCUSSION

The results of this study indicated that alcohol and other substance use among university students was associated with childhood trauma and dissociation, as seen in earlier research of these issues. Regression analysis suggested that alcohol or substance use mediated the effects of physical abuse in childhood and dissociative experiences. To the best of our knowledge, our study is the first to demonstrate such a relationship between dissociative symptoms, the effects of childhood trauma, and alcohol and other substance use in Turkey in a sample of university students.

In our study group, the rate of hazardous alcohol consumption was 45.2% among male students and 34.5% among female students. A recent study of university students in our country reported a rate of 18.8% in males and 8.2% in females (27). The higher rate observed in our study may have been related to the fact that the majority of our participants lived in metropolitan areas and that the average age of our sample was lower. The rate of hazardous alcohol use among university students in Ireland was reported as 65.2% in males and 67.3 in females (28). Hazardous alcohol use rates reported in previous studies in England and Ireland are considerably higher than the rate seen in our study (29). The lower rate of excessive drinking in our study may be related to cultural differences related to alcohol consumption.

The rate of hazardous substance use was 8.4% in men and 9% in women in our sample. The rate among university students in Canada was reported as 18.7% according to the DUDIT (30). In a study conducted in France, it was noted that 8.9% of university students used more than one of the substances of tobacco, alcohol, and cannabis (31). In studies conducted in Turkey, lifetime substance use rates have been reported to be between 6.3% and 11% (32-35). Atlam et al. (36) determined a lifetime substance use rate among university students of 27.2%, and 7.6% had used substances more than 5 times. Considering that there are no data of hazardous substance use rates according to the DUDIT conducted in Turkish samples, it is difficult to make comparisons. The low rate of hazardous substance use in our study compared to the Canadian sample may be related to cultural differences.

The results of our study indicated that childhood physical abuse had an effect on alcohol use in university students and that dissociation played a mediating role. Klaneckey et al. (37) similarly found that dissociative symptoms had an effect on alcohol use in the presence of sexual trauma among female university students. Dissociation is a way of compartmentalizing emotions in childhood, as the child's capacity to cognitively and emotionally process compelling emotions caused by trauma is not yet developed (9). However, emotions that remain outside the cognitive process and left unprocessed are a stress factor. When dissociation continues to be used as a mechanism to cope with negative emotions, the difficulty in emotion regulation continues (11). This lack of emotion regulation may lead to constant efforts to calm the emotions with alcohol, which could lead to chronic use. Our findings support the view that dissociative symptoms have an impact on substance use (1,4,5). It has been demonstrated that dissociation has a mediating role in the relationship between childhood trauma and alcohol addiction (4,38). The fact that our findings determined a mediating role for dissociation in the effect of childhood physical abuse on alcohol use in a non-clinical sample may be related to both the emotional dysregulation caused by the dissociation mechanism and with the emotional stress caused by dissociative symptoms themselves.

It has been argued that the experience of childhood trauma may be related to deterioration in significant developmental areas and effects may be seen in adulthood in areas such as affect regulation and interpersonal relationships (39). It has been reported that dissociative symptoms, which are closely related to

affective regulation disorder, are quite common in patients with a substance use disorder, and dissociation may play a mediating role in the relationship between childhood trauma and substance use (1,6,8). In patients with a substance use disorder, childhood trauma has also been found to be associated with borderline personality traits as well as dissociation. Based on this research, it has been argued that high the dissociation rate in patients with a substance use disorder may be an indicator of a disorder in affect regulation (6). It has been reported that features such as chronic anxiety, hostility, and impulsivity associated with childhood trauma predispose patients to intensely experience dissociation which may lead to a proneness to substance use (8). Our results of a non-clinical sample indicated that physical abuse in childhood had an effect on substance use as well as substance addiction, and that dissociation had a mediating role in this effect. Our findings support the view that childhood trauma may have an influence on substance use through dissociative experiences in adulthood.

The partial mediating effect of dissociation on the experience of physical abuse and alcohol use revealed in our study is consistent with the chemical dissociation hypothesis (40). Some people who use alcohol and other substances do not have dissociative symptoms, but rather use the chemical effects of substances as a dysfunctional way of coping with trauma to achieve a dissociative result (41,42). The data are varied and the hypothesis remains to be clarified, however, it is also compatible with the hypothesis that alcohol and substance use is a form of self-medication (43). Individuals who use alcohol and drugs may not only seek psychological dissociation in order to regulate intense emotions resulting from childhood trauma, but also may want to experience chemical dissociation.

One of the limitations of our study is that a clinical evaluation was not performed and only self-report scales were used, which has less reliability. In addition, our research was limited to students at only 2 universities, which constrained sociocultural and socioeconomic diversity and makes it difficult to generalize the findings. The fact that symptoms of psychiatric disorders other than those that might be shared with alcohol and substance use were not evaluated in our study is an important limitation. Due to the cross-sectional nature of the research, it is difficult to establish a cause-effect relationship regarding the developmental process in the association between childhood trauma, dissociation, and substance use. It is important to further examine our findings with prospective and clinical evaluation studies.

In conclusion, our study revealed that childhood trauma was associated with dissociation and substance use in a sample group. The demonstration of a mediating effect of substance use on the consequences of childhood physical abuse is a new contribution to the literature. The findings suggest that dissociative symptoms due to childhood trauma should be handled carefully and students with dissociative symptoms should be evaluated for the risk of alcohol and other substance abuse as part of efforts to better understand substance use among university students.

Contribution Categories		Author Initials
Category 1	Concept/Design	B.H., H.K., M.Y.
	Data acquisition	B.H.
	Data analysis/Interpretation	B.H., H.K., M.Y.
Category 2	Drafting manuscript	B.H., H.K., M.Y.
	Critical revision of manuscript	B.H., H.K., M.Y.
Category 3	Final approval and accountability	B.H., H.K.

**Informed Consent:** Participants were instructed on the purpose and design of the study, and the informed consents were obtained.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** The authors declare that there was no conflict of interest.

**Financial Disclosure:** No financial support was granted for this research.

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