

# The Association between Childhood Maltreatment and Cyber Dating Abuse Perpetration among Chinese adolescents: The Role of Relative Deprivation and Future Time Perspective

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**Abstract:** This study examines how childhood maltreatment relates to cyber dating abuse perpetration among Chinese high school students, with particular attention to the mediating role of relative deprivation and the moderating role of future time perspective. Survey data were collected from 566 students ( $M_{age} = 17.01$ ,  $SD = 1.52$ ; 252 male). Path analysis was conducted to test the proposed model. Findings indicate that experiences of childhood maltreatment are positively associated with later perpetration of cyber dating abuse. Relative deprivation emerged as a mediator in this relationship. Moreover, the influence of childhood maltreatment on cyber dating abuse—both its direct effect and its indirect effect through relative deprivation—varied depending on students' future time perspective. These effects were stronger for those with a lower sense of future orientation compared with their peers who reported a higher future orientation. Taken together, the study sheds light on how early adverse experiences shape online relationship behaviors in adolescence, and highlights the importance of psychological factors such as relative deprivation and future time perspective in explaining these patterns.

**Keywords:** Childhood Maltreatment; Cyber Dating Abuse Perpetration; Relative Deprivation; Future Time Perspective.

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## 1. Introduction

Cyber dating abuse refers to harmful behaviors directed toward a current or former romantic partner through online or digital means, such as email, WeChat, text messages, or phone calls [1]. Scholars increasingly view it as a new form of interpersonal violence within intimate relationships [2]. The consequences for victims can be severe, ranging from emotional problems such as low self-esteem, anxiety, and depression, to externalized behaviors like substance misuse or alcohol dependence. In some cases, it has even been linked to suicidal ideation and attempts [3][4][5][6]. These risks highlight the urgency of examining the factors that give rise to such behavior.

One potential risk is childhood maltreatment, which disrupts the development of secure attachments and undermines the creation of healthy “relationship representations” [7] [8] [9][7]. When such negative representations carry over into later romantic ties, they may manifest as distrust, poor communication, or even violence [10]. A handful of recent studies have begun to investigate how childhood maltreatment connects to cyber dating abuse perpetration [11][12]. While these studies contribute important insights, several gaps remain.

First, relatively little empirical research has centered on adolescents. This is notable given that adolescence is the developmental stage when people typically enter their first romantic relationships[13]. Compared with adults, adolescents often bring less experience to dating, and their expectations about romance can be distorted or overly idealized, which sometimes fosters unhealthy attitudes and abusive behaviors [14][15]. The ubiquity of smartphones and digital communication further increases the likelihood that patterns of abuse may extend into virtual settings during this

period [16]. In Western contexts, surveys suggest that between 10% and 44% of adolescents report engaging in cyber dating abuse [17][18][19]. These figures point to the need for targeted interventions among younger populations.

Second, there is little evidence from adolescents in non-Western cultural settings, particularly China. A recent meta-analysis of 29 studies on adolescent cyber dating abuse found no research focusing on Chinese youth [16]. Yet earlier studies of traditional, offline dating violence in China reported prevalence rates of 27.3% among adolescents [20]. Considering the rapid diffusion of digital technologies in Chinese society, the likelihood that cyber dating abuse is becoming more common in this context seems high. Understanding how these dynamics play out among Chinese adolescents is therefore a pressing research concern.

Moreover, within the cultural context of China, the notion of “beating is caring, and scolding is loving” is ingrained in caregivers, contributing to the not uncommon occurrence of childhood maltreatment in China [21][22]. The theory of inter-generational transmission of violence posits that exposure to abuse or violence during childhood can predict violent behavior in adolescence and young adulthood [23]. Therefore, it is essential to explore the relationship between childhood maltreatment and cyber dating abuse perpetration among Chinese adolescents.

