



# The unique contribution of childhood maltreatment types to risk-taking behavior and self-esteem

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## Abstract

Child maltreatment is a pervasive public health problem. Evidence from numerous studies suggests that child maltreatment leads to both short-term and long-term detrimental effects. However, only few studies investigated the differential effects of specific child maltreatment types on mental health. In the current study, we aimed to detect the frequency of child maltreatment and determine specific associations of different types of child maltreatment with risk-taking behavior and self-esteem among college students. A total of 421 university students from Turkey aged between 18 and 26 years ( $M_{age} = 21.16$ ,  $SD = 1.79$ ) participated in the study. Among the participants, 323 (76.7%) were females. The Childhood Trauma Questionnaire-Short Form, the Risk-taking Behavior Scale, and the Self-Esteem Scale were used to assess childhood maltreatment, risk-taking behavior, and self-esteem, respectively. In total, 58.7% ( $n = 247$ ) of the participants reported experiencing at least one type of child maltreatment throughout their childhood. Moreover, a path analysis showed that emotional abuse ( $\beta = -0.23$ ,  $p < .001$ ) and emotional neglect ( $\beta = -0.28$ ,  $p < .001$ ) were negatively associated with self-esteem, whereas sexual abuse ( $\beta = 0.16$ ,  $t = 3.37$ ,  $p < .001$ ) was positively linked with risk-taking behavior after controlling for other types of childhood maltreatment and sociodemographic variables. The findings emphasize the importance of understanding the unique associations and effects of childhood maltreatment on self-esteem and risk-taking behavior. Prevention and intervention efforts should consider these potential impacts of specific childhood maltreatment types.

**Keywords** Child maltreatment · Unique effects · Risk-taking behaviors · Self-esteem

Child maltreatment is commonly defined as any abusive or neglectful behavior by an adult or caregiver with whom the

child has a power and trust relationship, which adversely affects or is likely to affect the child's development, health, or life (Leeb et al., 2008; World Health Organization, 1999). Although no culture and community are free of child maltreatment (Stoltenborgh et al., 2015), the available evidence suggests that it is more common in low- and middle-income countries compared to high-income countries (e.g., Mbagaya et al., 2013; Tran et al., 2017). Child maltreatment is consistently associated with psychological, behavioral, and societal consequences (Fang et al., 2012; Gilbert et al., 2009; Springer et al., 2003).

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## Prevalence of childhood maltreatment

Unfortunately, many studies that attempted to estimate the prevalence of child maltreatment fell into methodological traps, which makes it difficult to unveil its exact rate (Mathews et al., 2020). It is a well-known fact that many children worldwide are exposed to child maltreatment,

particularly by their parents or caregivers. A series of recent meta-analysis studies showed the global prevalence rate to be 17.7% for physical abuse, 26.7% for emotional abuse, 11.8% for sexual abuse, and 16.3% for neglect (Stoltenborgh et al., 2011, 2012, 2013a, b). A large body of literature showed that the prevalence of child maltreatment varies across cultures and countries (e.g., Moody et al., 2018). Empirical research on its prevalence in Turkey is rather limited. In a study examining the prevalence of child maltreatment in Turkey, the rate of those experiencing at least one type of child maltreatment was revealed to be 43.5% (59.6% for males and 40% for females) (Ustuner Top & Cam, 2021). A UNICEF (2010) study concluded the following prevalence rates of childhood maltreatment: 43% for physical abuse, 51% for emotional abuse, and 3% for sexual abuse. In another study, the prevalence was found to be 58.3% for physical abuse, 70.5% for psychological abuse, and 42.6% for neglect (Sofuoğlu et al., 2014). Due to different assessment methods prevalence rates vary widely between studies, even in similar contexts (Aksel & Yılmaz Irmak, 2005).

### Adverse effects of child maltreatment

The detrimental consequences of childhood maltreatment were previously shown in the literature (Cyr et al., 2013; Wang et al., 2019). Child maltreatment is likely to affect one's cognitive, socio-emotional, and physical development across the lifespan (Widom, 2014). Individuals exposed to child maltreatment during childhood are likely at increased odds of developmental and adjustment problems such as school dropout, low academic achievement, risk-taking behavior, and low self-esteem (e.g., Romano et al., 2015). In addition to these adverse effects, exposure to child abuse and neglect is associated with physical illness (e.g., cancer, heart attack), as well as mental health problems (e.g., post-traumatic stress disorder, eating disorders, depression) in adulthood (e.g., Clemens et al., 2018; Humphreys et al., 2020; Messman-Moore & Bhuptani, 2017).

