SAPIENZA
UNIVERSITÀ EDITRICE

E-ISSN 2724-2943
ISSN 2723-973X

Psychology Hub (2024)
XLI, 1, 35-44

Article info

Submitted: 25 July 2023
Accepted: 27 February 2024
DOI: 10.13133/2724-2943/18180

Childhood maltreatment and cyberbullying victimization/perpetration; The mediating role of family function, resilience, and anxiety

Rasool Hamidi Choolabi[1], Zinat Asgharzadeh Nasr Abadi[2], Kiarash Tavakolpour[3], and Omid Amani[4*]

[1] *Department of Psychology, Ahrar Institute of Technology and Higher Education, Rasht, Iran*

[2] *Department of Clinical Psychology, Faculty of Education and Psychology, Isfahan University, Isfahan, Iran*

[3] *Department of Psychology, Faculty of Literature and Humanities, Salman Farsi University, Kazeroon, Shiraz, Iran*

[4] *Department of Clinical Psychology, Faculty of Education and Psychology, Shahid Beheshti University, Tehran, Iran*

Abstract

Cyberbullying (CBB) is an emerging social concern that has harmful effects on the life satisfaction of students and their relatives. This study aimed to examine how family function, resilience, and anxiety mediate the link between childhood maltreatment (CM) and CBB victimization/perpetration among Iranian students. We conducted a cross-sectional study in March 2022 with 403 students (75 males, 328 females) aged 18 to 50. Participants completed an online questionnaire encompassing the Child Abuse Self-Report Scale, Cyberbullying and Online Aggression Scale, Connor-Davidson Resilience Scale, Family Assessment Device (FAD), and State-Trait Anxiety Inventory (STAI). We found that CM correlated with CBB victimization/perpetration. The mediation analysis showed that family function fully mediates the relationship between CM and CBB victimization/perpetration. Also, poor family function could raise anxiety and the risk of CBB victimization/perpetration. Moreover, the reduced family function might harm individuals' resilience, and lower resilience might increase the likelihood of becoming a victim of CBB through anxiety mediation. Overall, our research underscores the family's pivotal role in ensuring cyber safety and preventing CBB involvement of its members, and it should be considered in intervention programs.

Keywords: Childhood maltreatment, Cyberbullying victimization, Cyberbullying perpetration, Family function, Students

*Corresponding author.
Omid Amani
Department of Clinical Psychology,
Faculty of Education and Psychology,
Shahid Beheshti University,
Tehran, Iran
E-mail: o.amani69@yahoo.com
(O. Amani)

Introduction

Today, electronic technologies have become an essential part of human life. Over the last decade, they have evolved into indispensable communication tools, especially for young people (Martínez-Monteagudo et al., 2020). However, with the rise of these technologies, cyberbullying (CBB) has emerged as a significant health (Skilbred-Fjeld et al., 2020) and social issue (Wang et al., 2021). CBB is a serious issue that involves the intentional use of online platforms to threaten, intimidate, and insult individuals (Collen & Onan, 2021; Vismara et al., 2022). The phenomenon has been observed across various age groups, including school-aged children, college students, and employed adults (Balakrishnan & Norman, 2020). CBB prevalence rates among college students vary from 4% to 60% for those who have reported engaging in CBB perpetration and from 19% to 72% for those who have reported being victims of CBB (Donat et al., 2023).

Research on CBB victims indicates that they may suffer from various issues, including anxiety, depression, low self-confidence, aggression, irritability, alcohol abuse, somatization disorder, sleep disturbances, concentration problems, poor academic performance, and reduced life satisfaction (Chan et al., 2020; Faucher et al., 2014; Leung et al., 2018; Meter et al., 2021; Vismara et al., 2022). Several factors, such as poor social skills, lack of family support, isolation, low self-confidence, substance abuse, depression, suicidal tendencies, and anxiety, have contributed to CBB victimization (Brunstein Klomek et al., 2019). On the other hand, the perpetrators of CBB, commonly known as cyber bullies, may also face serious consequences for their actions, such as developing violent and irresponsible behaviors, losing their moral sense, becoming more antisocial, and getting into trouble with the law (Lizut, 2019). CBB perpetrators often engage in this behavior due to many underlying motivations, such as a desire for power, revenge, or to respond to their victimization. This dynamic leads to various issues for both the victims and the perpetrators (Balakrishnan & Norman, 2020; Yokotani & Takano, 2021).

Childhood maltreatment (CM) and its consequences

CM stands out as a significant determinant of CBB, both for victims (Geng et al., 2022) and perpetrators (Li et al., 2022). It refers to a range of traumatic experiences a child may face during their early years, including emotional or physical neglect and emotional, physical, or sexual abuse. Studies have shown that CM is a widespread problem, with a global prevalence rate of 22.6% for physical abuse and 36.3% for emotional abuse (Lo et al., 2021). According to social learning theory, observing and imitating others is the basis of individual behavior. Consequently, children exposed to maltreatment within their family or social circles may learn abusive behavior more often, leading to a higher likelihood of them engaging in aggressive behavior (Li et al., 2022).

The role of family in influencing behavior

The family environment is pivotal in child development (Meunier et al., 2012). Drawing from Bowen's (1978) family system theory, individual behaviors are influenced by the broader family system and its members. Individuals who have experienced maltreatment during childhood or grew up in a household with significant dysfunctionality may have a poorer understanding of relationships and receive less family support. Such experiences may result in the development of weak interpersonal relationships, thereby increasing the likelihood of being subjected to bullying (Nocentini et al., 2019; Zhang et al., 2022). Furthermore, Individuals observing aggressive or bullying behaviors within their family may be more inclined to adopt such behaviors (Bandura, 2002; Huesmann & Kirwil, 2007; Nocentini et al., 2019). Dysfunctional family environments can increase the risk of CBB victimization/perpetration (Fu et al., 2018; Nocentini et al., 2019; Vismara et al., 2022). Thus, the parenting style and the parent's ability to monitor their child can serve as protective factors against CBB or could be essential factors that may lead a child to become a victim or perpetrator of CBB in the future (Khair et al., 2022).