Thirdly, there is insufficient in-depth exploration of the mechanisms underlying the interaction between childhood maltreatment and cyber dating abuse perpetration. The understanding of the internal mechanisms linking childhood maltreatment and cyber dating abuse perpetration is still in its infancy, the extension of general strain theory can provide a certain theoretical basis for the internal mechanism between the two [24]. The extension of general strain theory describes the impact of stressors (e.g., childhood maltreatment) on deviant behaviors (e.g., cyber dating abuse perpetration

perpetration), emphasizing the mechanisms and boundary effects between them. The theory suggests that negative cognitive evaluations of stressful events and adverse emotions (e.g., relative deprivation) are core factors in the formation of deviant behavior, but this process is moderated by individual resource qualities (e.g., future time perspective) due to varying susceptibility to stress among individuals with different future time perspectives. Based on the above research deficiencies, this study focuses on Chinese adolescents and aims to explore, from the perspective of the extension of general strain theory, how and when childhood maltreatment influences cyber dating abuse perpetration. Specifically, the study investigates the mediating role of relative deprivation and the moderating effect of future time perspective, thus deepening our understanding of the relationship between childhood maltreatment and cyber dating abuse perpetration.

### **1.1. Relationship between Childhood Maltreatment and Cyber Dating Abuse Perpetration**

Childhood maltreatment broadly encompasses abuse, neglect, and the failure of caregivers to safeguard a child's physical or emotional well-being, often leading to harm or even life-threatening consequences [25]. A growing body of research suggests that such early experiences are strongly linked to later forms of violence in adolescence, including general aggression, bullying among peers, and intimate partner violence [26][27].

More recently, studies have extended these findings to digital contexts. Evidence shows that adolescents with histories of maltreatment are more likely to engage in violent or abusive behaviors toward peers and partners online [11][12][28]. These experiences often leave lasting psychological traces: they can foster maladaptive thought patterns, fuel hostile attribution biases, and heighten anxiety [11][29][30]. Each of these factors has been identified as a predictor of cyber dating abuse perpetration [2][31][32].

Drawing on these theoretical perspectives and empirical findings, the present study proposes the following hypothesis.

H1: Childhood maltreatment positively correlated with cyber dating abuse perpetration among high school students in China.

### **1.2. Relative Deprivation as the Mediator**

Relative deprivation refers to an individual's perception of being in a disadvantaged position compared to universally accepted standards, accompanied by emotions of anger and resentment [33]. According to the extension of general strain theory [24], the negative emotional and cognitive processing patterns arising from childhood maltreatment can offer an explanation for violent behaviors, such as cyber dating abuse. Specifically, relative deprivation is considered a cognitive and emotional assessment triggered by an individual's perception of being in a disadvantaged position [22]. Consequently, childhood maltreatment may instigate an upward social comparison tendency in individuals, leading them to believe they are in a disadvantageous position compared to others, resulting in experiences of anger, hostility, jealousy, and other adverse emotions [34], which generated a sense of relative deprivation, hindering adaptive development [35]. Therefore, relative deprivation may mediate the relationship between childhood maltreatment and cyber dating abuse perpetration.

Prior research has confirmed that individuals who have

experienced emotional abuse and neglect during childhood, where their emotional needs went unmet during expected responsiveness and interaction, may develop unmet emotional needs [36]. These individuals are more likely to harbor feelings of envy or strong feelings of inferiority when comparing themselves to others [34][37], perceiving more negative experiences, and being more prone to developing a sense of relative deprivation [19]. Researchers observed that children raised in single-parent households are more likely to suffer emotional neglect than those in two-parent families, a pattern that often fosters a stronger sense of relative deprivation[39]. Other research points in a similar direction: harsh parenting practices—ranging from physical or verbal aggression to psychological control—can leave children feeling inferior and timid, which in turn heightens their perceptions of deprivation [40]. Taken together, these findings suggest that adolescents with histories of maltreatment may be especially prone to experiencing relative deprivation.

Although no studies to date have directly examined whether relative deprivation contributes to cyber dating abuse perpetration, there is indirect evidence worth considering. A substantial body of work has linked relative deprivation to different forms of violent behavior [38][41][42]. In studies of traditional dating violence, adolescents who view themselves as disadvantaged compared to peers are more likely to report feelings of deprivation, and those perceptions are associated with greater involvement in dating violence [43][44]. Experimental research adds weight to this line of reasoning: Greitemeyer and Sagioglou demonstrated that participants induced to feel relatively deprived expressed stronger aggressive emotions and engaged in more aggressive behaviors than either relatively gratified or control groups[41]. Similarly, Li et al. found that relative deprivation partially mediated the link between childhood maltreatment and cyberbullying perpetration[46]. Building on these strands of evidence, we put forward the following hypothesis.

H2: Relative deprivation would mediate the relationship between childhood maltreatment and cyber dating abuse perpetration. That is to say, people with high childhood maltreatment may have high relative deprivation, and they are more likely to perpetrate cyber dating abuse.