### Associations between child maltreatment and risk-taking behavior and self-esteem

A substantial body of literature consistently documented that exposure to maltreatment during childhood is associated with lower self-esteem (Berber Çelik & Odacı, 2020; Mwakanyamale & Yizhen, 2019; Pereira et al., 2021). Considering that child abuse and neglect have a detrimental impact on the autonomous self, it is not surprising that individuals exposed to childhood abuse and neglect adopt a negative self-concept and self-esteem (Cicchetti & Lynch, 1993). On the other hand,

early close interactions with parents are also crucial for the self-concept. Attachment theory, for example, claims that intimate relationships with the caregiver influence one's views and beliefs about the self, the world, and others (Bowlby, 1969). When parents or caregivers are unavailable or do not consistently and sensitively meet children's needs, the children do not consider themselves valuable and, in turn, develop negative self-images (Belsky & Fearon, 2002; Sakman & Sümer, 2018; Spertus et al., 2003). Given that maltreating parents give insensitive care and fail to fulfill their children's physical and emotional needs, individuals exposed to maltreatment during their childhood are likely to feel unworthy and incompetent, resulting in low self-esteem (Riggs, 2010).

Risk-taking behavior is among the wide range of adverse consequences of childhood maltreatment. There is a plethora of studies that previously discovered a relationship between childhood maltreatment and risk-taking behavior such as alcohol and drug use and risky sexual behaviors (Oshri et al., 2012; Shin et al., 2009). Besides, the literature offers robust explanations for why child abuse and neglect increase the likelihood of engaging in risky activities. According to the developmental trauma model (De Bellis, 2001), child maltreatment negatively affects biological stress systems and brain development which, in turn, leads to long-term psychological and physical dysfunctioning. In addition, child maltreatment generates impairments or delays in multisystem developmental tasks, including behavioral, cognitive, and emotional regulation. These significant changes may predispose children and adolescents to risky behaviors. De Bellis (2002), for example, emphasized that deleterious consequences of childhood maltreatment on biological stress systems and brain development put children and adolescents at risk for psychopathology and boost the likelihood of developing an alcohol-drug use problem—a type of risky behavior. In other words, early traumatic experiences may increase the possibility of risky behaviors, including substance use disorders, as a result of attempts to self-medicate or alleviate mood symptoms caused by a dysregulated physiologic stress response (Briere & Scott, 2015; Khoury et al., 2010).

### Unique effects of childhood maltreatment

Although there is increasing evidence of adverse outcomes of childhood maltreatment, it remains unclear whether different types of child maltreatment are associated differently with specific developmental outcomes. Previous studies often investigated the specific effects of physical and sexual abuse (e.g., Cougle et al., 2010; Hyun et al., 2000). Only few studies attempted to explore all types of child maltreatment; however, they fell into the trap that all types

of childhood maltreatment co-occur and are significantly correlated with each other (Kim et al., 2017; Scher et al., 2004). For example, Senn and Carey (2010) found that all types of child maltreatment were linked to adult sexual risk behavior. However, when controlling for other forms of child maltreatment, only child sexual abuse was found to be related to adult sexual risk behavior.

Recent studies indicated that it is essential to control for not only the other types of abuse but also several covariates to better understand the unique associations of child maltreatment subdimensions with, for example, adverse consequences (e.g., Cecil et al., 2017). For example, it is well established that physical abuse enhances the risk for externalizing disorders such as aggression (Briere & Runtz, 1990; Shields & Cicchetti, 1998). Similarly, Cecil et al. (2017) found that exposure to physical violence predicted externalizing problems. However, after controlling for exposure to community violence, exposure to physical violence was not associated with externalizing problems anymore.