Resilience as a protective factor

The quality of internal and external family relationships has a direct impact on an individual's resilience, which can either be improved or diminished (Bradley et al., 2013; Garmezy et al., 1984). Resilience is more than just enduring adversity; it involves actively navigating challenges (Ercan, 2017). Resilient individuals maintain positive interactions with others, possess effective problem-solving skills, and benefit from supportive external resources. Research indicates that resilience can mitigate the adverse effects of early life challenges, even in the face of childhood adversity (Cui et al., 2020). Moreover, a meta-analysis revealed that resilience negatively correlates with anxiety (Hu et al., 2015).

Anxiety and its relationship with CBB

As described by Erikson (1963), anxiety can stem from a lack of trust and security experienced during childhood. Anxiety is a natural response to perceived threats and can significantly impact individuals' mental well-being. However, resilience can buffer against the effects of anxiety, preserving mental health after negative experiences (Azadegan Mehr et al., 2021; Oshri et al., 2018; Raskauskas & Huynh, 2015). Cross-sectional and longitudinal studies have shown that CBB victimization/perpetration is significantly associated with anxiety (Chu et al., 2018; Martínez-Monteagudo et al., 2020; Santos et al., 2015).

The present study

Given the significant impact of CBB on students' well-being, understanding its underlying causes is crucial. The topic of our study is important for several reasons. First, in most studies conducted in the field of bullying, only the relationship between CM and bullying has been investigated, and CBB has been neglected (Xie et al., 2018). Second, CBB is not dependent on a specific time and place; it can occur relatively easily, and it

causes more harm to the individual than traditional face-to-face bullying (Broll et al., 2018). So, in this study, we have examined this type of bullying. Finally, recent studies have identified CM as a significant contributor to CBB victimization/perpetration (Geng et al., 2022; Li et al., 2022; Vismara et al., 2022; Wang et al., 2021). Thus, to comprehensively comprehend the causes of CBB victimization/perpetration among students, it is imperative to ascertain the underlying mechanism of this association. In this study, we aim to elucidate the roles of family function, resilience, and anxiety in the relationship between CM and CBB victimization/perpetration. To achieve this, we have structured our objectives as follows:

1. To determine whether family function, resilience, and anxiety serve as independent mediators in the association between CM and CBB victimization/perpetration. This objective is grounded in the evidence suggesting differential impacts of these factors on CBB roles. Specifically, we explore how family dysfunction, a consequence of CM, can lead to increased vulnerability to victimization while simultaneously fostering tendencies toward perpetration.

2. To investigate the sequential mediating effects of family function, resilience, and anxiety in the relationship between CM and CBB victimization/perpetration. Here, we aim to differentiate the pathways leading to victimization and perpetration. For victimization, we consider how a dysfunctional family environment and subsequent challenges in resilience and anxiety contribute to one's susceptibility to being victimized. Conversely, for perpetration, we focus on how these same factors might cultivate aggressive behaviors and inclinations toward becoming a perpetrator.

Materials and Methods

Participants and Procedure

Our study involved 403 Iranian students, of whom 319 (79.2%) were women and 84 (20.8%) were men. The age range of participants was between 18-50 years, with a mean age of 23.02 (SD = 5.46). In terms of educational level, 27 students (6.6%) had an associate degree, 313 students (77.7%) had a bachelor's degree, 53 students (13.2%) had a master's degree, and 10 students (2.5%) were PhD students. Participants were selected using the convenience sampling method, with entry criteria including being a student, absence of illnesses affecting cognitive functions, and informed consent to participate. Exit criteria were refusal to participate or incomplete questionnaire submission. Due to the COVID-19 pandemic, we collected data through an online questionnaire shared via students' social network groups (on Telegram and WhatsApp). We assured the students that their information was confidential and would be used only for research purposes.

Instruments

Child Abuse Self-Report Scale (CASRS): We used the CASRS to assess CM. This is a self-report questionnaire developed by Mohammadi in 2003 that consists of 38 items. The items are rated on a 4-point Likert scale from 1 (never) to 4 (always). The questionnaire measures four types of abuse: physical (items 26-33), sexual (items 34-38), psychological (items 1-14, 28), and neglect (items 15-25). Mohammadi (2003) reported a Cronbach's alpha reliability coefficient of .92 for the total scale and a convergent validity coefficient of .16 to .63 with the subscales of the list of injury symptoms for children. The Cronbach's alpha coefficients for the subscales ranged from .79 to .89. In this study. The alpha coefficient in the present study was .96. Sample items include "When my parents punish me, it is not proportionate to my mistakes", "I am beaten up because of every small mistake". Higher scores indicate a greater history of CM.

Hinduja and Patchin's cyberbullying questionnaire: We used the Persian version of Hinduja and Patchin's cyberbullying questionnaire to assess CBB victimization/perpetration This questionnaire has two subscales: bullying and victimization, each with 10 items. The items are rated on a 4-point Likert scale (0 = never, 1 = once, 2 = many times, 3 = very often). Examples of items are "Someone posted a mean or hurtful picture online of me" and "I created a mean or hurtful web page about someone". The total score for each subscale ranges from 0 to 30, and a score of 3 or more indicates CBB perpetration/victimization. Patchin and Hinduja (2016) reported Cronbach's alpha coefficients of .935 to .867 for the bullying subscale and .793 to .969 for the victimization subscale, and high and significant internal correlations for each subscale. The Persian version of the questionnaire was previously translated and adapted for Iranian university students, and showed high internal consistency, with Cronbach's alpha coefficients of .771 for the bullying subscale and .808 for the victimization subscale (Bakhtiari, 2018). In this study, Cronbach's alpha coefficients were .78 for the bullying subscale and .71 for the victimization subscale.