### **1.3. Future Time Perspective as the Moderator**

Future time perspective is a cognitive-motivational construct referring to an individual's mental representation of the future, characterized by a goal-oriented attitude towards life and a willingness to sacrifice immediate benefits for future rewards [47].

High levels of future time perspective are often linked to stronger motivation toward long-term goals, greater self-control in avoiding behaviors that threaten future success, and better coping strategies when facing life's adversities [48]. Within the framework of general strain theory, extensions of the model suggest that certain individual resources—such as optimism, resilience, or a positive orientation toward the future—can act as protective factors. These qualities may help lessen the harmful effects of stressors and, in turn, reduce the risk of negative psychological or behavioral outcomes [24]. From this perspective, future time perspective could play a buffering role, softening both the direct and indirect effects of childhood maltreatment on cyber dating abuse perpetration.

One possibility is that a strong sense of future time

perspective diminishes the link between childhood maltreatment and cyber dating abuse. Studies have shown that adolescents who look ahead to the future are less likely to engage in problematic behaviors, including substance use and aggression [49][50][51]. In online settings, research also indicates that future-oriented adolescents are less prone to cyberbullying [52]. What stands out is that even when young people grow up in adverse environments, those who maintain a positive outlook on their future demonstrate lower tendencies toward violent behavior [48].

Another possibility is that future time perspective helps to reduce the sense of relative deprivation associated with childhood maltreatment, thereby weakening its impact on abusive behavior. Lu et al. found that individuals with a positive and open attitude towards the future, when facing adverse situations, effectively regulate their current behavior by recognizing the efficacy of current actions and valuing future outcomes[53]. They purposefully formulate long-term plans to compensate for the threats posed by adverse experiences, rather than repeatedly placing themselves in negative reference information, contemplating past adverse stimuli, and generating more negative self-cognition. Therefore, compared to individuals with higher levels of future time perspective, those with lower levels, after experiencing childhood maltreatment, tend to develop more negative self-cognition (such as feelings of inferiority), perceive themselves as less competent than others, and repeatedly dwell on adverse experiences, which may transform suppressed emotions into feelings of anger [54], leading to a sense of relative deprivation. The experience of childhood maltreatment itself has already instilled a strong sense of injustice in adolescents. If coupled with a lack of clear and defined plans for their future and a lack of motivation to achieve self-worth, it accelerates the rise of relative deprivation.

Lastly, future time perspective may also mitigate the relationship between relative deprivation and cyber dating abuse perpetration. Adolescents with high future time perspective levels, in comparison to those with low levels, tend to set future goals to regulate current behavior for obtaining more valuable future outcomes [48]. Consequently, they are more likely to restrain negative emotional experiences arising from perceived disadvantage, resulting in fewer emotional disturbances during dating and, thus, less engagement in abusive behaviors. Empirical studies indicate that future time perspective is positively predictive of self-control and positive coping strategies [55]. Therefore, this study anticipates that individuals with high future time perspective exhibit better self-control and adopt rational approaches to cope with adverse emotions, leading to a lower incidence of cyber dating abuse. Based on these earlier findings, we made the following hypothesis:

H3: Future time perspective would moderate the direct and indirect link between childhood maltreatment and cyber dating abuse perpetration. Specifically, future time perspective would weaken the direct relationship between childhood maltreatment and cyber dating abuse perpetration and the indirect association of childhood maltreatment and cyber dating abuse perpetration via relative deprivation.

## 1.4. The Current Study

It is imperative to investigate the association between childhood maltreatment and cyber dating abuse perpetration, especially among Chinese adolescents, further explore the

potential influence factors driving this relationship. Grounded on extension of general strain theory and previous empirical studies, a more detailed model of the hypothesized mediating role of relative deprivation and the moderating effect of future time perspective in the relationship between childhood maltreatment and cyber dating abuse perpetration was built.

## 2. Method

### 2.1. Participants and Procedure

This study gathered convenience samples from four general and vocational high schools in northern China. The study included only participants who had current or past experience in romantic relationships; (2) the participants who partially left the questionnaire unanswered (>30%). A total of 823 high school students were guided to participate in this study. After these exclusions, a total of 566 valid questionnaires were obtained. The final sample consisted of 295 general high school students and 271 vocational high school students, with 314 girls and 252 boys. Additionally, 244 participants were from urban areas, and 322 were from rural areas. The average age of the participants was 17.01 years old ( $SD = 1.52$ ), with an average daily internet usage duration of  $2.77 \pm 2.04$  hours over the past month.