## Current study

The current study reports on an attempt to investigate the unique associations of different types of child maltreatment with self-esteem and risk-taking behavior by controlling for other types of maltreatment and sociodemographic variables (e.g., perceived SES, sex, and age). Many of the few previous studies on the unique effects of child maltreatment controlled for other types of maltreatment but not for covariates (e.g., Senn & Carey, 2010; Thibodeau et al., 2017). Besides, many previous studies investigated at-risk groups but rarely recruited a community sample (e.g., Cecil et al., 2017; Rodgers et al., 2004; Ryan et al., 2000). Furthermore, many studies were performed in high-income countries and few studies have investigated the frequency of child maltreatment in Turkey (e.g., UNICEF, 2010). Given these shortcomings in the current literature, the present study aimed at exploring the frequency of child maltreatment and the specific associations of different types of childhood maltreatment by controlling for both other types of childhood maltreatment and covariates in a low- or middle-income country with a high prevalence of child maltreatment.

## Method

### Participants

A total of 472 university students participated in this study. However, 51 participants were excluded from the study for the concerns of incomplete data ( $n = 28$ ) and upper age limit

( $n = 23$ ); thus, the final sample consisted of 421 university students. Participants were aged between 18 and 26 years ( $M_{age} = 21.16$ ,  $SD = 1.79$ ). Of the participants, 76.7% ( $n = 323$ ) were females and 23.3% ( $n = 98$ ) were males. The majority of the participants perceived their socioeconomic status (SES) as middle. In total, 13 (3.1%) identified themselves as with low SES, 53 (12.6%) with a lower-middle SES, 237 (56.3%) with a middle SES, 100 (23.8%) with an upper-middle class, and 18 (4.3%) with an upper SES. For the time being, the parents of 365 (86.7%) participants were married and lived together. Concerning parental education, 5.7% ( $n = 24$ ) of the mothers were illiterate, 40.7% ( $n = 171$ ) had primary and secondary school education, 27.6% ( $n = 116$ ) had high school education, and 26.1% ( $n = 110$ ) held a bachelor's or higher degree. These rates became 2.1% ( $n = 9$ ), 28.5% ( $n = 120$ ), 30.2% ( $n = 127$ ), and 39.3% ( $n = 165$ ), respectively, for the fathers.

### Procedure and data collection

The ethical permission was granted by the Ethics Committee of the Graduate School of Social Science, Aydın Adnan Menderes University. We deployed a cross-sectional design using an online survey with Qualtrics software and a convenience sampling technique to recruit the participants via social media announcements supplemented with a web link. In other words, participants were reached through social media platforms frequently used by university students. The researchers distributed the online questionnaires from their social media accounts and asked the university students who filled out the questionnaire to share the questionnaire from their own accounts. All participants volunteering to participate in the study provided informed consent prior to filling out the questionnaire booklet and were informed that they could refuse or quit the study at any time. It took about 30–35 min to complete the online survey.

### Measures

#### The childhood trauma questionnaire-short form

The 28-item Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein et al., 1994)—the brief form of the 70-item Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003) was used to measure the experiences of maltreatment in childhood, regardless of whether it occurs inside or outside the family environment. The CTQ-SF was adapted and validated in Turkish by Şar et al. (2012). It includes five subscales: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. The items are rated on a 5-point Likert scale ranging from “Never True” to “Very Often”. The scores of each subscale vary from 5 to 25, while the total score ranges from 25

to 125. In the Turkish adaptation of the instrument on the Turkish sample, Şar et al. (2012) determined the cut-off points to be 35 for the total score, 5 for physical abuse, 7 for emotional abuse, 5 for sexual abuse, 7 for physical neglect, and 12 for emotional neglect. The Cronbach's alpha coefficients in the current sample were calculated to be .79 for the emotional abuse, .76 for the physical abuse, .89 for the sexual abuse, .88 for the emotional neglect, and .66 for the physical neglect. As in other studies (e.g., Bernstein et al., 2003; Karos et al., 2014; Kaya, 2014; Manna et al., 2022), we found the reliability coefficient of physical neglect to be lower than of the other subscales, which may be explained by the fact that the items of this subscale are wide-ranging in terms of forms of physical neglect, may not be understood well, or may be difficult to distinguish from poverty (Karos et al., 2014) or due to the sample characteristics of the current study. Despite lower reliability on the physical neglect subscale, the CTQ-SF is one of the most widely used tools to make a retrospective evaluation of childhood abuse and neglect in adults.