Connor-Davidson Resilience Scale (CD-RISC): We used the CD-RISC to measure resilience. This scale has 25 items that are rated on a Likert scale from zero (not true at all) to four (true nearly all the time). Examples of items are "Can deal with whatever comes" and "I like challenges". The total score ranges from 0 to 100, and a score of 50 or more indicates high resilience, while a score of less than 50 indicates low resilience. Connor and Davidson (2003) reported the reliability coefficient of this scale as .89. The Persian version of the scale was translated by Mohammadi et al. (2006) and validated in Iran, with a Cronbach's alpha reliability coefficient of .89. The reliability coefficient of the resilience questionnaire was obtained using Cronbach's alpha method in this study as .93.

Family Assessment Device (FAD): The FAD is a 60-item questionnaire that measures family functioning based on the McMaster model. This instrument was developed in 1983 by Epstein et al. The participants rate each statement on a 4-point Likert scale from 1 (strongly disagree) to 4 (strongly agree), according to how well it describes their family. The total score ranges from 60 to 240. This questionnaire has seven subscales: Problem Solving (e.g. We can find solutions to our problems), Communication (e.g. You can't tell how a person is feeling from what they are saying), Roles (e.g. When you ask someone to do something, you have to check that they did it), Affective

Responsiveness (e.g. We express our feelings to each other), Affective Involvement (e.g. We show interest in each other when we can get something out of it personally), Behavior Control (e.g. We have rules about hitting people), and General Functioning (e.g. We feel accepted for what we are). The original questionnaire was previously translated and adapted for Iranian university students. Zadeh Mohammadi and Malek Khosravi (2006) reported a Cronbach's alpha reliability coefficient of .94 for the Persian version of the FAD. In this study, the Cronbach's alpha reliability coefficient for the FAD was .95.

State-Trait Anxiety Inventory (STAI): This questionnaire was developed by Spielberger in 1970 and revised in 1983. The revised form of this instrument has 40 items and includes two scales: state anxiety, which refers to the current feeling of anxiety a person might be experiencing, and trait anxiety, which refers to a person's general propensity to experience anxiety across various situations (Aghili & Afzali, 2017). Sample items from the state anxiety scale include "I feel calm", "I feel nervous". Sample items from the trait anxiety scale include "An unimportant thought runs through my mind and bothers me", "I worry too much over something that really doesn't matter". Spielberger and Gorsuch (1983) reported test-retest reliability coefficients of .73 to .86 for the STAI for students with a 30- to 60-day interval, and Cronbach's alpha reliability coefficients of .92 for the state anxiety scale and .9 for the trait anxiety scale. The original questionnaire was previously translated and adapted for Iranian university students. Aghili et al. (2016) standardized the STAI for the Iranian population. They reported Cronbach's alpha reliability coefficients of .94 for the state anxiety scale, .96 for the trait anxiety scale, and .94 for the whole test. In this study, Cronbach's alpha reliability coefficients were .93 for the state anxiety scale and .94 for the trait anxiety scale.

Statistical Analysis

We excluded 3 participants from the data due to non-response before performing statistical analysis. Univariate outliers were identified and corrected with a box plot, while multivariate outliers were determined by Mahalanobis distance (scores of 7 respondents were corrected based on Mahalanobis distance results). Univariate normal distribution was checked with skewness and kurtosis statistics, and the acceptable range was -1 to +1 (Meyers et al., 2017). Because the univariate distribution of the dependent variables deviated from the normal distribution, we applied Spearman's correlation test to investigate the relationship. The normal distribution of the multivariate, the assumption of the path analysis test, was checked with Mardia's coefficient, and the obtained coefficient was equal to 27.04. According to criterion 5 for Mardia's coefficient (Byrne, 2016), it can be concluded that the multivariate normal distribution assumption was not found. Consequently, the path analysis model was tested using the partial least squares method ($p < .05$). The maximum alpha error level to test the hypotheses was determined as .05 ($p < .05$). We conducted data analysis using SPSS 27 and Smart PLS 3 statistical software.

Results

Descriptive statistics and correlation between variables

Table 1 shows descriptive statistics and Spearman's correlation test between variables. Spearman's correlation test showed that there was a significant relationship between all independent and mediating variables (CM, family function, resilience, state anxiety, and trait anxiety) with the dependent variables of CBB victimization and perpetration ($p < .05$). Resilience was negatively associated with family function, CBB victimization, and CBB perpetration, and there was a positive relationship between CM, state anxiety, and trait anxiety with CBB victimization and perpetration. The results indicated that the strongest relationship with CBB perpetration was related to family function with a coefficient of .16, and the strongest relationship with CBB victimization was related to state anxiety with a coefficient of .24. Also, the relationship between the CM variable and mediating variables (family functioning, resilience, state anxiety, and trait anxiety) was confirmed ($p < .05$).

Examining the correlation between independent and mediating variables (effective on CBB victimization and perpetration) revealed that the intensity of correlations was moderate and less than .70, which showed that there was no strong correlation between independent variables, and the assumption of no multicollinearity was confirmed. Moreover, the values of the variance inflation factor (VIF) for all the variables affecting CBB victimization and perpetration were less than 5, which showed that there was no strong collinearity between the independent variables.

Research model test

The conceptual model of the research was conducted using the path analysis technique by the method of partial least squares in SmartPLS software (due to the non-normality of

Tab. 1. Descriptive statistics and Spearman's correlations for study measures (n=403)

Variable	M	SD	1	2	3	4	5	6	7
1. CM	77.16	19.04	1	-.65**	-.25**	.42**	.43**	.13*	.20**
2. family function	161.76	23.75		1	.31**	-.50**	-.53**	-.16**	-.19**
3. resilience	90.80	15.77			1	-.53**	-.60**	-.11*	-.13**
4. State anxiety	53.26	15.99				1	.68**	.14**	.24**
5. trait anxiety	51.55	16.10					1	.14**	.19**
6. CBB perpetration	10.38	.93						1	.36**
7. CBB victimization	12.70	3.59							1

Note. M = mean; SD = standard deviation; CBB = Cyberbulling; CM = Chilhood maltreatment; *p < .05; ** p < .01

the multivariate distribution). Figure 1 is the experimental model; the intensity of the impact is determined by the values of the standard coefficient on the paths and the significance of the relationship with the asterisk on the standard coefficients. Note that the presented model is the final and modified model. To improve the fit of the model and more straightforward interpretation of the results, we removed non-significant relationships, and all remaining relationships in the model are significant ($p < .05$).

