Vicious cycle of emotional maltreatment and bullying perpetration/victimization among early adolescents: Depressive symptoms as a mediator

Xiaofei Li [a,b,c,d], E. Scott Huebner [e], Lili Tian [a,b,c,d,*]

[a] School of Psychology, South China Normal University, 510631, Guangzhou, China
[b] Key Laboratory of Brain, Cognition and Education Sciences (South China Normal University), Ministry of Education, China
[c] Center for Studies of Psychological Application, South China Normal University, 510631, Guangzhou, China
[d] Guangdong Key Laboratory of Mental Health and Cognitive Science, South China Normal University, 510631, Guangzhou, China
[e] Department of Psychology, University of South Carolina, Columbia, SC, 29208, USA

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ABSTRACT

Rationale: Emotional maltreatment and bullying (including both bullying perpetration and bullying victimization) are two prevalent and highly related problems among children and adolescents worldwide. The adverse consequences of emotional maltreatment and bullying behoove researchers to identify their causal mechanisms.
Objective: We examined the reciprocal relations between emotional maltreatment and bullying perpetration/victimization and whether depressive symptoms functioned as mediator of the relations, after separating within-person effects from between-person effects.
Methods: A total of 4273 Chinese early adolescents (45.2% girls; M_{age} = 9.90 years, SD = 0.73) participated in a five-wave longitudinal study with 6-month intervals.
Results: Results from random intercept cross-lagged panel modeling showed: (a) emotional maltreatment and bullying perpetration were bidirectionally related; (b) bullying victimization directly predicted emotional maltreatment, but not vice versa; (c) emotional maltreatment indirectly predicted bullying perpetration/victimization via depressive symptoms; and (d) bullying victimization indirectly predicted emotional maltreatment via depressive symptoms.
Conclusions: These findings provided evidence for bidirectional spillover effects in the family and peer domains, demonstrating that early adolescents may become trapped in a vicious cycle of negative relationships, directly or indirectly, via their depressive symptoms. To prevent a downward spiral, findings suggested that bullying interventions need to address family and peer relationships as well as individual psychological well-being simultaneously to be most effective.

1. Introduction

Experiences of emotional maltreatment and bullying involvement (including both bullying perpetration and bullying victimization) are two commonly related global problems among children and adolescents. Both are significantly associated with concurrent and later psychopathology (e.g., Casper and Card, 2017; Vonderlin et al., 2018). Moreover, according to spillover theory (Parke and Ladd, 2016), individuals are embedded in various interdependent social systems (e.g., family and peer subsystems), with changes in one system influencing other systems via individual's psychological symptoms. Research has supported this spillover process, revealing bidirectional associations between family and peer conflicts (Chung and Fuligni, 2011; Kaufman et al., 2020). For

example, child maltreatment indirectly increased the risk of bullying victimization through externalizing and internalizing symptoms (Yoon et al., 2018). Most studies have examined such parent-driven effects, demonstrating that given that the brain regions involved in emotion regulation are underdeveloped and stress-reactivity is heightened (Spear, 2009), youth in middle childhood and early adolescence (i.e., ages 10–14 years) who are exposed to family adversity (e.g., emotional maltreatment) during childhood are at a significantly higher risk of bullying perpetration and bullying victimization (Lereya et al., 2013; Shackman and Pollak, 2014).

Although fewer studies have examined child-driven processes, some researchers have noticed that the pattern of a "cycle of violence" (Widom, 1989) can also move from peer to family contexts (Kaufman

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et al., 2020). As a consequence, youth may fall into a "vicious cycle of violence" between family (i.e., child maltreatment) and peer contexts (bullying) and tend to develop more severe mental health problems than adolescents repeatedly exposed to a single type of victimization (Finkelhor et al., 2007).

Among a number of maladjustment symptoms, according to interpersonal theories of depression (Joiner et al., 1999; Rudolph et al., 2008), depressive symptoms may act as a mediator of a vicious cycle of negative interpersonal relationships (e.g., child maltreatment, peer violence). Although many studies have identified associations in cross-sectional studies (e.g., Negriff, 2020; Nocentini et al., 2019), few studies have examined longitudinal associations using repeated measures of child maltreatment, bullying involvement, and mental health problems. This limitation precludes a meaningful understanding of the precise nature of the relations. Thus, using a sample of Chinese elementary school students from middle childhood to early adolescence, this study aimed to investigate the reciprocal processes between emotional maltreatment and bullying perpetration/victimization and whether depressive symptoms functioned as mediator of the relations through random intercept cross-lagged panel models (RI-CLPM). Such knowledge is essential for understanding when and under which conditions violence is likely to persist and to prevent adolescents from developing chronic mental health problems.

1.1. Emotional maltreatment and bullying perpetration/victimization

Emotional maltreatment is defined as any verbal assault behavior directed by parents or close caregivers that makes children feel worthless or unloved (Bernstein et al., 2003). These behaviors typically include threat, criticism, and humiliation and any other behaviors reflecting rejecting or hostile treatment towards the child (Glaser, 2002). Compare to other forms of maltreatment, such as physical and sexual abuse, emotional maltreatment represents a more common and harmful maltreatment; however, it has received substantially less research attention (Negriff, 2020; Wright et al., 2009).

Emotional maltreatment has been proposed as a risk factor for both bullying perpetration and victimization (Cunningham et al., 2019; Schwarzer et al., 2021). As one of the most common and worrisome adversities among youth, bullying is defined as unwanted verbal, physical, or relational aggression that is characterized by repeated occurrences and a power imbalance between the perpetrator and victim (Olweus, 1993). Bullying perpetration and victimization can result in numerous problems, including poor social competence and academic performance, mental health problems, substance use, and criminal involvement (e.g., Casper and Card, 2017; Da Silva et al., 2020; Reijntjes et al., 2010). Moreover, previous studies have revealed that adolescents who experience both child maltreatment and bullying are more likely to experience repeated violence or victimization across domains (i.e., family and peer domains) and thus suffer the highest risk of psychosocial and behavioral problems (Finkelhor et al., 2007; Malvaso et al., 2016). For this reason, among the various adverse consequences caused by emotional maltreatment (e.g., emotion regulation difficulties, increased risk of depression and anxiety (Wright et al., 2009), and suicidal ideation (Miller et al., 2017)), bullying deserves special attention (Lereya et al., 2013). The detrimental long-term consequences of emotional maltreatment on bullying involvement are well documented (Nocentini et al., 2019).