### The risk-taking behavior scale

Risk-taking behavior was evaluated using the Risk-taking Behavior Scale, initially developed by Bayar and Sayıl (2005) and revised and shortened by Uludağlı and Sayıl (2009). It is a single-factor instrument, and all 18 items are rated on a 5-point Likert scale ranging from “Never” to “Often,” with higher values indicating more exhibited risk-taking behavior. One gets between 18 and 90 points on the scale. Cronbach's alpha coefficient of the short form was previously calculated to be .88, and it was found that risk-taking behavior was positively correlated with childhood traumas (Eker & Yılmaz, 2016). Similarly, the internal consistency coefficient was found to be .86 in another study with a sample of university students (Yılmaz Irmak et al., 2018). When it comes to our study, we calculated Cronbach's alpha coefficient of the scale to be .84.

### The self-esteem scale

Rosenberg (1965) designed the 10-item Self-Esteem Scale to assess self-esteem. Each item is rated on a 4-point scale from 1 (Strongly Agree) to 4 (Strongly Disagree). Five items include positive statements regarding self-esteem, while the other five are designed as negative statements. Negative items are reversed while calculating the total score. One may obtain a minimum of 10 and a maximum of 40 points on the scale. As expected, higher scores indicate higher self-esteem. Çuhadaroglu (1985) adapted the instrument to Turkish and found its Cronbach's alpha coefficient to be .71 and test–retest reliability coefficient to be .75. In the

present study, we calculated Cronbach's alpha coefficient to be .91. The scale, which is frequently utilized worldwide (Martín-Albo et al., 2007; Shi et al., 2017) as well as in Turkey (Doğan et al., 2009; Özgüngör & Duatepe Paksu, 2017) is proven to be valid and reliable.

### Demographic information form

We generated a demographic information form to obtain some demographic characteristics of the participants (e.g., age, sex, year of study, and perceived SES).

### Statistical analysis

We utilized Statistical Package for Social Sciences (SPSS v.22.0) and LISREL 8.8 to analyze the data. Prior to analyses, we considered missing values and found no missing data on self-esteem and risk-taking behavior, whereas the missing data on sexual abuse (0.4%) and physical neglect (1%) were replaced with mean values. Next, we resorted to skewness (-2, 2) and kurtosis (-7, 7) values to test the normality of distribution. Data on sexual abuse and physical abuse scales deviated from normal distributions, even after of the transformation of the two subscales.

Frequencies were considered to estimate the prevalence of the different types of childhood maltreatment experienced by the participants. Then, to determine the frequency of experience to child abuse and neglect, a dichotomic variable was generated using cut-off scores of CTQ-SF (1 = exposed to child maltreatment and 0: not exposed to child maltreatment). Using the total score of the subscales of CTQ-SF, we performed Pearson's correlation analysis to reveal the associations among the variables and a path analysis was conducted to investigate the relationships between different types of childhood maltreatment and self-esteem and risk-taking behavior. Finally, all covariances and paths between exogenous variables were estimated at baseline and controlled for considering potential effects of sex, age, and perceived SES on self-esteem and risk-taking behavior (Eker & Yılmaz, 2016; Frost & McKelvie, 2004; Sahlstein & Allen, 2002; Yılmaz Irmak et al., 2018; Zhang & Postiglione, 2001).

Because of non-normal distribution of sexual abuse and physical abuse subscales, we created an asymptotic covariance matrix and estimated it with robust ML to avoid bias caused by non-normality values. Therefore, we reported the Satorra-Bentler  $X^2$  value. The analysis yielded the following fit indices:  $SB\chi^2/df < 3.0$ , NFI, GFI, CFI, or IFI  $\geq 0.95$ , and RMSEA or SRMR  $< 0.08$  (Hu & Bentler, 1999; Kline, 2016). Moreover, we used the AIC measure for model comparison; lower values are known to indicate a better fit in the comparison. Finally, we adopted

effect size estimation based on Cohen's (1992) proposition ( $r \geq .10$  = small effect,  $r \geq .30$  = medium effect, and  $r \geq .50$  = large effect). Statistical significance was set at a two-tailed  $p = 0.05$ .