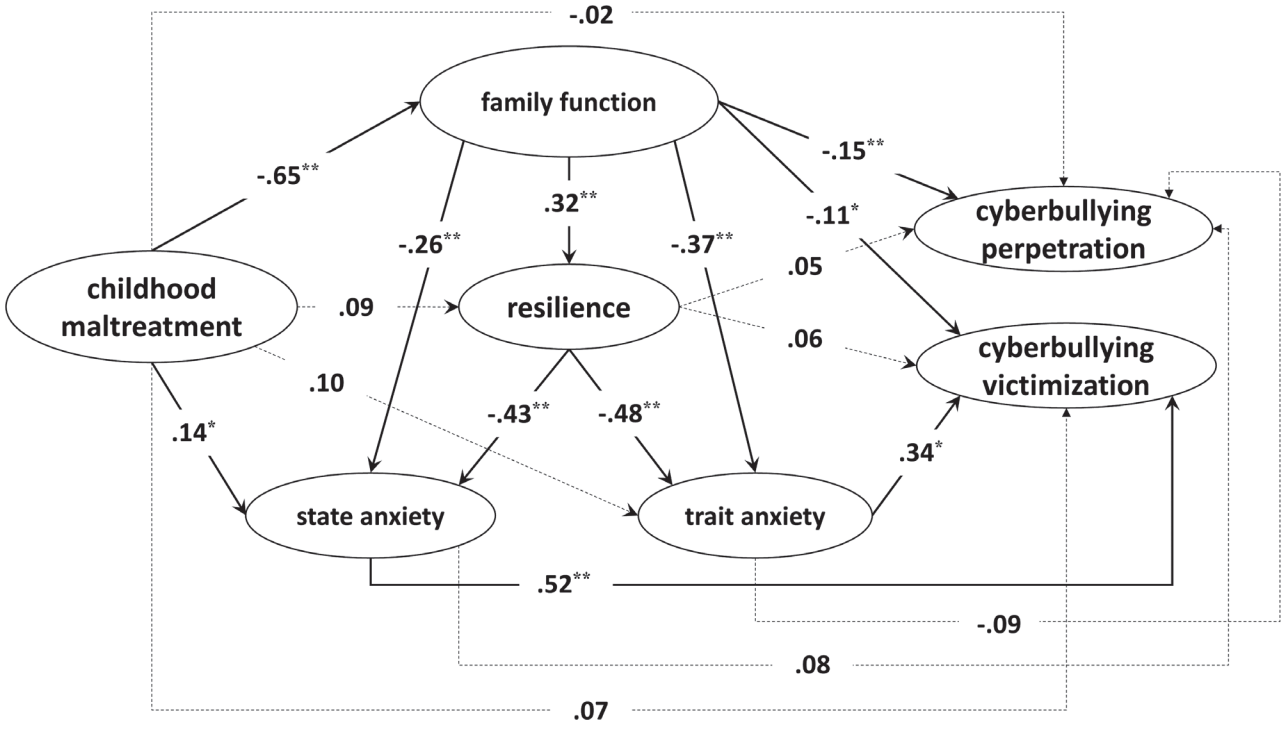
We checked the model's fit using the coefficient of determination index (R2) and goodness-of-fit (GOF). Chin (1998) describes the determination coefficient values of .67, .33, and .19 in the PLS path model as significant, moderate, and weak, respectively (Davari & Rezazadeh, 2013). If goodness-of-fit is greater than .36, the research model has a good fit (Tenenhaus et al., 2005). The findings showed that the coefficient of determination obtained for CBB perpetration was .023 and that for CBB victimization was .316, which

Tab. 2. The results of the test of structural relationships in the model (direct effects)

Path	Standardized coefficient	S.E.	T-Value	P-Value
CM → family function	-.65	.029	22.10	< .001
CM → resilience	.09	.070	1.29	.198
CM → state anxiety	.14	.058	2.37	.018
CM → trait anxiety	.10	.050	1.91	.056
CM → CBB perpetration	-.02	.066	.34	.732
CM → CBB victimization	.07	.062	1.06	.291
family function → resilience	.32	.049	6.38	< .001
family function → state anxiety	-.26	.058	4.49	< .001
family function → trait anxiety	-.37	.039	9.56	< .001
family function → CBB perpetration	-.15	.038	4.01	< .001
family function → CBB victimization	-.11	.052	2.07	.039
resilience → state anxiety	-.43	.039	10.9	< .001
resilience → trait anxiety	-.48	.038	12.72	< .001
resilience → CBB perpetration	.05	.092	.53	.595
resilience → CBB victimization	.06	.066	.88	.379
state anxiety → CBB perpetration	.08	.120	.69	.489
state anxiety → CBB victimization	.52	.123	4.22	< .001
trait anxiety → CBB perpetration	-.09	.128	.69	.492
trait anxiety → CBB victimization	.34	.135	2.52	.012

Note. S.E. = standard error; CBB = Cyberbulling; CM = Chilhood maltreatment

Fig. 1. Comprehensive experimental model depicting all tested paths. Note. Solid lines represent significant paths (marked with an asterisk for clarity; *p < .05, **p < .01), and dashed lines represent non-significant paths.



showed that the predictor variables of the model were able to explain a much larger part of the variance of CBB victimization compared to CBB perpetration. The GOF index that measures the overall fit of the model was found to be .29 for the research model, which is an average value. Overall, the results showed that the fit of the model is moderate. Table 2 indicates the results of the direct effects test of the model.