The effect of bullying perpetration/victimization on emotional maltreatment has received less attention. Based on spillover theory, individuals' mood, affect, and behavior changes in one system can be transferred to another system, suggesting that children carry relationship dynamics between family and peer subsystems (Parke and Ladd, 2016). Some evidence supports this "spillover effect." For example, children's peer victimization was related to increased parental criticism and negative emotional tone (Lehman and Repetti, 2007). Also, adolescents' aggression elicited more mother-adolescent conflict (Steeger

and Gondoli, 2013). Some studies also supported the bidirectional spillover between family and peer relations. For example, family conflicts can spill over into peer conflicts, and vice reverse, so that children can experience a vicious cycle of problems (Chung and Fuligni, 2011). Moreover, reciprocal relations between parent-child relationships (i.e., parental rejection and warmth) and peer victimization (Kaufman et al., 2020) have been reported. Thus, it seemed plausible to hypothesize that emotional maltreatment and bullying perpetration/victimization display bidirectional relations. A full knowledge of these relations is essential because if emotional maltreatment and bullying perpetration/victimization are reciprocally related, interventions may need to address both systems to break the vicious cycle.

The majority of extant studies involving the measurement of childhood maltreatment has relied on retrospective self-reports obtained during adulthood; these measures raise issues related to possible memory losses and/or recall biases (see Mathews et al., 2020, for a review). Most importantly, extant studies typically assess child maltreatment retrospectively at one time point (Mathews et al., 2020) and do not include the possibility of examining longitudinal associations between child maltreatment and bullying involvement. Therefore, a repeated measure, multi-wave longitudinal design is needed to clarify the prospective relations. Researchers have recently recommended examining prospective effects between constructs using RI-CLPM instead of traditional CLPM. Because psychological constructs (whether behavioral, cognitive, emotional or psychological) often have trait-like qualities reflecting stable individual differences over time, RI-CLPM attempts to disentangle the within-person processes from stable between-person differences, whereas CLPM yields results that provide an amalgam of between and within-person effects that are difficult to interpret and can be relatively uninformative about developmental relations between variables (Hamaker et al., 2015).Thus, it would be beneficial to examine the dynamic bidirectional relations between emotional maltreatment and bullying perpetration/victimization at the within-person level among Chinese early adolescents with a multi-wave longitudinal design using RI-CLPM.

1.2. Depressive symptoms as a mediator

According to spillover theory, the bidirectional influence between family and peer systems can occur through direct or indirect pathways, and an individual's psychological symptoms, such as internalizing or externalizing behavior, drive the spillover between family and peer systems (Parke and Ladd, 2016). Among the different psychological symptoms, depressive symptoms are given special attention in the present study for the following reasons. First, depressive symptoms are among the most prevalent mental health problems during childhood and adolescence, and they undermine youth's social and cognitive functioning (World Health Organization, 2012). Second, interpersonal theories suggest that depressive symptoms influence and are influenced by negative interpersonal relationships, which are often expressed within, and intricately linked to, interpersonal interactions and relationships (Rudolph et al., 2008).

According to general strain theory (Agnew, 1992), experiences of interpersonal strains (e.g., emotional maltreatment, bullying victimization) trigger negative emotions (e.g., depressive symptoms), leading persons to utilize ineffective coping strategies (e.g., bullying perpetration) to reduce, minimize, or externalize the emotional strain (e.g., depressive symptoms). General strain theory has been supported by many studies. For example, a recent study found that bullying victimization predicted later bullying perpetration indirectly via hostility (Walters and Espelage, 2018). In addition, physical maltreatment has been shown to significantly increase the risk of aggressive behavior through negative affect (Shackman and Pollak, 2014). A similar pattern may occur from interpersonal strain to later victimization, in which the psychological symptoms, such as depressive symptoms, mediate the relations from hostile and cold parenting to later bullying victimization

(Kaufman et al., 2020). Based on general strain theory and extant research, it seems likely that depressive symptoms would mediate the relation from emotional maltreatment to bullying perpetration/victimization.

The reverse spillover effect from bullying perpetration/victimization to emotional maltreatment via depressive symptoms may also occur. According to diathesis-stress models (Swearer and Hymel, 2015), bullying involvement is a stressful life event for both individuals who bully and who are victimized, serving as a catalyst for a diathesis-stress connection between bullying perpetration, bullying victimization, and psychosocial problems. A growing body of research indicates that different forms of bullying perpetration/victimization are associated with adolescents' depressive symptoms both cross-sectionally (e.g., Casper and Card, 2017; Humphreys et al., 2020) and longitudinally (e. g., Da Silva et al., 2020), although some studies have failed to find a link between bullying perpetration and depressive symptoms (i.e., Hemphill et al., 2011; Hill et al., 2017). Moreover, children's mental health problems represent a risk factor for child maltreatment in the family context. For example, research has shown that children who experience both internalizing and externalizing symptoms are particularly vulnerable to multiple forms of child maltreatment (Turner et al., 2010). Indeed, increases in anxiety or depressive symptoms help explain why aggression and rejection by peers are linked to negative parent-child relationships (Kaufman et al., 2020; Lehman and Repetti, 2007). Thus, depressive symptoms may also mediate the spillover from bullying perpetration/victimization to emotional maltreatment.

1.3. The present study

This study used RI-CLPMs to examine whether and how Chinese early adolescents get caught in a vicious cycle of negative relations in family and peer domains at within-person level. This study formulated two hypotheses: (1) A bidirectional and positive effect will exist between emotional maltreatment and bullying perpetration/victimization; (2) depressive symptoms will function as a mediator of the bidirectional relations between emotional maltreatment and bullying perpetration/victimization. Also, previous research has found that student's gender, age, and family socioeconomic status may influence the study variables (e.g., Malvaso et al., 2016; Zhang et al., 2016). Therefore, these demographic variables were controlled in this study.