Postgraduate students in psychology served as the primary investigators. Data collection took place during scheduled self-study sessions, when participants were invited—under the guidance of both their teachers and the research team—to complete the questionnaire. On average, the survey took around 15 minutes to finish. Prior to participation, written informed consent was obtained not only from the students themselves but also from their caregivers and teachers. All participants were assured that their responses would remain confidential. The study protocol received approval from the research ethics committee of the investigators' institution.

### 2.2. Measures

#### 2.2.1. Childhood Maltreatment

Childhood maltreatment was assessed using the 28-item Childhood Maltreatment Scale (CMS) developed by Zhao and colleagues [56]. This instrument has been widely applied with Chinese adolescent samples and has shown solid reliability and validity. There are five subscales in the CMS: emotional abuse, physical abuse, emotional neglect, physical neglect, and sexual abuse. One sample item is "Someone at home beat me and my face was bruised". The item is scored from 1 (never) to 5 (always), with higher scores indicating higher levels of childhood maltreatment experiences. The Cronbach's coefficient  $\alpha$  for the total scale in this study was 0.91.

#### 2.2.2. Relative Deprivation

Relative deprivation was assessed using the four-item Relative Deprivation Scale (RDS) developed by Ma [33]. This scale has previously shown solid reliability and validity in studies with Chinese adolescent populations. One sample item is "I always feel that others have things that rightfully belong to me". The item is scored from 1 (completely disagree) to 6 (completely agree). A higher average score across all items indicates a stronger sense of relative deprivation in adolescents. The Cronbach's coefficient  $\alpha$  for the total scale in this study was 0.72.

#### 2.2.3. Future Time Perspective

Time perspective was evaluated using the Zimbardo Time Perspective Inventory developed by Zimbardo and Boyd[47].

The Chinese version of the scale was developed and validated by Lv and Huang [57]. According to the purpose of our study, we selected the subscale of future perspective in this scale. The future time perspective subscale contains 13 items. One sample item is “I make a list of things to do”. The item is scored from 1 (completely inconsistent) to 5 (completely consistent). A higher average score across all items indicates a higher level of future time perspective in adolescents. The Cronbach's coefficient  $\alpha$  for the total scale in this study was 0.74.

#### 2.2.4. Cyber Dating Abuse Perpetration

The perpetration dimension of the Cyber Dating Abuse Scale, developed by Borrajo et al. [1], includes 11 items measuring direct attack behaviors (e.g., “I have written insulting comments about the other person online”) and 9 items measuring monitoring behaviors (e.g., “I have controlled the other person's online social relationships”). The term “other person” includes both current and former boyfriends/girlfriends. The item is scored from 1 (never) to 6 (often, more than 20 times). A higher average score across all items indicates a greater frequency of cyber dating abuse perpetration. The Cronbach's coefficient  $\alpha$  for the total scale in this study was 0.82.

### 2.3. Data Analyses

Prior to conducting the analysis, the data underwent meticulous organization, coding, and entry into the SPSS 25.0 software. First, we conducted preliminary analysis. Basic data analysis mainly covers common methods bias, descriptive statistics (mean, standard deviation) and frequency analysis. Second, we used Amos 25.0 software to test the mediating role of relative deprivation and the moderating effect of future time perspective in the link between childhood maltreatment and cyber dating abuse perpetration among adolescents. Moreover, the bootstrap approach with 2,000 resamples to estimate the 95% confidence interval (CI) was conducted for interpreting the significance of the mediating and moderating effects. We assessed the model's fit indices to evaluate how well it accounted for the data and to determine whether the proposed model could be considered an acceptable representation. The values of indices of fit includes  $\chi^2/df$  ratio, the Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), and Normed Fit Index (NFI).

#### 2.4. Common Method Deviation

To minimize the risk of common method bias inherent in self-report data, both procedural and statistical controls were applied. On the procedural side, the survey was conducted anonymously, and several items were reverse scored to help reduce response bias. Statistically, we tested for common method variance. Results from Harman's single-factor test showed that the first factor accounted for 16.66% of the variance—well below the conventional threshold of 40%. This suggests that common method bias was not a serious concern in the present study.