The results of the direct effect test showed that the CM variable was effective on the two mediating variables of family function and state anxiety ($p < .05$). Also, the family function was effective on five variables: resilience, state anxiety, trait anxiety, CBB perpetration, and CBB victimization ($p < .05$). The results confirmed the effect of resilience on state anxiety and trait anxiety. Besides this, the impact of state anxiety and trait anxiety on CBB victimization was confirmed ($p < .05$). The findings showed that three predictor variables of family function, state anxiety, and trait anxiety had a direct effect on CBB victimization, and only the variable of family function was effective on CBB perpetration. Table 3 shows the results of the mediation role test. The mediator role was analyzed using the bootstrapping method, and the resulting standard error was analyzed.

According to the results, all mediating and indirect effects were significant ($p < .05$). Based on this, it can be concluded that the mediating role of family function, trait anxiety, and state anxiety in the relationship between CM and CBB victimization was confirmed. Also, the mediating role of family function in the relationship between CM and CBB perpetration was confirmed. Finally, it can be concluded that while the independent variable of CM was not directly effective on the dependent variables of CBB victimization and perpetration, it was indirectly effective on CBB victimization and perpetration, through the mediating variables of family function and state-trait anxiety.

Discussion

Our study aimed to examine how CM affects CBB victimization/perpetration through the mediating role of family function, resilience, and anxiety. In line with previous studies, our study also confirmed a positive and significant relationship between CM and CBB victimization/perpetration, indicating that children who experience maltreatment are more likely to be involved in CBB as victims or perpetrators. It can be explained by social learning theory, which claims that individual behavior comes from actively observing and imitating others (Bandura, 2002). As a result of being exposed to maltreatment, children are more likely to learn abusive behavior, resulting in a greater likelihood of them engaging in aggression later on. While it's relatively straightforward to understand why maltreated children might engage in bullying behaviors, perhaps as a way to exert control or express their frustrations, it's less clear why these same children might also become victims of bullying. One possible explanation is that children who suffer from maltreatment may show signs of their trauma, such as low self-esteem, isolation, or other behavioral indicators, which bullies may notice and target (Brunstein Klomek et al., 2019). These children may also have difficulties in developing social skills or support networks to protect themselves from bullying or to use online platforms securely (Geng et al., 2022).

Our study also found that the relationship between CM and CBB victimization/perpetration among students was influenced by family function as a mediator. Our findings are consistent with many previous studies that reported a negative relationship between family function and CBB victimization/perpetration (Vismara et al., 2022) and between CM and family function (Fu et al., 2018).

Family is where people first observe and learn about interpersonal relationships. Through their family, children learn how to behave, what to expect, and how to apply interpersonal skills outside the home (Meunier et al., 2012). Damage to the family function affects the behavior of its members, so inappropriate patterns in the family and poor parent-child relationships have a destructive effect on their mental health. As a result, the children become more irritable and anxious in such an environment, and they display hostile and aggressive behavior (Ercan, 2017) and are prone to future difficulties, such as CBB perpetration (Li et al., 2022). On the other hand, individuals from dysfunctional families might not receive guidance on appropriate online behavior or might turn to the online world as an escape (Loladze, 2020), making them more vulnerable to CBB victimization.

Tab. 3. Results of mediation test by bootstrapping method

Indirect effects	b	S.E.	T-Value	P-Value	95% CI	
					Lower	Upper
CM → family function → resilience	-.21	.04	5.83	< .001	-.272	-.140
CM → family function → resilience → state anxiety	.09	.02	5.32	< .001	.058	.124
CM → family function → state anxiety	.17	.04	4.38	< .001	.098	.245
CM → family function → resilience → trait anxiety	.10	.02	5.62	< .001	.065	.133
CM → family function → trait anxiety	.24	.03	8.09	< .001	.175	.295
CM → state anxiety → CBB victimization	.07	.04	2.05	.041	.001	.131
CM → family function → resilience → state anxiety → CBB victimization	.05	.01	3.16	.002	.010	.104
CM → family function → state anxiety → CBB victimization	.09	.03	2.97	.003	.039	.151
CM → family function → resilience → trait anxiety → CBB Victimization	-.03	.01	2.27	.024	-.065	-.006
CM → family function → trait anxiety → CBB victimization	-.08	.03	2.41	.016	-.140	-.007
CM → family function → CBB victimization	.07	.03	2.06	.040	.001	.131
CM → family function → CBB perpetration	.10	.02	4.01	< .001	.042	.144

Note. S.E. = standard error; CI = confidence interval; CBB = Cyberbulling; CM = Childhood maltreatment

Another explanation is that, based on Bowen's (1978) family system theory, the behavior of everyone is influenced by the entire family system and its other members. As a result, a person's behavior problems are also the outcome of the interaction of elements in the family, which are strengthened by their persistence. These problems raise the likelihood of becoming CBB victimization/perpetration in the future and adulthood (Fu et al., 2018; Nocentini et al., 2019; Vismara et al., 2022). Moreover, according to Bandura's (2002) social learning theory, people's behavior can be changed through observational learning, imitation, and role modeling. Hence, although CM experiences can disrupt family function and thus increase CBB victimization/perpetration, good interpersonal skills caused by family may moderate the adverse effects of CM on CBB victimization/perpetration (Khair et al., 2022). A warm and intimate family in which a person is well-trained in problem-solving skills can prepare an individual to face the new and challenging situations of adulthood (Zhang et al., 2022).

Furthermore, our study revealed that family function is positively correlated with resilience and negatively correlated with both state and trait anxiety. This result is consistent with the findings of the previous studies by Oshri et al. (2018) and Raskauskas & Huynh (2015). Positive relationships within and outside the family are crucial for developing resilience, according to Garmezy et al. (1984). Resilient people communicate and solve problems effectively and receive support from external resources such as family environment (e.g., positive relationship with parents) and friends (Garmezy et al., 1984). On the other hand, in line with previous studies, we found that resilience was inversely related to trait/state anxiety. Therefore, resilience can enhance people's mental health after facing adverse childhood events (Hu et al., 2015).