2. Method

2.1. Participants

Participants were recruited from 13 elementary schools in a province of southern China, namely Guangdong. Assessments were conducted every six months over a two years period from middle childhood to early adolescence of participants (five waves, Time 1-Time 5) spanning the period 2017–2019. At baseline (Time 1), the participants included 4273 students from Grade 3 or Grade 4 (45.2% girls; M_{age} = 9.90 years, SD = 0.73), and 3840 students participated at Time (T) 2 (T2), 3760 students participated at Time 3 (T3), 3701 students participated at Time 4 (T4), and 3660 students participated at Time 5 (T5). The participant retention rates were 89.87% (T2), 88% (T3), 86.61 (T4), and 85.7% (T5) from Time 2 to Time 5 assessments, respectively. Attrition was mainly due to students transferring to other schools or being absent from school on the assessment date.

Three steps were undertaken to ensure attrition and other sources of missing data did not bias the results. First, Little's Missing Completely at Random test (Little, 1988) based on all variables was computed, χ^2 (214, 079) = 274,824.046, p < .001, indicating that the rate of missingness across the study's duration was not completely at random (Little, 1988), which is common for longitudinal studies (Ibrahim and Molenberghs, 2009). Second, Full Information Maximum Likelihood (FIML) was applied for model estimations, which estimates model parameters using all available information, producing unbiased estimates for non-normality for indicator variables when data are not missing completely at random (Little and Rubin, 2002). Third, multiple imputation was used for sensitivity analyses.

2.2. Procedure

The study was approved by the relevant school boards, principals, and teachers, as well as the Human Research Committee of South China Normal University. Before data collection, parental consent and student assent were obtained.

Data collection was completed during regular class time with the assistance of trained school teachers. At the beginning of each assessment, students were informed by teachers that they could hand in the questionnaires and withdraw from participation whenever they wanted. The personal information of participants was treated as confidential, and only the researchers had access to the questionnaires.

2.3. Measures

Emotional Maltreatment was assessed by the Chinese version of emotional abuse subscale from the Childhood Trauma Questionnaire-Short Form (CTQ-SF, Bernstein et al., 2003). The Chinese version of the CTQ-SF has been validated by Zhao et al. (2005), showing good test-retest reliability and high internal consistency in Chinese adolescents. Consistent with previous research (Miller et al., 2017), the emotional abuse subscale was used in this study to assess experiences of emotional maltreatment during the previous six months. Participants responded to five items by indicating their frequency of emotional maltreatment (e.g., "People in my family said hurtful or insulting things to me."). All items were rated on a 5-point Likert-type scale ranging from 1 (*never true*) to 5 (*very often true*). The total score was calculated; higher scores indicated higher emotional maltreatment. In this study, the Cronbach's coefficients α were 0.67, 0.71, 0.72, 0.73, 0.74 for T1 to T5, respectively.

Depressive Symptoms were assessed by the Chinese version of depression subscale of the Youth Self Report Form of the Child Behavior Checklist (Achenbach, 1991). The Chinese version of the YSR has shown good applicability in Chinese elementary school students (Su et al., 1999). The depression subscale consists of sixteen items that query responses about depressive symptoms during the past six months (e.g., "I am unhappy, sad, or depressed"). Participants responded using a 3-point Likert scale, ranging from 0 (*not true*) to 2 (*very true or often true*). Mean scores were calculated; higher scores indicated a stronger tendency toward experiencing depression. In this study, the Cronbach's coefficients α were 0.88, 0.91, 0.91, 0.92, 0.93 for T1 to T5, respectively.

Bullying Victimization was measured by the Chinese version of Multidimensional Peer Victimization Scale (Mynard and Joseph, 2000). This Chinese version of the MPVS was adapted by Zhang et al. (2009) and has been demonstrated to be reliable and valid with Chinese children and adolescents. The measure consists of three items assessing physical bullying victimization (e.g., "In this semester, other kids hurt me physically in some way.") and seven items assessing relational bullying victimization (e.g., "In this semester, someone made other kids not to talk to me."). Responses were provided using a 4-point scale ranging from 0 (*never*) to 3 (*a lot*). Mean scores were calculated; higher scores indicated more frequent bullying victimization. In this study, the Cronbach's coefficients alpha α were 0.90, 0.91, 0.93, 0.93, 0.94 for T1 to T5, respectively.

Bullying Perpetration was assessed by parallel items adapted from the Chinese version of the Multidimensional Peer Victimization Scale (Mynard and Joseph, 2000). The measure includes three items assessing physical bullying perpetration (e.g., "In this semester, I hurt other kids physically in some way.") and seven items assessing relational bullying perpetration (e.g., "In this semester, I made other kids refuse to talk to someone."). Responses were provided using a 4-point scale ranging from

0 (*never*) to 3 (*a lot*). Mean scores were calculated; higher scores indicated more frequent bullying perpetration. In this study, the Cronbach's coefficients α were 0.90, 0.91, 0.93, 0.93, 0.93 for T1 to T5, respectively.

Covariates including students' gender, students' age, and family socioeconomic status, were treated as control variables. Students reported on all control variables at T1. Specifically, both father's and mother's education levels served as indicators of family socioeconomic status (e.g., Padilla-Walker et al., 2015). Father's and mother's education levels were assessed respectively on a scale ranging from 1 (*never attended to school*) to 8 (*doctoral degree*).

2.4. Data analysis

First, descriptive analyses and correlations were calculated using SPSS 24.0. Then, the Intraclass Correlation Coefficients (ICCs) for all study variables were computed. A high ICC (>0.50) indicates proportionately higher between-group variance while a low ICC (<0.50) indicates proportionately higher within-person variance.

Second, confirmatory factor analysis (CFA) was used to investigate the longitudinal measurement invariance for study variables. The respective items of study variables were measured as the observed indicators. Specifically, five items were used for measuring emotional maltreatment, ten items for bullying perpetration, and ten items for bullying victimization. To control for inflated measurement errors due to multiple items, depressive symptoms were represented by three parcels created by the item-construct balance approach (Little et al., 2002).

Third, RI-CLPMs were conducted following procedures as described by Hamaker et al. (2015). Each observed emotional maltreatment, depressive symptom, bullying perpetration and victimization score was decomposed into stable between-person and within-person variance components. By separating stable individual differences via a random intercept, the lagged coefficients of the RI-CLPM represent within-person patterns of change (see Mplus Syntax on Supplemental Materials). Correlations between the random intercepts capture the between-person effects. The first RI-CLPM (Model 1) represented the association between emotional maltreatment and bullying perpetration by including the within-wave associations, stability paths, and cross-lagged effects. Then, the second RI-CLPM (Model 2) represented the association between emotional maltreatment and bullying victimization. Students' sex, age, and their family's socioeconomic status were entered in all RI-CLPMS as time-invariant covariates and were regressed on all variables at all five time points. Standard CLPMs were developed and added as auxiliary analyses (see Supplemental Materials). To determine the most parsimonious model, two types of models were tested respectively, including a fully constrained model with all cross-lagged paths, autoregressive paths, and occasional covariances set to be time-invariant as the baseline model and a fully unconstrained model.