## 3. Results

### 3.1. Descriptive Statistics and Correlation Analysis

To determine the prevalence of cyber dating abuse perpetration, we used an average score above 1 as the threshold, indicating that an individual had engaged in such

behavior at least once. Based on this criterion, 39.22% of adolescents reported have experienced this perpetration. The breakdown shows higher rates among vocational school students (43.81%) than among general high school students (35.88%). Gender differences were also present, with female students (40.66%) reporting slightly higher involvement than male students (34.39%). A modest urban–rural gap was observed, with 39.84% of urban students and 41.68% of rural students meeting the threshold.

Table 1 summarizes the correlation results. Childhood maltreatment was positively associated with both relative deprivation and cyber dating abuse perpetration, while negatively associated with future time perspective. Relative deprivation, in turn, correlated positively with cyber dating abuse and negatively with future time perspective. Finally, future time perspective was negatively correlated with cyber dating abuse perpetration.

**Table 1.** Means, Standard Deviations, and Correlation between the Main Variables

	1	2	3	4
1 Childhood maltreatment	1			
2 Relative deprivation	0.25***	1		
3 Future time perspective	-0.12**	-0.18**	1	
4 Cyber dating abuse perpetrations	0.27***	0.37***	-0.13**	1
M	2.62	2.80	3.22	1.91
SD	0.93	0.87	0.59	1.14

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

### 3.2. Moderated Mediation Model

We employed AMOS 23.0 with standardized variables to test a moderated mediation model. Specifically, we assessed the mediating role of relative deprivation in the link between childhood maltreatment and cyber dating abuse, as well as the moderating role of future time perspective. The model fit the data well, with indices as follows:  $\chi^2/df = 2.48$ , RMSEA = 0.076, GFI = 0.95, AGFI = 0.98, NFI = 0.97 (see Figure 1).

After controlling for school type, gender, hometown, and average daily online time, childhood maltreatment significantly predicted both relative deprivation and cyber dating abuse. Relative deprivation also significantly predicted cyber dating abuse. Mediation analysis confirmed that relative deprivation partially explained the effect of childhood maltreatment on cyber dating abuse, with a 95% CI [0.04, 0.10], accounting for 26.92% of the total effect.

The moderation test further revealed that the interaction between childhood maltreatment and future time perspective significantly predicted both relative deprivation and cyber dating abuse perpetration. In contrast, the interaction between relative deprivation and future time perspective did not reach significance. To interpret these patterns, we conducted simple slope analyses (see Figures 2 and 3). When students had higher levels of future time perspective, the effect of childhood maltreatment on relative deprivation was relatively weak ( $\beta = 0.12$ ,  $t = 2.06$ ,  $p = 0.04$ ). At lower levels of future time perspective, however, the same effect was considerably stronger ( $\beta = 0.30$ ,  $t = 5.90$ ,  $p < 0.001$ ). A similar pattern emerged for cyber dating abuse: the relationship with childhood maltreatment was not significant under high future time perspective ( $\beta = 0.08$ ,  $t = 1.52$ ,  $p > 0.05$ ), but became strong and significant when future time perspective was low ( $\beta = 0.27$ ,  $t = 5.13$ ,  $p < 0.001$ ). These findings suggest that the detrimental effects of childhood maltreatment are magnified when adolescents lack a strong sense of their future.