Moreover, our study confirmed the sequential mediating role of family function, resilience, and trait/state anxiety in the relationship between CM and CBB victimization. This finding aligns with Zhang et al.'s (2022) study on traditional bullying victimization. To explain this result, we can refer to Erikson's theory (1963), which argued that childhood interpersonal experiences have a crucial role in personality development and growth in adulthood. Experiences such as receiving affection, attention, and intimacy from parents provide a platform for developing positive traits such as resilience (Bradley et al., 2013; Garmezy et al., 1984) and empower a person to regulate emotions such as anxiety (Black et al., 2011; Watkins et al., 2022).

Conclusions

Our study findings revealed that family function serves as a significant mediator in the link between CM and CBB victimization/perpetration and might act as a protective factor against CBB victimization/perpetration. In addition, the study provides evidence for the sequential mediation effects of family function, resilience, and anxiety in the relationship between CM and CBB victimization. Overall, this study showed that family function plays an essential role in the health of people's cyber lives. Therefore, to reduce CBB perpetration and protect people from it, it is crucial to pay more attention to the role of the family and its effectiveness in implementing prevention intervention programs. Moreover, education officials should prioritize the implementation of intervention programs that aim to reduce anxiety and promote resilience among individuals who have undergone CBB victimization.

Limitations and future research

The present study has some limitations that should be acknowledged. Firstly, the correlational nature of our study design precludes the establishment of causal relationships between the variables examined. Future research could employ experimental designs to ascertain causality more definitively. Secondly, the use of convenience sampling limits the generalizability of our findings. The sample's lack of diversity in age, educational level, and cultural background may not accurately reflect the broader population of Iranian students. Future studies could enhance representativeness by employing random sampling techniques. Thirdly, the extensive number of questionnaires administered may have led to participant fatigue, potentially resulting in less attentive responses to some questions. Future research could mitigate this by utilizing instruments with fewer items or incorporating breaks during the survey process. Lastly, while our model provided significant insights into CBB victimization, it was less predictive of CBB perpetration, as indicated by the low coefficient of determination (R^2 = .023) for this outcome. Although statistically significant, this suggests that additional factors not included in our model may play a role in CBB perpetration. Future research should explore these additional variables to develop a more robust predictive model for CBB perpetration. This limitation highlights an important avenue for future research and underscores the complexity of CBB behaviors.

Ethical approval
The study was approved by a local ethical committee in Iran (Shahid Beheshti University).

Data availability statement
The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

Funding/Financial Support
No funding was received.

Authors' contribution
The authors contributed equally to this manuscript.

Conflict of interest
The authors declared that there are no conflicts of interest.

References

Aghili, M. (2016). Preliminary review of validity, validity and softening of state-trait anxiety list (STAI-Y) [Master's thesis, Tarbiat Modares University].

Aghili, S. m., & Afzali, s. (2017). The Effect of Yoga Yoga Breathing Exercises on chronic Low Pain, Anxiety, Psychological and Physical Well-being of Women with MS. *Quarterly Journal of Health Psychology*, *5(20)*, 109-124. https://dorl.net/dor/20.1001.1.23221283.1395.5.20.7.0

Azadegan Mehr, M., Ebrahhimabad, M. J. A., & Moeenizadeh, M. (2021). The Effectiveness of Mindfulness-Based Stress Reduction on Anxiety, Cognitive Flexibility and Resilience of Divorced Mothers. *Quarterly Journal of Women and Society*, *12(45)*, 57-69. https://doi.org/10.30495/JZVJ.2021.4564

Bakhtiari, M. (2018). , Comparison of pathological personality traits based on the proposed pattern of DSM-5 personality disorders in bullies, victims and non-victims of cyber bullying, [Master's thesis, Semnan University]. https://ganj.irandoc.ac.ir/#/articles/bc6b64110ae721b7cf88072ef55275c4

Balakrishnan, V., & Norman, A.-A. (2020). Psychological motives of cyberbullying among Malaysian young adults. *Asia Pacific Journal of Social Work and Development*, *30*(3), 181-194. https://doi.org/10.1080/02185385.2020.1772101

Bandura, A. (2002). Social Cognitive Theory in Cultural Context. *Applied Psychology*, *51(2)*, 269-290. https://doi.org/10.1111/1464-0597.00092

Black, M. C., Basile, K. C., Breiding, M. J., Smith, S. G., Walters, M. L., Merrick, M. T., Chen, J., & Stevens, M. R. (2011). *National Intimate Partner and Sexual Violence Survey (NISVS): 2010 Summary Report.*

Bowen, M. (1978). *Family Therapy in Clinical Practice*.

Bradley, B., Davis, T. A., Wingo, A. P., Mercer, K. B., & Ressler, K. J. (2013). Family environment and adult resilience: contributions of positive parenting and the oxytocin receptor gene. *Eur J Psychotraumatol*, *4*, 21659. https://doi.org/10.3402/ejpt.v4i0.21659

Broll, R., Dunlop, C., & Crooks, C. V. (2018). Cyberbullying and Internalizing Difficulties among Indigenous Adolescents in Canada: Beyond the Effect of Traditional Bullying. *Journal of Child & Adolescent Trauma*, *11(1)*, 71–79. https://doi.org/10.1007/s40653-017-0163-y

Brunstein Klomek, A., Barzilay, S., Apter, A., Carli, V., Hoven, C. W., Sarchiapone, M., Hadlaczky, G., Balazs, J., Kereszteny, A., Brunner, R., Kaess, M., Bobes, J., Saiz, P. A., Cosman, D., Haring, C., Banzer, R., McMahon, E., Keeley, H., Kahn, J.-P., . . . Wasserman, D. (2019). Bi-directional longitudinal associations between different types of bullying victimization, suicide ideation/attempts, and depression among a large sample of European adolescents. *Journal of Child Psychology and Psychiatry*, *60(2)*, 209-215. https://doi.org/10.1111/jcpp.12951