Fourth, the hypothesized full models including emotional maltreatment, depressive symptoms, and bullying perpetration (Model 3)/victimization (Model 4) were tested. After selecting the most parsimonious model based on the model comparison step mentioned above, mediation analyses were followed by a percentile bootstrapping approach. By employing 5000 samples, percentile bootstrapping was used to test the significance of the mediated effects and produce percentile confidence intervals. If the 95% confidence interval for the indirect effect estimate did not include zero, we concluded that the indirect effect was statistically significant at the 0.05 level. Control variables were also included in the bootstrapping analyses.

All model estimations were conducted with Mplus 8.0 (Muthén and Muthén, 1998–2017) using robust maximum likelihood estimation. Monte Carlo power analyses suggested that the sample size was sufficiently large to detect small effects (i.e., 0.10, Funder and Ozer, 2019) in both RI-CLPMs and standard CLPMs with power >.80 (see Supplemental Materials). Model fit was deemed acceptable if CFI was above 0.90 and

RMSEA and SRMR were less than 0.08 (Kline, 2010). For reasons of parsimony, when the model fit was equal between the compared models, the more parsimonious model was retained. Because χ2 is greatly affected by the sample size, differences in CFI and RMSEA were used as two criteria for model comparisons. When ΔCFI of < −0.010 and ΔRMSEA <0.015 between the less and more restrictive models, the null hypothesis of invariance was accepted (Cheung and Rensvold, 2002).

3. Results

3.1. Descriptive statistics

Means and standard deviations for the study variables, and correlations between study variables are reported in Table 1. The ICCs were 0.36 for emotional maltreatment, 0.43 for depressive symptoms, 0.34 for bullying perpetration, and 0.47 for bullying victimization, indicating that there were sufficient within-person variances to use RI-CLPMs to investigate within-person changes over time. Therefore, the RI-CLPM was applied in later analyses.

3.2. Longitudinal measurement invariance

As shown in Table 2, configural, metric, and scalar invariance models for all study variables were tested in sequence. The results indicated that scalar invariance was established for all measures. The achievement of at least metric invariance is needed to reliably examining across-time associations between variables (Little, 2013). The achievement of scalar invariance for most study variables supported meaningful comparisons across the five measurement waves.

3.3. Random intercept cross-lagged panel model between emotional maltreatment and bullying perpetration/victimization

As shown in Table 3, for Model 1 and Model 2, the fully constrained and fully unconstrained models fit the data well, and there was no significant difference between them. Considering parsimony, the fully constrained model for Model 1 and Model 2 was used as the final RI-CLPM, respectively.

Fig. 1 and Fig. 2 present the RI-CLPMs between emotional maltreatment and bullying perpetration/victimization. The between-person associations of emotional maltreatment and bullying perpetration/victimization were positive (*r* = 0.60/.64, *p* < .001), indicating higher emotional maltreatment correlated with higher bullying perpetration or victimization. At the within-person level, reciprocal relations were found between emotional maltreatment and bullying perpetration (Model 1). However, in Model 2, bullying victimization positively predicted emotional maltreatment at the within-person level, but not vice versa.

3.4. Random intercept cross-lagged panel model among emotional maltreatment, depressive symptoms and bullying perpetration/victimization

As shown in Table 3, for Model 3 and Model 4, compared with fully constrained models, freeing the time constraints for cross-lagged paths, autoregressive paths, and occasional covariance did not significantly improve the model fit, so fully constrained models were selected.

Fig. 3 presents the full RI-CLPMs among emotional maltreatment, depressive symptoms, and bullying perpetration (Model 3). There were statistically significant and positive associations (0.48 < *r* < 0.65) between emotional maltreatment, depressive symptoms and bullying perpetration at the between-person level. At the within-person level, significant, positive paths from emotional maltreatment to depressive symptoms and from depressive symptoms to bullying perpetration existed over the five waves. However, only links from depressive symptoms to emotional maltreatment were found, no significant path

Table 1
Descriptive and correlations among study variables.

Variable	T1 EM	T1 DEP	T1 BP	T1 BV	T2 EM	T2 DEP	T2 BP	T2 BV	T3 EM	T3 DEP	T3 BP	T3 BV	T4EM	T4DEP	T4BP	T4BV	T5EM	T5DEP	T5BP	T5BV
T1 EM	–																			
T1 DEP	.41***	–																		
T1 BP	.34***	.37***	–																	
T1 BV	.35***	.47***	.45***	–																
T2 EM	.33***	.23***	.25***	.25***	–															
T2 DEP	.24***	.41***	.20***	.26***	.42***	–														
T2 BP	.21***	.22***	.33***	.23***	.33***	.34***	–													
T2 BV	.22***	.30***	.24***	.47***	.38***	.43***	.42***	–												
T3 EM	.27***	.24***	.21***	.26***	.41***	.33***	.23***	.30***	–											
T3 DEP	.21***	.38***	.16***	.25***	.30***	.55***	.27***	.37***	.47***	–										
T3 BP	.19***	.21***	.33***	.22***	.28***	.25***	.42***	.27***	.34***	.32***	–									
T3 BV	.19***	.28***	.20***	.42***	.27***	.36***	.28***	.56***	.41***	.48***	.43***	–								
T4 EM	.25***	.23***	.25***	.19***	.42***	.32***	.21***	.27***	.47***	.34***	.25***	.29***	–							
T4 DEP	.16***	.31***	.09***	.19***	.25***	.44***	.17***	.29***	.36***	.58***	.22***	.35***	.45***	–						
T4 BP	.17***	.16***	.23***	.15***	.23***	.19***	.31***	.21***	.22***	.21***	.38***	.24***	.37***	.32***	–					
T4 BV	.19***	.27***	.17***	.35***	.27***	.31***	.24***	.46***	.35***	.40***	.31***	.58***	.43***	.46***	.45***	–				
T5 EM	.21***	.17***	.12***	.16***	.33***	.27***	.23***	.26***	.40***	.29***	.22***	.27***	.47***	.39***	.22***	.32***	–			
T5 DEP	.10***	.27***	.06**	.19***	.19***	.36***	.12***	.26***	.28***	.48***	.15***	.30***	.29***	.60***	.17***	.36***	.42***	–		
T5 BP	.11***	.14***	.19***	.15***	.19***	.20***	.31***	.23***	.19***	.18***	.32***	.25***	.24***	.23***	.41***	.31***	.31***	.24***	–	
T5 BV	.15***	.22***	.15***	.31***	.22***	.28***	.22***	.42***	.30***	.36***	.27***	.52***	.29***	.37***	.27***	.60***	.37***	.46***	.42***	–
Mean	8.03	.33	.22	.63	7.80	.29	.17	.58	7.47	.27	.15	.49	7.38	.26	.13	.45	7.23	.26	.11	.40
(SD)	3.70	.35	.40	.64	3.70	.35	.37	.65	3.53	.35	.35	.63	3.50	.36	.33	.63	3.42	.37	.30	.62