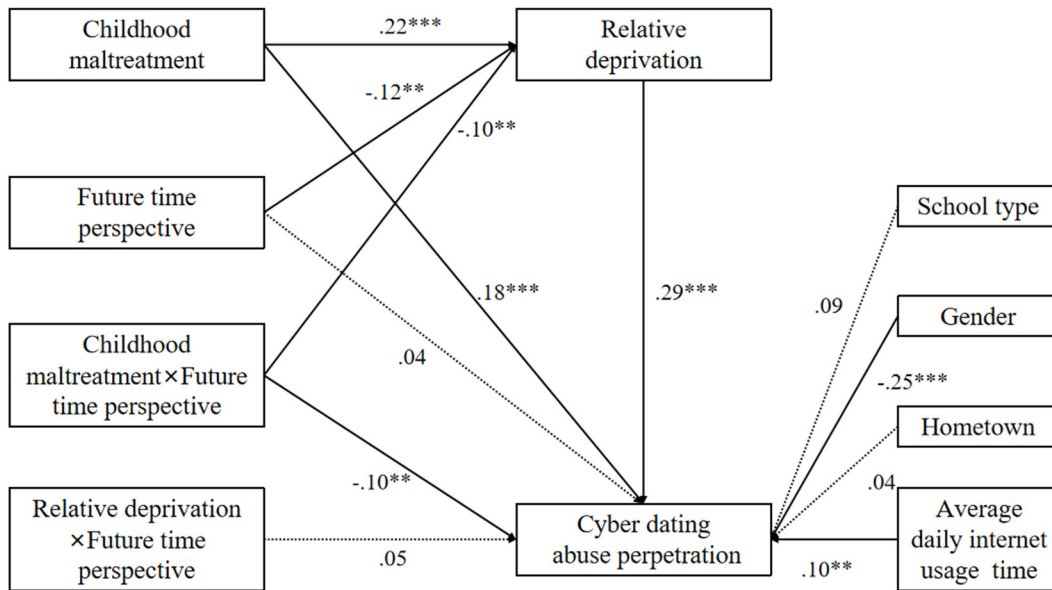


Figure 1. The proposed model

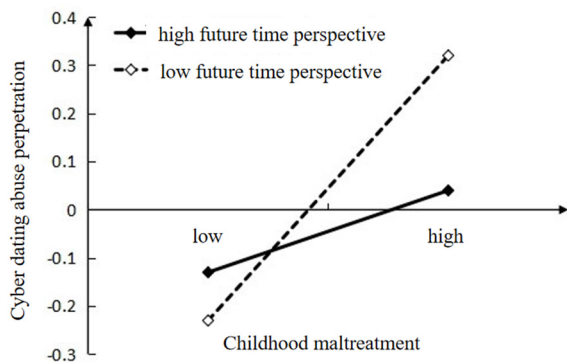


Figure 2. The moderating role of future time perspective in the relationship between childhood maltreatment and cyber dating abuse perpetration

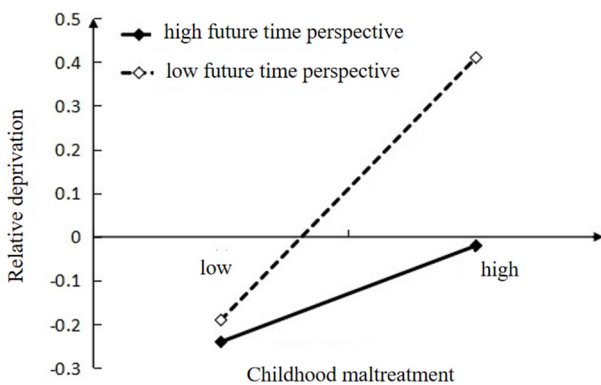


Figure 3. The moderating role of future time perspective in the relationship between childhood maltreatment and relative deprivation

## 4. Discussion

This is the first study in the field to report on the association between childhood maltreatment and cyber dating abuse perpetration among high school students in China. Our findings indicate that nearly 39.22% of high school

students—including both general and vocational tracks—reported having engaged in cyber dating abuse at least once. This rate is striking, as it not only surpasses the prevalence of traditional dating violence among Chinese adolescents documented by Shen et al. [20], but also exceeds the levels of cyber dating abuse reported in Western contexts [17][19]. Several factors may help account for this pattern. The near-universal access to electronic devices among high school students provides greater opportunities for both overt aggression and controlling behaviors toward romantic partners. The study's focus on high school rather than middle school students may also have played a role, since older adolescents generally have more dating experience, which in turn raises the likelihood of conflict and abusive behaviors. In addition, prior research has pointed to school type as an important factor, with vocational school students consistently reporting higher rates of dating violence compared to their peers in general high schools [58]. Therefore, the inclusion of vocational school students may also help explain the higher overall prevalence of cyber dating abuse perpetration observed in this study. In addition, many adolescents still hold relatively immature views of romance, and some may even misinterpret aggressive or controlling acts as signs of “jealousy” or proof of love [17]. Another notable finding was the gender gap: male students reported significantly higher rates of cyber dating abuse than females. This pattern may be rooted in cultural expectations within China that stress male authority, which can surface as more aggressive or controlling online behaviors toward female partners.