## Results

### Descriptive statistics

More than half of the participants (58.7%,  $n = 247$ ) reported being exposed to at least one type of maltreatment during childhood. Emotional abuse was found to be the most common type of child maltreatment ( $n = 135$ , 32.1%), followed by sexual abuse ( $n = 109$ , 25.9%) and physical abuse ( $n = 97$ , 23%). Emotional neglect ( $n = 90$ , 21.4%) and physical neglect ( $n = 78$ , 18.5%) were the least reported types of maltreatment. Moreover, almost 30% ( $n = 127$ ) stated to be exposed to more than one type of maltreatment in their childhood.

### Associations between different types of childhood maltreatment, risk-taking behavior, and self-esteem

The findings revealed that all types of childhood maltreatment were positively correlated with risk-taking behavior ( $r$ s between 0.14–0.21), while it was vice versa with self-esteem ( $r$ s between -0.13–0.38), except for sexual abuse ( $r = -0.06$ ). Therefore, it can be claimed that higher scores in the dimensions of childhood maltreatment are linked with more risk-taking behavior and lower self-esteem. In addition, risk-taking behavior was negatively related to self-esteem ( $r = -0.16$ ). Besides, the types of childhood maltreatment were found to be interrelated ( $r$ s between 0.24–0.61). Table 1 presents the correlations between the types of child maltreatment, risk-taking behavior, and self-esteem.

To reveal the unique associations of different types of childhood maltreatment with self-esteem and risk-taking behavior, we performed a path analysis by controlling for sex, age, and perceived SES. Yet, the initial model did not

fit the data well [ $SB\chi^2 [1, n = 421] = 7.18, p < 0.05$ ;  $SB\chi^2 / df = 7.18$ ; CFI = 0.99; GFI = 1.00; IFI = 0.99; NFI = 0.99; SRMR = 0.01; RMSEA = 0.12 (90% CI = .05–.21); AIC: 115.18] and indicated that sex and age were not linked with self-esteem risk-taking behavior, respectively. Therefore, we removed these paths and re-ran the modified model. Our final model fitted the data better [ $SB\chi^2 [3, n = 421] = 6.32, p > 0.05$ ;  $SB\chi^2 / df = 2.11$ ; CFI = 1.00; GFI = 1.00; IFI = 1.00; NFI = 0.99; SRMR = 0.01; RMSEA = 0.052 (90% CI = .00–.11); AIC: 110.32] and yielded that both emotional abuse ( $\beta = -0.23, t = -3.81, p < .001$ ) and emotional neglect ( $\beta = -0.28, t = -4.62, p < .001$ ) were negatively related to self-esteem, while sexual abuse ( $\beta = 0.16, t = 3.04, p < .01$ ) was positively related to risk-taking behavior (see Fig. 1 and Table 2). Besides, all direct relationships produced small effect sizes, according to Cohen (1992). Physical abuse and physical neglect were neither uniquely associated with self-esteem nor with risk-taking behavior. The model explained 22% and 16% of the variance in self-esteem and risk-taking behavior, respectively.