Note. EM = Emotional Maltreatment; DEP = Depressive Symptoms; BP = Bullying Perpetration; BV = Bullying Victimization; T1 to T5 are Time 1 to Time 5.

$*p < .05; **p < .01; ***p < .001.$

from bullying perpetration to depressive symptoms was observed. Therefore, only the indirect path of "emotional mal-treatment→depression symptoms→bullying perpetration" were tested and significant. For example, results showed that the path from T1 emotional maltreatment to T3 bullying perpetration via T2 depressive symptoms was significant (β = 0.003, 95% CI = [0.001, 0.007]).

Fig. 4 presents the full RI-CLPMs among emotional maltreatment, depressive symptoms, and bullying victimization (Model 4). At the between-person level, statistically significant, positive associations $(0.64 < r < 0.71)$ existed between emotional maltreatment, depressive symptoms, and bullying victimization. At the within-person level, the paths from emotional maltreatment to depressive symptoms and from depressive symptoms to bullying victimization were all significant. Additionally, significant links from bullying victimization to depressive symptoms, and from depressive symptoms to emotional maltreatment were observed. Therefore, both indirect paths of "emotional mal-treatment→depression symptoms→bullying victimization" and "bullying victimization→depressive symptoms→emotional maltreat-ment" were tested, and the results proved significant. For example, the results showed that the path from T1 emotional maltreatment to T3 bullying victimization via T2 depressive symptoms was significant (β = 0.005, 95% CI = [0.002, 0.009]), and the path from T1 bullying victimization to T3 emotional maltreatment via T2 depressive symptoms was also significant (β = 0.006, 95% CI = [0.002, 0.011]).

3.5. Auxiliary analyses: CLPMs

In addition to the main RI-CLPMs, standard CLPMs for model 1 to model 4 were constructed respectively. In general (see Supplemental Appendix), most of the results of CLPMs were similar to those of the RI-CLPMs, except that the CLPM results indicated that emotional maltreatment directly predicted later bullying victimization at the between-person level.

3.6. The sensitivity analyses

Sensitivity analysis evaluates the robustness of the results when the model and consequently assumptions related to it changed (Little and Rubin, 2002). Following recommendations from Sidi and Harel (2018), when FIML is used for primary analysis, different missing data tech-niques (i.e., multiple imputation, MI) could be utilized for sensitivity analyses.

MI was implemented by imputing the outcome variable 200 times, then similar RI-CLPMs procedures mentioned above were conducted. Most of the results based on MI showed similar findings compared to the non-imputed method (i.e., FIML). Across both methods, there were few significant differences in the direction or significance of any direct or indirect effects, except that bullying perpetration was significantly related to depressive symptoms based on MI $(\beta < 0.04)$. However, considering its small effect size and the power analysis (see more details in Supplemental Materials), this inconsistent result may be due to chance and will therefore not be interpreted unless the path is significant based on FIML and MI findings. Thus, the results reported used the FIML approach.

4. Discussion

Exposure to emotional maltreatment and bullying perpetration/victimization can lead to mental health problems (Malvaso et al., 2016; Vonderlin et al., 2018). However, the longitudinal relations between emotional maltreatment, depressive symptoms, and bullying perpe-tration/victimization have remained obscured (Da Silva et al., 2020; Humphreys et al., 2020). Based on spillover theory, this study examined whether emotional maltreatment and bullying perpetration/victimiza-tion bidirectionally facilitated each other directly or indirectly via depressive symptoms at the with-person level, using multi-wave,

Table 2
Model fit and comparison for measurement invariance.

Variable	Models	$\chi^2(df)$	CFI	SRMR	RMSEA [90% CI]	ΔCFI	ΔRMSEA
Emotional Maltreatment							
	Configural invariance	904.726 (260)	0.954	0.028	0.024 [0.022 0.026]	–	–
	Metric invariance	922.100 (280)	0.954	0.030	0.023 [0.022 0.025]	0.000	−0.001
	Scalar invariance	1095.837 (300)	0.943	0.033	0.025 [0.023 0.027]	−0.011	0.002
Depressive Symptoms							
	Configural invariance	177.213 (77)	0.997	0.009	0.017 [0.014 0.021]	–	–
	Metric invariance	211.209 (89)	0.996	0.027	0.018 [0.015 0.021]	−0.001	0.001
	Scalar invariance	373.213 (101)	0.992	0.040	0.025 [0.022 0.028]	−0.004	0.007
Bullying Perpetration							
	Configural invariance	2192.576 (1120)	0.973	0.025	0.015 [0.014 0.016]	–	–
	Metric invariance	2331.618 (1160)	0.970	0.058	0.015 [0.014 0.016]	−0.003	0 .000
	Scalar invariance	2557.989 (1200)	0.965	0.063	0.016 [0.015 0.017]	−0.005	0.001
Bullying Victimization							
	Configural invariance	4145.358 (1120)	0.962	0.025	0.025 [0.024 0.026]	–	–
	Metric invariance	4192.516 (1160)	0.961	0.026	0.025 [0.024 0.026]	−0.001	0.000
	Scalar invariance	4757.777 (1200)	0.955	0.035	0.026 [0.026 0.027]	−0.006	0.001

Note. CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval.

Table 3
Model fit of RI-CLPMs.