We also found that greater exposure to childhood maltreatment was linked to higher levels of cyber dating abuse among high school students. This result supported Hypothesis 1 and echoed findings reported in adult populations [11][12]. Yet, the specific processes through which early maltreatment leads to abusive behavior in adolescents remain insufficiently understood. Drawing on the extended general strain theory, we tested a moderated mediation model. The analysis showed that childhood maltreatment not only directly increased the likelihood of cyber dating abuse but also intensified feelings of relative deprivation, which in turn predicted abusive behavior.

Notably, these associations were weaker—and in some cases disappeared—among students with higher levels of future time perspective.

#### **4.1. Relative Deprivation as a Mediator**

Consistent with Hypothesis 2, our results suggest that childhood maltreatment fosters feelings of relative deprivation, which subsequently encourage adolescents to engage in cyber dating abuse. This finding aligns with extended general strain theory [24] and supports earlier work [11]. Using adult samples, Celsi and colleagues showed that maladaptive schemas tied to separation and rejection—such as emotional deprivation and abandonment—mediated the relationship between childhood maltreatment and online dating violence. Extending these insights to adolescents, the present study reveals that childhood maltreatment shapes cyber dating abuse perpetration indirectly by fueling feelings of relative deprivation.

One possible explanation is that early maltreatment undermines the fulfillment of basic psychological needs during adolescence [59]. When such needs go unmet, young people may develop a sense of being unfairly deprived compared to peers, which in turn increases the likelihood of maladaptive and harmful behaviors in relationships. This obstruction potentially makes them more susceptible to jealousy [37], perceiving themselves at a disadvantage after comparing with peers, leading to heightened feelings of relative deprivation. Consequently, individuals may develop feelings of low self-esteem, hostility, and resentment [60]. In some cases, these emotions can find expression through violent behavior, including cyber dating abuse, as a way of releasing accumulated negative pressures. From the perspective of relative deprivation, this study elucidates how adverse life experiences in real-world contexts, specifically childhood maltreatment, trigger cyber dating abuse perpetration among high school students. Specifically, the generation of relative deprivation emphasizes the subjective social comparison processes based on objective situations and is often accompanied by emotions such as resentment and anger [19][41]. This emotional state makes adolescents more prone to perpetrating violence online against others or their partners to vent the dissatisfaction and anger stemming from the perceived relative deprivation. The findings enriched existing research by highlighting the mediating role of relative deprivation. This suggests that feelings of being deprived may help explain why adverse life experiences can give rise to aggressive behaviors.

#### **4.2. Future Time Perspective as a Moderator**

This study also found that future time perspective can buffer the impact of childhood maltreatment on relative deprivation and cyber dating abuse perpetration, partially supporting H3. This finding is consistent with earlier work showing that a strong future time perspective can buffer the impact of stressful life events and reduce the likelihood of negative outcomes [61][62][64]. Adolescents gradually develop a tendency to think about, explore, and plan for the future during their growth process (i.e., an increasing level of future time perspective) [63]. This tendency helps them focus on positive behaviors they can take in the present to achieve future goals, exhibiting more positive emotions, a more optimistic life attitude, and adopting more appropriate ways to cope with adverse life experiences [65][66]. These factors contribute to promoting high school students' dialectical

thinking, facilitating the rational resolution of interpersonal conflicts, and forming mutually supportive interpersonal relationships. As a result, adolescents with a stronger sense of future orientation are often better able to cope with the adverse effects of childhood maltreatment. This resilience appears to lessen their feelings of relative deprivation and, in turn, reduce the likelihood of engaging in cyber dating abuse.

Yet our findings also show an important limitation: the moderating role of future time perspective in the specific link between relative deprivation and cyber dating abuse perpetration did not reach significance. This result did not negate the protective role of future time perspective but suggested that its protective effect may be limited. At high levels of relative deprivation, regardless of the level of future time perspective, there was no significant difference in the degree of cyber dating abuse perpetration. This implied that the protective effect of future time perspective is not constant, and higher levels of risk may increase individual vulnerability, rendering the protective effects of personal resources ineffective [66]. Therefore, it is essential not to overemphasize the role of future time perspective and to thoroughly explore the interaction between risk and protective factors to better address the issue of cyber dating abuse perpetration.