Byrne, B. M. (2016). *Structural Equation Modeling With AMOS: Basic Concepts, Applications, and Programming, Third Edition (3rd ed.)*. Routledge. https://doi.org/10.4324/9781315757421

Chan, N. N., Ahrumugam, P., Scheithauer, H., Schultze-Krumbholz, A., & Ooi, P. B. (2020). A hermeneutic phenomenological study of students' and school counsellors' "lived experiences" of cyberbullying and bullying. *Computers & Education*, *146*, 103755. https://doi.org/10.1016/j.compedu.2019.103755

Chin, W. W. (1998). *The Partial Least Squares Approach to Structural Equation Modeling*. Lawrence Erlbaum Associates Publishers.

Chu, X.-W., Fan, C.-Y., Liu, Q.-Q., & Zhou, Z.-K. (2018). Cyberbullying victimization and symptoms of depression and anxiety among Chinese adolescents: Examining hopelessness as a mediator and self-compassion as a moderator. *Computers in Human Behavior*, *86*, 377-386. https://doi.org/10.1016/j.chb.2018.04.039

Collen, H. O., & Onan, N. (2021). Cyberbullying and Well-being Among University Students: The Role of Resilience. *International Journal of Caring Sciences*, *14(1)*, 632-641.

Connor, K. M., & Davidson, J. R. (2003). Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depress Anxiety*, *18*(2), 76-82. https://doi.org/10.1002/da.10113

Cui, Z., Oshri, A., Liu, S., Smith, E. P., & Kogan, S. M. (2020). Child Maltreatment and Resilience: The Promotive and Protective Role of Future Orientation. *J Youth Adolesc*, *49*(10), 2075-2089. https://doi.org/10.1007/s10964-020-01227-9

Davari, A., & Rezazadeh, A. (2013). *Structural equation modeling with PLS software* (Vol. 248). Tehran: Academic Jihad Publications.

Donat, M., Willisch, A., & Wolgast, A. (2023). Cyber-bullying among university students: Concurrent relations to belief in a just world and to empathy. *Current Psychology*, *42*(10), 7883-7896. https://doi.org/10.1007/s12144-022-03239-z

Ercan, H. (2017). The Relationship between Resilience and the Big Five Personality Traits in Emerging Adulthood. *Eurasian Journal of Educational Research*, *17 (70)*, 83-103. https://dergipark.org.tr/en/pub/ejer/issue/42480/511718

Erikson, E. H. (1963). *Childhood and society*.

Faucher, C., Jackson, M., & Cassidy, W. (2014). Cyberbullying among University Students: Gendered Experiences, Impacts, and Perspectives. *Education Research International*, *2014*. https://doi.org/10.1155/2014/698545

Fu, H., Feng, T., Qin, J., Wang, T., Wu, X., Cai, Y., Lan, L., & Yang, T. (2018). Reported prevalence of childhood maltreatment among Chinese college students: A systematic review and meta-analysis. *PLoS one*, *13*(10), e0205808. https://doi.org/10.1371/journal.pone.0205808

Garmezy, N., Masten, A. S., & Tellegen, A. (1984). The study of stress and competence in children: a building block for developmental psychopathology. *Child Dev*, *55*(1), 97-111. https://www.ncbi.nlm.nih.gov/pubmed/6705637

Geng, J., Bao, L., Wang, H., Wang, J., Wei, X., & Lei, L. (2022). The relationship between childhood maltreatment and adolescents' cyberbullying victimization: The new phenomenon of a "cycle of victimization". *Child Abuse & Neglect*, *134*, 105888. https://doi.org/https://doi.org/10.1016/j.chiabu.2022.105888

Hu, T., Zhang, D., & Wang, J. (2015). A meta-analysis of the trait resilience and mental health. *Personality and Individual Differences*, *76*, 18-27. https://doi.org/10.1016/j.paid.2014.11.039

Huesmann, L. R., & Kirwil, L. (2007). Why observing violence increases the risk of violent behavior in the observer. Cambridge University Press. https://psycnet.apa.org/doi/10.1017/CBO9780511816840.029

Khair, A. K., Li, W., Yeo, S. H., Tong, Y. S., Nazri, M., Rahman, B. A., & Motevalli, S. (2022). Importance of Emotional Competence in Preventing Cyberbullying: The Role of Family as Moderator. *International Journal of Academic Research in Business and Social Sciences*, *12(4)*, 262–278. https://doi.org/10.6007/IJARBSS/v12-i4/13062

Leung, A. N. M., Wong, N., & M.Farver, J. (2018). Cyberbullying in Hong Kong Chinese students: Life satisfaction, and the moderating role of friendship qualities on cyberbullying victimization and perpetration. *Personality and Individual Differences*, *133*, 7-12. https://doi.org/10.1016/j.paid.2017.07.016

Li, M., He, Q., Zhao, J., Xu, Z., & Yang, H. (2022). The effects of childhood maltreatment on cyberbullying in college students: The roles of cognitive processes. *Acta Psychologica*, *226*, 103588. https://doi.org/https://doi.org/10.1016/j.actpsy.2022.103588

Lizut, J. (2019). Cyberbullying victims, perpetrators, and bystanders. In *Cyberbullying and the critical importance of educational resources for prevention and intervention* (pp. 144-172). IGI Global. https://doi.org/10.4018/978-1-5225-8076-8.ch005

Lo, C. K. M., Ho, F. K., Emery, C., Chan, K. L., Wong, R. S., Tung, K. T. S., & Ip, P. (2021). Association of harsh parenting and maltreatment with internet addiction, and the mediating role of bullying and social support. *Child Abuse Negl*, *113*, 104928. https://doi.org/10.1016/j.chiabu.2021.104928