Models	$\chi^2(df)$	CFI	SRMR	RMSEA [90% CI]	ΔCFI	ΔRMSEA
Model 1						
RICLPM-fixed	261.632 (69)	0.957	0.033	0.026 [0.022 0.029]	–	–
RICLPM-free	211.869 (53)	0.965	0.027	0.026 [0.023 0.030]	0.008	0.000
Model 2						
RICLPM-fixed	297.940 (69)	0.973	0.032	0.028 [0.025 0.031]	–	–
RICLPM-free	228.924 (53)	0.979	0.026	0.028 [0.024 0.032]	0.006	0.000
Model 3					–	–
RICLPM-fixed	534.027 (135)	0.959	0.036	0.026 [0.024 0.029]	–	–
RICLPM-free	320.813 (96)	0.977	0.026	0.023 [0.020 0.026]	0.018	−0.003
Model 4						
RICLPM-fixed	534.773 (135)	0.972	0.033	0.026 [0.024 0.029]	–	–
RICLPM-free	337.267 (96)	0.983	0.025	0.024 [0.021 0.027]	0.011	−0.002

Note. RICLPM-free = Fully Unconstrained Random Intercept Cross-Lagged Panel Model; RICLPM-fixed = Random Intercept Cross-Lagged Panel Models with Time Invariance Constrains on the Autoregressive Stabilities, the Cross Lagged Effects and Occasional Covariance. CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval; SRMR = Standardized Root Mean Square Residual; CM = Comparison Model.

longitudinal data from a representative sample of Chinese students covering the transitional period from middle childhood to early adolescence.

4.1. Relations between emotional maltreatment and bullying perpetration/victimization

After controlling the trait effects of variables, a positive with-person effect of emotional maltreatment on bullying perpetration was observed. Specifically, adolescents who suffered more emotional maltreatment than usual at one time-point were more likely to bully others at follow-up, regardless of the frequency of bullying perpetration at the prior time-point. Consistent with the cycle of violence (Widom, 1989) and corroborates many previous findings reflecting between-person effects or the mixture of between- and within-person effects (e.g., Nocentini et al., 2019; Yoon et al., 2018), the result suggested that adolescents transfer emotional maltreatment strategies learned in parent-child interactions to their peer interactions. However, inconsistent with our hypothesis, emotional maltreatment did not appear to be a risk factor for bullying victimization directly, as in previous studies (Cunningham et al., 2019; Schwarzer et al., 2021). This disparity could be due to the fact that most previous investigations used cross-sectional and retrospective measure at one time point (Nocentini et al., 2019); current result thus provide critical evidence for the temporal relation between emotional maltreatment and bullying victimization at the within-person level. Another possible explanation is that the path from emotional maltreatment to bullying victimization was mainly driven by stable between-person differences (see CLPMs results in Supplemental Materials), rather than within-person dynamics.

The within-person results suggested that when individuals have a higher-than usual frequency of bullying perpetration/victimization experience at one-time point, they will experience a subsequent increase in emotional maltreatment. These results were consistent with spillover theory, verifying cross-domain spillover from negative peer relations (e. g., bullying perpetration/victimization, peer rejection) to negative parent-child relationships (e.g., parental rejection, parent-child conflict, Chung and Fuligni, 2011; Kaufman et al., 2020). A possible explanation of this "child effect" might be related to parents' or caregivers' attributions regarding children's maladaptive behaviors. According to social information processing models of abuse (Milner, 2003), parents' negative attributions for child behavior are significant predictors of child abuse and harsh parenting. For example, early childhood antisocial behavior, including bullying behavior, evokes parental negativity (e.g., anger) towards the child (Miragoli et al., 2018). Child conduct problems (e.g., bullying behaviors) predicted more parental criticism (Narusyte et al., 2011), harsh parenting, and even physical punishment (Lysenko et al., 2013). Although these studies do not directly involve emotional maltreatment, parental negativity, criticism and harsh parenting all carry the same negative emotions, such as yelling, frequent negative commands, name calling, overt expressions of anger, and humiliating children via physical threats and aggression (Chang et al., 2003), children may perceive as emotional maltreatment (Glaser, 2002). This might be especially true for Chinese adolescents because human relatedness and social harmony are valued extremely highly by Chinese parents based on Confucian tradition (Zhang et al., 2016). Thus, Chinese parents are likely to interpret bullying involvement as misconduct or a severe peer relationship problem because it undermines group harmony.
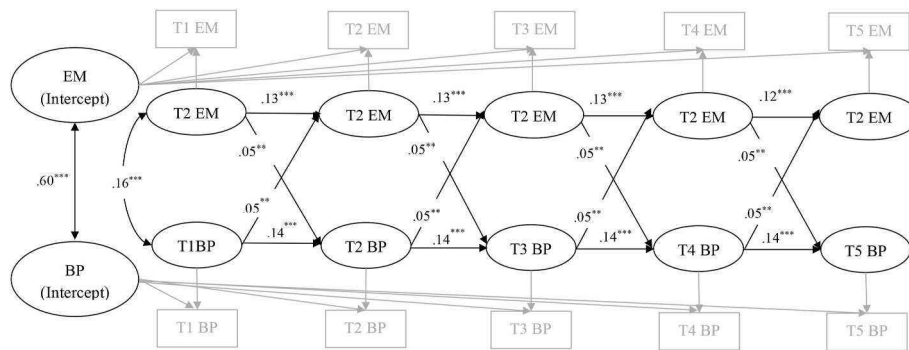
Fig. 1. RI-CLPM for emotional maltreatment and bullying perpetration **(Model 1).** The observed variables were shown in grey. EM = Emotional Maltreatment; BP = Bullying Perpetration. T1 to T5 are Time 1 to Time 5. *$p < .05$; **$p < .01$; ***$p < .001$.
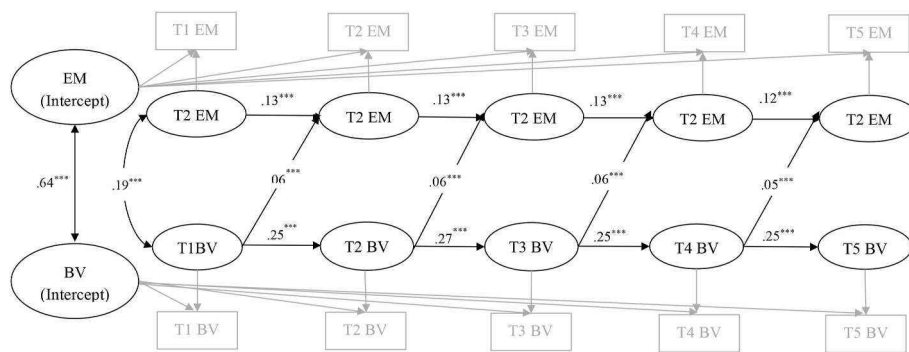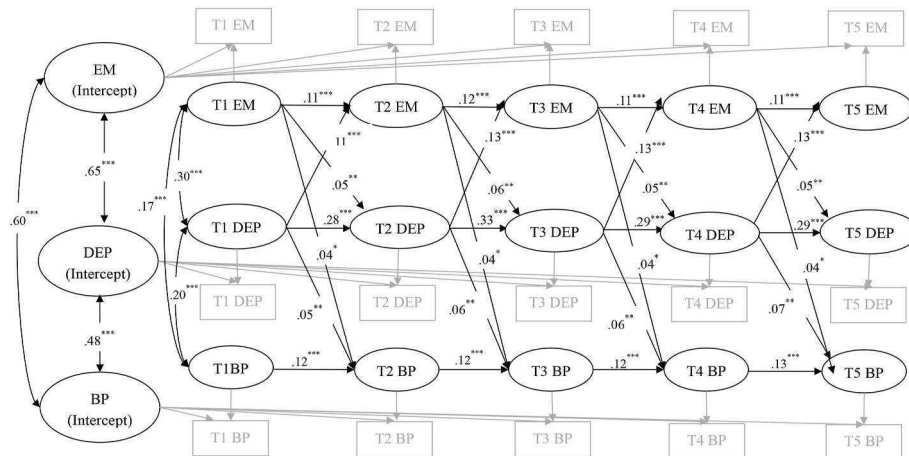