## Discussion

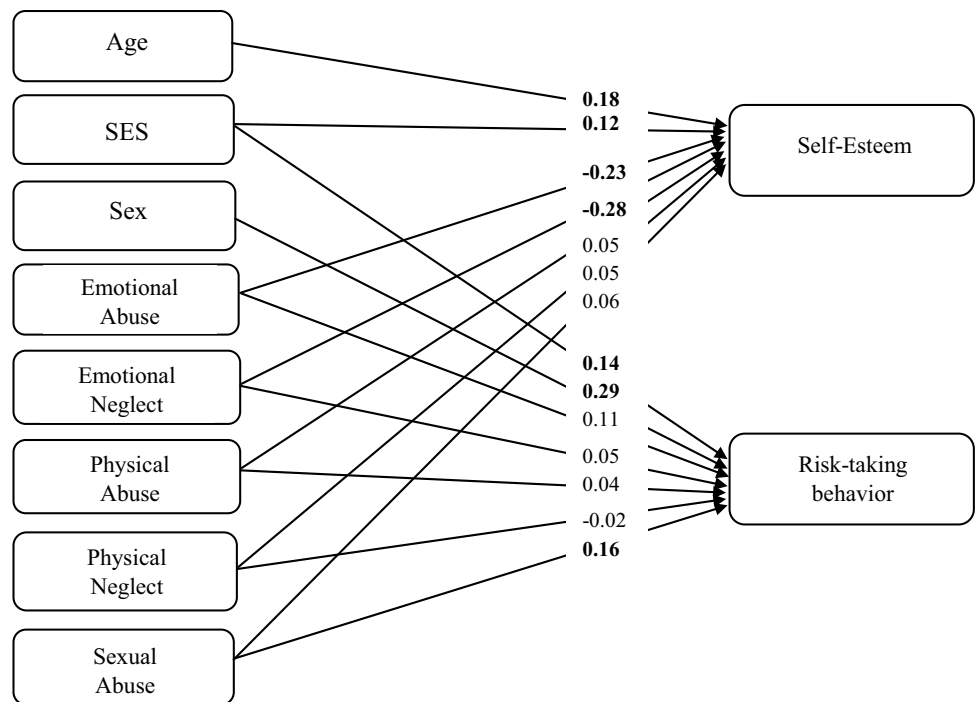
This study aimed to determine the frequency of different types of childhood maltreatment and the unique associations of the types of childhood maltreatment with self-esteem and risk-taking behavior. While about 59% of the participants reported exposure to at least one type of maltreatment, 30% experienced more than one type of maltreatment in their childhood. We found the prevalence of childhood maltreatment to be relatively high, consistent with previous studies in Turkey (UNICEF, 2010; Ustuner Top & Cam, 2021). Compared to meta-analytic findings on the global prevalence of child maltreatment (Stoltenborgh et al., 2015), we may bring some possible explanations for why abuse remains a widespread problem in Turkey as a low- and middle-income country. First of all, not only child maltreatment but also other forms of violence are, unfortunately, quite common in Turkey (Aytaç et al., 2016). Secondly, violence is still adopted

**Table 1** Correlations between the variables used in the path analysis

Variables	1	2	3	4	5	6	7
(1) Emotional abuse	1						
(2) Physical abuse	0.49**	1					
(3) Sexual abuse	0.35**	0.24**	1				
(4) Emotional neglect	0.61**	0.33**	0.28**	1			
(5) Physical neglect	0.38**	0.38**	0.26**	0.54**	1		
(6) Risk-taking behavior	0.21**	0.19**	0.21**	0.18**	0.14**	1	
(7) Self-esteem	-0.35**	-0.13**	-0.08	-0.38**	-0.18**	-0.16**	1

$p < .05^*$ ,  $p < .01^{**}$

**Fig. 1** Path model ( $N=421$ ) exploring the unique associations of each childhood maltreatment on self-esteem and risk-taking behavior. The model indicates that after controlling for demographic variables and effects of the other types of childhood maltreatment, emotional abuse and emotional neglect are negatively associated with self-esteem, while sexual abuse is positively linked with risk-taking behavior. The model produced good model-data fit [ $SB\chi^2 [3, n=421]=6.32, p > 0.05$ ;  $SB\chi^2 /df=2.11$ ; CFI=1.00; GFI=1.00; IFI=1.00; NFI=0.99; SRMR=0.01; RMSEA=0.052 (90% CI=.00–.11)] Standardized regression coefficients are presented above



**Table 2** Relationships between the types of childhood maltreatment, self-esteem, and risk-taking behavior in the path model

Direct Effects	B	SE	$\beta$	$t$	$R^2$
Self-Esteem					.22
Age	0.60	0.14	0.18	4.15***	
SES	0.87	0.33	0.12	2.63**	
Emotional Abuse	-0.48	0.13	-0.23	-3.81***	
Emotional Neglect	-0.41	0.09	-0.28	-4.62***	
Physical Abuse	3.24	3.13	0.05	1.04	
Physical Neglect	0.15	0.14	0.05	1.03	
Sexual Abuse	2.69	2.12	0.06	1.27	
Risk-taking behavior					.16
SES	1.86	0.68	0.14	2.73**	
Sex	7.13	1.23	0.29	5.78***	
Emotional Abuse	0.40	0.25	0.11	1.60	
Emotional Neglect	0.12	0.18	0.05	0.65	
Physical Abuse	4.36	6.10	0.04	0.72	
Physical Neglect	-0.09	0.34	-0.02	-0.26	
Sexual Abuse	14.01	4.61	0.16	3.04**	

B Unstandardized beta estimate; SE Standard error;  $\beta$  Standardized beta estimate;  $R^2$  Explained variance

\*\*  $p < .01$ ; \*\*\*  $p < .001$

to discipline children’s behaviors (Biçer et al., 2017; Kızıltepe et al., 2020). Lastly, our findings may also be associated with persistent economic crises and cultural values in which the child is considered the property of their parents (Öztürk Can & Yılmaz Irmak, 2016).