Loladze, T. (2020). Adolescents Problematic Internet Use: Family factors Systematic review. *Translational and Clinical Medicine-Georgian Medical Journal*, *5*(2), 33-51. https://www.tcm.tsu.ge/index.php/TCM-GMJ/article/view/158

Martínez-Monteagudo, M. C., Delgado, B., Díaz-Herrero, Á., & García-Fernández, J. M. (2020). Relationship between suicidal thinking, anxiety, depression and stress in university students who are victims of cyberbullying. *Psychiatry Research*, *286*, 112856. https://doi.org/10.1016/j.psychres.2020.112856

Meter, D. J., Budziszewski, R., Phillips, A., & Beckert , T. E. (2021). A Qualitative Exploration of College Students' Perceptions of Cyberbullying. *TechTrends*, *65 (4)*, 464-472. https://doi.org/10.1007/s11528-021-00605-9

Meunier, J. C., Roskam, I., Stievenart, M., De Moortele, G. V., Browne, D. T., & Wade, M. (2012). Parental differential treatment, child's externalizing behavior and sibling relationships: Bridging links with child's perception of favoritism and personality, and parents' self-efficacy. *Journal of Social and Personal Relationships*, *29(5)*, 612-638. https://doi.org/10.1177/0265407512443419

Meyers, L. S., Gamst, G. C., & Guarino, A. J. (2017). *Applied Multivariate Research: Design and Interpretation*. Sage publication.

Mohammadi, M., Jazairi, A., Rafiee, A., Jokar, B., & Pourshahbaz, A. (2006). Resilience factors in people at risk of substance abuse. *Journal of Psychology (Tabriz University)*, *1*(2-3), 203-224. https://www.sid.ir/en/Journal/ViewPaper.aspx?ID=75843

Mohammadi, M. R. (2003). Development, validation and reliability of child abuse self report scale [CASRS] in Iranian students. *Medical Journal of the Islamic Republic of Iran*, *17 (1)*, 51-58. http://mjiri.iums.ac.ir/article-1-723-en.html

Nocentini, A., Fiorentini, G., Di Paola, L., & Menesini, E. (2019). Parents, family characteristics and bullying behavior: A systematic review. *Aggression and Violent Behavior*, *45*, 41-50. https://doi.org/https://doi.org/10.1016/j.avb.2018.07.010

Oshri, A., Duprey, E. B., Kogan, S. M., Carlson, M. W., & Liu, S. (2018). Growth patterns of future orientation among maltreated youth: A prospective examination of the emergence of resilience. *Developmental Psychology*, *54(8)*, 1456-1471. https://doi.org/10.1037/dev0000528

Patchin, J. W., & Hinduja, S. (2016). *Bullying Today: Bullet Points and Best Practices*. Corwin Press. https://doi.org/10.4135/9781506335957

Raskauskas, J., & Huynh, A. (2015). The process of coping with cyberbullying: A systematic review. *Aggression and Violent Behavior*, *23*, 118-125. https://doi.org/10.1016/j.avb.2015.05.019

Santos, C. F. d., Queirós, C., & Marques, A. (2015). Cyberbullying, anxiety, depression and stress among adolescents. II Congresso Internacional da Saúde Gaia Porto: Livro de Resumos,

Skilbred-Fjeld, S., Reme, S. E., & Mossige, S. (2020). Cyberbullying involvement and mental health problems among late adolescents. *Cyberpsychology : Journal of Psychosocial Research on Cyberspace.*, *14*(1). https://doi.org/10.5817/CP2020-1-5

Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). Manual for the State-Trait Anxiety Inventory (Form Y1 - Y2). *Palo Alto, CA: Consulting Psychologists*.

Tenenhaus, M., Vinzi, V. E., Chatelin, Y.-M., & Lauro, C. (2005). PLS path modeling. *Computational Statistics & Data Analysis*, *48(1)*, 159-205. https://doi.org/10.1016/j.csda.2004.03.005

Vismara, M., Girone, N., Conti, D., Nicolini, G., & Dell'Osso, B. (2022). The current status of Cyberbullying research: a short review of the literature. *Current Opinion in Behavioral Sciences*, *46*, 101152. https://doi.org/10.1016/j.cobeha.2022.101152

Wang, X., Dong, W., & Qiao , J. (2021). How is childhood psychological maltreatment related to adolescents' cyberbullying perpetration? the roles of moral disengagement and empathy. *Current Psychology*, 1-11. https://doi.org/10.1007/s12144-021-02495-9

Watkins, N. K., Salafia, C., & Ohannessian, C. M. (2022). Family Functioning and Anxiety Symptoms in Adolescents: The Moderating Role of Mindfulness. *Journal of Child and Family Studies*, *31*(5), 1474-1488. https://doi.org/10.1007/s10826-021-02219-4

Xie, P., Wu, K., Zheng, Y., Guo, Y., Yang, Y., He, J., Ding, Y., & Peng, H. (2018). Prevalence of childhood trauma and correlations between childhood trauma, suicidal ideation, and social support in patients with depression, bipolar disorder, and schizophrenia in southern China. *Journal of Affective Disorders*, *228*, 41-48. https://doi.org/10.1016/j.jad.2017.11.011

Yokotani, K., & Takano, M. (2021). Social contagion of cyberbullying via online perpetrator and victim networks. *Computers in Human Behavior*, *119*, 106719. https://doi.org/10.1016/j.chb.2021.106719

Zadehmohammadi, A., & Malek Khosravi, G. (2006). Preliminary study of psychometric properties of family assessment device (FAD). *Journal of Family Study*, *5*, 69-89.

Zhang, H., Han, T., Ma, S., Qu, G., Zhao, T., Ding, X., Sun, L., Qin, Q., Chen, M., & Sun, Y. (2022). Association of child maltreatment and bullying victimization among Chinese adolescents: The mediating role of family function, resilience, and anxiety. Journal of Affective Disorders, 299, 12-21. https://doi.org/10.1016/j.jad.2021.11.053