Fig. 2. RI-CLPM for emotional maltreatment and bullying victimization **(Model 2).** The observed variables were shown in grey. EM = Emotional Maltreatment; BV = Bullying Victimization. T1 to T5 are Time 1 to Time 5. *$p < .05$; **$p < .01$; ***$p < .001$.

Fig. 3. RI-CLPM for emotional maltreatment, depressive symptoms and bullying perpetration **(Model 3).** The observed variables were shown in grey. EM = Emotional Maltreatment; DEP = Depressive Symptoms; BV= Bullying Victimization. T1 to T5 are Time 1 to Time 5. *$p < .05$; **$p < .01$; ***$p < .001$.

Moreover, as Chinese parents often hold the traditional view that "beating is caring and scolding is loving" (Qiao and Chan, 2005), harsh parenting behaviors may be more common in Chinese families (Chang et al., 2003). Thus, cultural factors may help to explain the relations from bullying perpetration/victimization to emotional maltreatment. However, this explanation should be considered cautiously because parental attributions for bullying were not measured in this study. Further studies are needed to evaluate how parental attributions are associated with emotional maltreatment and adolescents' bullying involvement.

4.2. The mediating role of depressive symptoms

As hypothesized, depressive symptoms played a mediating role in linking emotional maltreatment to bullying perpetration/victimization. Early adolescents who suffered more emotional maltreatment than at baseline showed increased depressive symptoms, which in turn predicted increased bullying perpetration/victimization. These results supported the notion that psychological symptoms may act as gateways between different interpersonal domains, such as the family and peer domains (Parke and Ladd, 2016). Consistent with general strain theory (Agnew, 1992), adolescents may bully others to release their negative
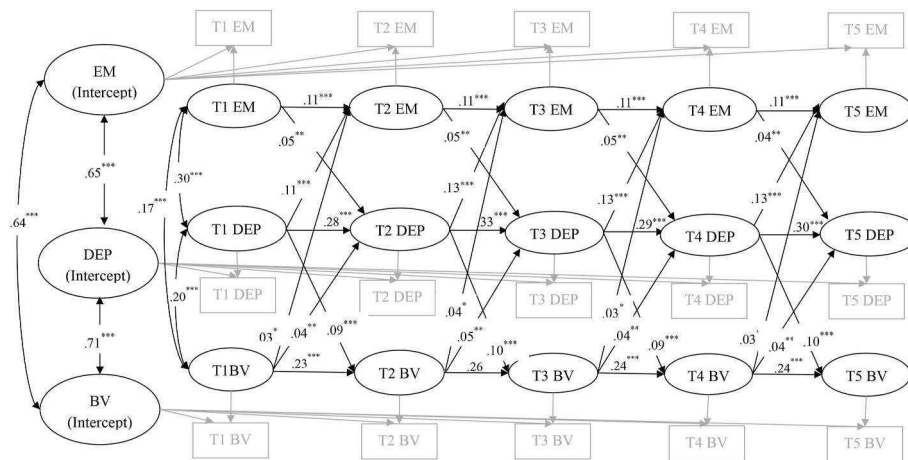
Fig. 4. RI-CLPM for emotional maltreatment, depressive symptoms and bullying victimization **(Model 4).** The observed variables were shown in grey. EM = Emotional Maltreatment; DEP = Depressive Symptoms; BV= Bullying Victimization. T1 to T5 are Time 1 to Time 5.

emotions, such as depressive symptoms related to emotional maltreatment. At the same time, depressed adolescents characterized by low feelings of self-esteem and insecurity are likely to become repeated victims because they are less likely to defend themselves in social conflicts (Reijntjes et al., 2010). Thus, depressive symptoms increase the risk of both bullying perpetration and victimization. Although there was no direct effect, emotional maltreatment indirectly influenced bullying victimization via depressive symptoms, highlighting the facilitative role of depressive symptoms.