As expected, all types of childhood maltreatment were discovered to be interlinked, which also overlaps the previous findings demonstrating that experiencing one type of childhood maltreatment is associated with an increased risk of exposure to other types of childhood maltreatment (e.g., Mwakanyamale et al., 2018). Moreover, we concluded that all types of childhood maltreatment were associated with self-esteem, except for sexual abuse. However, after controlling for the other types of child maltreatment and covariates, only emotional abuse and emotional neglect were associated with lower self-esteem. Briere and Runtz (1990) previously reported that emotional abuse had an adverse impact on self-esteem when other types of abuse were controlled for. However, our findings suggest that emotional neglect was also linked to self-esteem. It is often acknowledged that emotional neglect is characterized by ignoring the child’s feelings and not meeting their psychological needs which may lead to generating negative self-representation over time (Rees, 2008; Spertus et al., 2003). Children with unmet needs accompanied by humiliation during childhood may also develop feelings of incompetence and worthlessness, which, in turn, cause lower self-esteem (Riggs, 2010). Surprisingly, this study found that sexual abuse was not associated with self-esteem. Although many studies in the literature reveal a relationship between sexual abuse and self-esteem (Karakuş, 2012; Okunlola et al., 2021), few studies have found that sexual abuse was not associated with self-esteem (Feiring et al., 2009; Mwakanyamale et al., 2018). A prospective study conducted by Feiring et al. (2009) found that the severity of child sexual

abuse was directly associated with dissociation, but not with self-esteem. Moreover, there were no mediating effect of self-blame and stigmatization in the relationship between severity of sexual abuse and self-esteem. The authors concluded that the severity of sexual abuse was associated with dissociative symptoms, which the participants might use as a coping method from child sexual abuse. Therefore, the experience of child sexual abuse did not affect general self-blame for everyday events and global self-evaluations, which in turn did not affect self-esteem. According to the study above, the finding in the current study that sexual abuse was only associated with risk-taking behaviors and not self-esteem led us to conclude that those who were exposed to sexual abuse may be more likely attempting to cope with their experiences by leaving exhibiting risk-taking behaviors. Moreover, Okunlola et al. (2021) conducted a systematic review on outcomes of sexual abuse on self-esteem and found that parental and family factors, low socio-economic status, and gender were determinants for self-esteem among sexually abused adolescents. Considering that the participants in this study were university students, they may have many protective factors related to this result, such as perceived social support from the family or parental acceptance.

In parallel with the literature (e.g., Diaz et al., 2020; Eker & Yılmaz, 2016), it was found that all types of child maltreatment were associated with risk-taking behavior. However, after controlling for the other types of child maltreatment and covariates, only child sexual abuse was found to be related to risk-taking behavior. The literature documented that child sexual abuse is associated with sexual risk-taking behavior (Banducci et al., 2014; Senn & Carey, 2010). For example, Banducci et al. (2014) found that sexual abuse was associated with multiple sexual risk-taking behaviors such as arrests for prostitution and sex for drug use. Because of the unique nature of sexual abuse, sexual abuse mostly occurs behind closed doors. Therefore, this situation may hinder people exposed to child sexual abuse from seeking help and coping effectively with such an undesirable experience (Zhang et al., 2021). Moreover, child sexual abuse is known to be associated with various adverse outcomes such as impulsivity and low emotion-regulation skills that contribute to the possibility of risk-taking behavior (Artime & Peterson, 2012; Bailey & McCloskey, 2005). What is more is that four traumagenic dynamics (e.g., stigmatization and powerlessness) following child sexual abuse might increase a person's tendency to risk-taking behavior. For example, due to powerlessness, one exposed to child sexual abuse may exhibit aggressive and delinquent behaviors to demonstrate to bear a sense of power and domination (Finkelhor & Browne, 1985). Another possible explanation for the relationship between sexual abuse and risk-taking

behaviors may be based on the literature on the psychophysiological effects of sexual abuse. Previous studies revealed that a history of childhood sexual abuse was linked to a series of abnormalities in the brain function and structure such as reduction in size of the corpus callosum (Andersen et al., 2008; Teicher et al., 2004), changes in blood flow in prefrontal cortex (Bremner et al., 1999), and decreased hippocampal volume (Stein et al., 1997). This means that when there are changes in the structure and volume of certain parts of the brain, it can negatively impact cognitive and emotional processes such as decision-making, executive functions, and cognitive control (Insana et al., 2015) which in turn may increase the likelihood of a person engaging in risky behaviors.