#### **4.3. Contributions**

The study adds theoretical support for the view that relative deprivation functions as a key mechanism linking experiences of childhood maltreatment to later cyber dating abuse. This suggests that while situational factors are important risk factors, individual maladaptive cognitive and emotional factors also play a significant role in influencing cyber dating abuse perpetration. Therefore, future research needs to pay attention to the investigation of individual risk factors, contributing to a comprehensive understanding of the causes of cyber dating abuse perpetration. On the other hand, this study found that high future time perspective can help high school students mitigate the adverse effects of childhood maltreatment, reducing the emergence of relative deprivation and cyber dating abuse perpetration. This insight highlighted the importance of considering the potential protective role of intrinsic resources when exploring risk factors for cyber dating abuse perpetration. Future research should explore the potential moderating effects of other trait variables.

In practical terms, this study identified childhood maltreatment as a significant risk factor for predicting relative deprivation and cyber dating abuse perpetration among high school students. Therefore, encouraging parents to provide more support, encouragement, and care for their children while minimizing abusive and neglectful behaviors is essential. Additionally, interventions targeting childhood maltreatment, coupled with efforts to reduce relative deprivation and enhance future time perspective among high school students, may potentially reduce the risk and negative consequences associated with cyber dating abuse perpetration. Mindfulness training programs have been proven effective in this regard [67][68]. Thus, schools may consider incorporating mindfulness training courses to assist students who have experienced childhood maltreatment in reducing or preventing the occurrence of cyber dating abuse.

#### **4.4. Limitations and Future Directions**

Firstly, this study employed self-reporting, but given that cyber dating abuse involves sensitive topics, there is a

potential for decreased participant disclosure rates to some extent. Future studies would benefit from drawing on a wider range of data sources in order to capture adolescent experiences of cyber dating violence in a more nuanced way. Laforte et al., based on a sample of 126 adolescent couples, utilized an actor-partner interdependence model (APIM) to investigate the associations between cyber dating violence victimization and perpetration (direct aggression and control) and attachment anxiety and avoidance[69]. The APIM, a widely used statistical method for examining non-independence of paired data, which suggests one approach to understanding and analyzing mechanisms of cyber dating violence from the perspectives of both individuals is feasible.

Secondly, this study solely explored the impact of the total score of childhood maltreatment on cyber dating abuse perpetration without delving into the specificity of different dimensions of childhood maltreatment on cyber dating abuse perpetration. Chen and Zhu[70] have incorporated three types of childhood maltreatment, including physical abuse, emotional abuse, and sexual abuse, to investigate their relationships with cyberbullying perpetration. The results revealed that, compared to other types, the relationship between sexual abuse and cyberbullying perpetration was most significant, suggesting that sexual abuse might be a more severe form of trauma, particularly increasing the likelihood of perpetrating violence against others. A recent systematic review examining the relationship between adverse childhood experiences in the family environment and dating violence indicated that childhood physical abuse is the adverse experience most strongly associated with perpetration of dating violence [71]. The aforementioned research findings collectively suggest that different components of childhood maltreatment may exert varying degrees of influence on cyber dating abuse perpetration, and future research need further delve into this issue.

Thirdly, the present study relied on a cross-sectional design, which limits the ability to trace how the variables develop over time or to establish clear causal pathways between them. Prior longitudinal research has shown that childhood maltreatment exerts a lasting influence on adolescent behavior. For instance, Wang et al. found that experiences of maltreatment predicted cyberbullying six months later[28]. In another example, Fortin et al. employed an intensive longitudinal approach, collecting daily data to examine how adolescents' use of conflict management strategies was linked to physical dating violence perpetration[72]. These studies highlight the value of tracking changes over time. Building on this, future work should consider longitudinal designs to better clarify the causal relationships among childhood maltreatment, relative deprivation, future time perspective, and cyber dating abuse perpetration.

## 5. Conclusion

Our findings indicate that childhood maltreatment serves as a significant predictor of cyber dating abuse perpetration. We also observed that relative deprivation partly explained this link, operating as a mediating mechanism. Beyond this, the analysis showed that future time perspective shaped both the direct effect of childhood maltreatment on cyber dating abuse and the indirect pathway through relative deprivation. Put differently, the impact of childhood maltreatment was far stronger among students with a weaker sense of future orientation than among those who reported higher levels of future time perspective. Taken together, these results not only

highlight the role of early adverse experiences in shaping adolescents' online relationship behaviors but also point to the protective value of future-oriented thinking. In this way, the study contributes to a deeper understanding of how childhood maltreatment connects to cyber dating abuse while clarifying the roles played by relative deprivation and future time perspective.

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