Within-person effects from bullying victimization to emotional maltreatment via depressive symptoms were also significant. Adolescents who experienced more bullying victimization than at baseline showed an increase in the frequency of depressive symptoms and ultimately emotional maltreatment. Given that the importance of peer relationships rises steadily with increasing age in adolescence, persistent peer victimization over time may contribute to victims' negative social-cognitive processes and self-evaluations, which increase their susceptibility to depressive symptoms (Reijntjes et al., 2010; Rudolph et al., 2008). Consistent with previous research (e.g., Turner et al., 2010), children or adolescents' mental health symptomatology increased their risk for maltreatment experiences. This could be because depressed people can activate negative self-schemas, making them believe they are unlovable and/or worthless (Rudolph et al., 2008) and tend to act in ways including crying easily, manifesting anxiety, being socially with-drawn, all of which can generate more stress and conflict with parents or caregivers (Turner et al., 2010). Child depressive symptoms might arouse anger or aggressive impulses of caregivers because they are typically associated with undesirable behaviors, such as being demanding, needy, or seeking excessive reassurance (Joiner and Timmons, 2009). These responses of caregivers may be perceived by children as emotional maltreatment. However, no significant path from bullying perpetration to depressive symptoms was observed in either RI-CLPMs or CLPMs results. Although contrary to our hypothesis, this result was consistent with some existing longitudinal studies (e.g., Hill et al., 2017). On the one hand, these mixed results could be due to the cross-sectional designs of some previous research (e.g., Thomas et al., 2017), the single-item questions used in some studies to measure bullying perpetration (e.g., Da Silva et al., 2020; Hemphill et al., 2011), or individual differences in associations due to moderating factors (e.g., McGee et al., 2011). Thus, the present longitudinal study with repeated measures provided more accurate results for the causal relations between bullying perpetration and depressive symptoms. On the other hand, it is possible that the self-reports of bullying perpetration used in this study did not fully capture youth bullying behaviors because of social desirability responding (Smith et al., 2005). Alternatively,

adolescents may not see their own acts as bullying, which could explain the lack of a link between bullying and depressive symptoms. Therefore, if multiple informants report bullying perpetration in future research, a significant relation may emerge.

4.3. Effect size

For both models, the prospective effects between emotional maltreatment, depressive symptoms, and bullying perpetration/victimization were not large, which may raise the concern of whether the effect sizes were clinically important. We believe that small effects can be meaningful for the following reasons. First, the theoretically possible range of cross-lagged coefficients was small because all effects controlled for the prior levels of the outcome variables. As shown in the auxiliary CLPM analyses, most of the constructs examined in the current study showed substantial stability (r range 0.26 from 0.46) across the six-month intervals, which removes a large portion of the variance in the outcome that is shared with other predictors (Adachi and Willoughby, 2015). Furthermore, previous CLPM studies may have overstated the magnitude of the effects due to their failure to distinguish between within- and between-person effects. More rigorous studies using RI-CLPM address this potentially important confound are essential to obtain more accurate estimates of the effects (Hamaker et al., 2015). Therefore, it is inappropriate to interpret cross-lagged effects against conventional standards for correlation coefficients (Cohen, 1992; e.g., $r = 0.1$ indicating a small effect). For this reason, even small effect sizes should be taken seriously. Second, the effect of adverse childhood experience on long-term mental health problems and other adverse experiences may show cumulative effects over a longer period (Brown et al., 2018). Thus, effect sizes based on this two-year period likely underestimate the aggregate effect of the vicious cycle of emotional maltreatment and bullying perpetration/victimization over time. Though the results based on this study should be interpreted with caution, and further within-person research is needed to examine the cumulative effects, our findings indicated that interventions to address child maltreatment should be introduced early before the vicious cycle has had a chance to congeal, which could provide the optimal condition to make a change.

4.4. Strengths, limitations and future directions

This study exemplified several strengths. First, this study comprehensively examined the cross-domain spillover effect between the family (i.e., emotional maltreatment) and peer (i.e., bullying perpetration/victimization) systems and whether individual psychological symptoms

(i.e., depressive symptoms) mediated the spillover effect among a large sample of Chinese early adolescents. Second, its multi-wave, longitudinal design examined the temporal relations among emotional maltreatment, depressive symptoms, and bullying perpetration/victimization, thus minimizing the likelihood of retrospective recall biases that may have occurred in previous studies (Mathews et al., 2020). Third, the employment of RI-CLPM allowed differentiation of within-person from between-person effects. To be more specific, the between-person results show who is most likely to need an intervention, compared with their peers; and the within-person effects provide insight in how emotional maltreatment, depressive symptoms, and bullying perpetration/victimization influence each other over time at the level of the individual adolescent.

Despite the contributions, some limitations should be noted. First, data relied on self-reports. Although the use of self-report was necessary to reflect a "child-focused" perspective, multiple informants including youth, caregivers, teachers, and peers in future research may increase confidence in the measurements and more fully capture youth bullying behaviors (Casper and Card., 2017), while decreasing social desirability responding effects (Smith et al., 2005). Second, the present study of psychological symptoms was limited to internalizing symptoms (i.e., depressive symptoms); future researchers should consider including externalizing symptoms such as conduct problems (Yoon et al., 2018).

4.5. Implications

This study yielded several important implications. First, adolescents' family and peer worlds could be better understood as an integrated system when examining experiences in each domain. For example, anti-bullying programs that consider the interactions between family and peer systems transactions should be the most effective ones (Van Niejenhuis et al., 2019). Second, interventions should also focus on parental responses to adolescents' involvement in bullying behavior. Parents are typically considered as essential sources of support in decreasing peer victimization and its consequences (Lereya et al., 2013), however, the victimized children in this study were at greater risk for emotional maltreatment. Hence, parents, perhaps Chinese parents in particular, may need guidance in how to recognize and respond most appropriately to their children's bullying involvement. Third, the mediating role of depressive symptoms in the cross-context spillover link indicated that adolescents with depressive symptoms are at heightened risk for later emotional maltreatment and bullying involvement. The major implication of this study is that educators and parents should pay great attention to and provide support for youth showing intrapersonal problems, like depressive symptoms, because they are risk of becoming victims of emotional maltreatment and bullying, which may further lead to a vicious cycle of cross-domain maltreatment. Furthermore, given the observed spillover effects, our study supported the notion that anti-bullying programs should simultaneously address both family and peer relationships as well as student well-being to be most effective.

5. Conclusion

Our study revealed bidirectional relations between emotional maltreatment and bullying perpetration, along with a unidirectional relation from bullying victimization to emotional maltreatment at the within-person level among Chinese early adolescents. Furthermore, depressive symptoms mediated the effects of emotional maltreatment on bullying perpetration/victimization as well as the reverse relation from bullying victimization to emotional maltreatment. Therefore, bullying interventions need to address family and peer circumstances as well as student well-being characteristics to break the observed vicious cycle of maltreatment.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.socscimed.2021.114483.

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