### Strengths and limitations

The present study explored which type of childhood maltreatment experienced by university students was associated with self-esteem and risk-taking behavior when controlling for other types of maltreatment and various demographic characteristics. To the best of our knowledge, this was pioneering research to address exclusive associations of the types of childhood maltreatment with self-esteem and risk-taking behavior in Turkey. Therefore, our findings are deemed to bring a noteworthy contribution to the literature. However, it is not free of a few limitations. First, our findings cannot imply a cause-effect relationship since the study employed a cross-sectional design. Therefore, the associations between variables might also be interpreted the other way around. Although we found childhood emotional neglect and abuse are associated with self-esteem and sexual abuse with risk-taking behavior, future studies may need to adopt a longitudinal design to replicate our findings. Second, although the participants generally reported a widespread experience of abuse and neglect in their childhood, a false memory bias can never be rule out completely as we addressed a subject relying on retrospective data. Furthermore, social desirability cannot be ignored, especially for measures of self-esteem and risk-taking behavior. Finally, our findings may not be generalized beyond the study sample. Compared to random sample procedure, the findings from online surveys cannot be generalized to other populations (Andrade, 2020; Vaske, 2011). In other words, the sample in the study were not representative. Moreover, we reached the participants via only social media platforms, the people who did not use any social media could not participate in the current study. All in all, further research is needed to explore the unique effects of the types of childhood maltreatment on other outcomes (e.g., internalizing and externalizing problems) and to evaluate the mediating role of the individual, familial, and contextual factors in these relationships.

## Implications for future research and clinical practice

Our study has shown that more than half of the participants have experienced at least one type of child maltreatment during their childhood. This conclusion should not come as a surprise when we take into account other low- and middle-income countries, such as Uganda (e.g., Ssenyonga et al., 2019). However, there have not been enough attempts to identify the risk factors for child abuse and neglect despite of a high rate of child maltreatment in Turkey. Therefore, based on ecological models (e.g., Cicchetti & Lynch, 1993), it is recommended to examine not only individual and familial risk factors, but also contextual risk factors. Moreover, there is an urgent need for preventative studies and social policies to reduce child abuse and neglect, which is emphasized by the high prevalence in Turkey. There are several successful prevention programs such as the evidence-based parenting program “Triple P” (Arkan et al., 2020) and the sexual abuse prevention program “I’m learning to protect myself with Mika” (Yılmaz Irmak et al., 2020) to stop child abuse and neglect. It is recommended that necessary efforts being made to disseminate these programs. Lastly, it is clear that rehabilitative treatments, such as trauma-focused cognitive behavioral therapy are required for those who have been exposed to child abuse and neglect to lessen negative consequences, such as risk-taking behaviors and boost self-esteem.

## Conclusion

The high prevalence of childhood maltreatment found in the present study may be considered a significant problem in Turkey, affecting the lives of thousands of children. Given the lack of research interest in the prevalence of, as well as the severe consequences of child abuse and neglect in Turkey, we believe that our research will extend the body of scholarly knowledge in the field. Overall, our findings overlap the idea that childhood maltreatment is linked to increased rates of risk behaviors and low self-esteem. The findings suggest that emotional abuse and neglect are associated with lower self-esteem among college students, whereas sexual abuse is associated with more risk-taking behavior. Thus, the present findings would help develop public health programs for long-term health improvement. Engaging in research with a primary focus on child maltreatment and its implications would particularly be valuable in low-income countries, where the body of literature is even more limited. Although more studies are needed to acquire a solid insight into the subject, the high prevalence of child maltreatment in Turkey and its negative consequences may be considered a sufficiently solid ground for the importance of introducing social policies and interventions to make life more bearable for affected children and their families.

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**Data availability** The data are available from the corresponding author, [Dr. Rukiye Kızıltepe], upon reasonable request.

## Declarations

**Declaration of competing interest** None to declare.

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