

## Special Issue Article

# The Future of Developmental Psychopathology: Honoring the Contributions of Dante Cicchetti

## The influence of friendships on the mental health of maltreated youth: A pre-registered systematic review using a developmental psychopathology perspective

Michelle P. Brown<sup>1</sup> , Rhoda Witmer<sup>1</sup> and Alexsia Johnson<sup>2</sup>

<sup>1</sup>Department of Psychology, University of South Carolina, Columbia, SC, USA and <sup>2</sup>Department of Psychological and Brain Sciences, University of California, Santa Barbara, CA, USA

### Abstract

Friendships are a potential factor that influence maltreated children's risk for psychopathology. This systematic review examined (1) how friendships influence the association between child maltreatment and psychopathology and (2) developmental differences in how friendships influence this association. Four databases were searched. Inclusion criteria were primary study, quantitative, measures of maltreatment and friendship up to the age of 18 years, measures of psychopathology up to the age of 24 years, and a non-maltreated sample. Exclusion criteria were qualitative, reviews or meta-analyses, no distinction between maltreatment and other trauma, and no differentiation between friendships and other support. Risk of bias was assessed. Data were narratively synthesized. Two hundred thirty-five articles were retrieved for full review. Fourteen met inclusion criteria ( $N = 98,676$  participants). Eleven of the fourteen studies found that some aspect of friendships influenced the association between maltreatment and psychopathology, with positive qualities generally decreasing risk and negative qualities increasing risk for psychopathology. However, peer support exacerbated maltreated children's risk for psychopathology in two studies. Only three studies assessed friendship prior to adolescence, which precluded conclusions regarding developmental differences. Future research should consider developmental differences and use findings and validated measures from the peer relations literature to better understand how friendships influence maltreated youth's vulnerability to psychopathology.

**Keywords:** Child maltreatment; friendship; peer relationships; psychopathology; systematic review

(Received 13 January 2024; revised 6 February 2024; accepted 9 February 2024; First Published online 27 March 2024)

Child maltreatment, which encompasses experiences of physical abuse, sexual abuse, emotional/psychological maltreatment, and neglect perpetrated against children and adolescents, is one of the biggest threats to normative child development and adaptation (Cicchetti, 2013). In the United States alone, approximately 600,000 children are determined to be victims of child maltreatment annually per child welfare records (U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth, and Families, 2023), which is estimated to result in total lifetime costs of \$428 billion (Peterson et al., 2018). One of the mostly widely established impacts of child maltreatment that drives its substantial economic burden is its influence on the development of mental health difficulties.

Decades of research have highlighted that individuals who have experienced child maltreatment are at an increased risk of developing a wide range of mental health symptoms and disorders throughout childhood and adolescence that persists into adulthood (Cicchetti &

Toth, 2016; Collishaw et al., 2007; Dunn et al., 2013; Vachon et al., 2015; Vallati et al., 2020). One of the major contributions of developmental psychopathology is illuminating our understanding of specific factors that influence the association between child maltreatment and mental health challenges. These factors range from biological factors such as specific genetic profiles and abnormal cortisol patterns to individual psychosocial factors such as self-esteem, personality characteristics, and avoidance of painful private events following abuse (Cicchetti & Toth, 2016; Cicchetti, 2013; Oshri et al., 2013; Shenk et al., 2014). Additional research in this area has focused on how the nature of maltreated individuals' interpersonal relationships influence their vulnerability to psychopathology with the parent-child relationship being the most studied. However, our knowledge regarding the influence of maltreated children's peer relationships, particularly their friendships, on their risk for psychopathology, is much more limited. To contextualize the importance of studying the influence of maltreated youth's friendships on their risk for psychopathology, it is important to first consider the normative trajectory of peer experiences for children and adolescents who have not experienced maltreatment. This consideration is in line with the normative principle of developmental psychopathology in which normative development can help to inform abnormal developmental processes (Cicchetti & Toth, 2009; Cicchetti, 1984).

**Corresponding author:** Michelle P. Brown, Email: [michellepbrown@sc.edu](mailto:michellepbrown@sc.edu)

**Cite this article:** Brown, M. P., Witmer, R., & Johnson, A. (2024). The influence of friendships on the mental health of maltreated youth: A pre-registered systematic review using a developmental psychopathology perspective. *Development and Psychopathology* 36: 2232–2243, <https://doi.org/10.1017/S0954579424000476>



### Normative development of peer relationships

The establishment of successful relationships with peers is recognized to be an important stage-salient central task of childhood that is indicative of normal development (Mueller & Silverman, 1989). Importantly, this is an ongoing task as the nature of these relationships transforms across childhood and adolescence. Specifically, during middle childhood (ages 6–10 years) as children enter grade school, they begin to spend a higher proportion of time with peers and by adolescence, youth spend 29% of their waking hours with peers, nearly double the amount spent with adults (Parker et al., 2006). This shift in proportion of time spent within parent versus peer relationships is the reason why it is widely appreciated that peers come to replace parents as the primary agents of youth's socialization (Mueller & Silverman, 1989). Beyond increasing time spent with peers, during ages 11–15 years, friendships in particular move from instrumental quality (e.g., considering what the person can do for you) to mutual caring in which friends hold greater emotional significance (Mueller & Silverman, 1989). During later adolescence, 16 years and above, the proportion of time spent with friends reaches its peak and the level of intimacy and trust placed in friends becomes as intense as that previously reserved for parents or no one at all.

Considering how influential peers become to child and adolescent development, it is understandable that peers become a primary source of social support, especially for youth who have experienced adversity. Indeed, a systematic review of the peer relations literature revealed that having close friendships of high quality can reduce the later adjustment difficulties experienced by children exposed to early adversities (Prinstein & Giletta, 2016). As a result, friendships may provide a corrective context to redirect developmental trajectories that have been distorted due to stressors such as parenting/family dysfunction and peer victimization. For example, one longitudinal study of 4<sup>th</sup> and 5<sup>th</sup> grade children found that peer victimization predicted increases in internalizing and externalizing behaviors, but having a best friend eliminated or significantly reduced these effects (Hodges et al., 1999). However, friendships can also maintain or exacerbate maladaptive trajectories. For example, youth engaged in delinquency may have such behaviors positively reinforced if they have antisocial friends and those with depressive symptoms may engage in co-rumination if they have depressed friends, which increases intimacy, but fosters maintenance of symptoms (Prinstein & Giletta, 2016).

### A developmental psychopathology perspective on understanding of the influence of friendships on the mental health of maltreated youth

The peer relations literature provides clear and compelling evidence regarding the importance of peers to child and adolescent development, both because of the role they assume in the lives of youth and their influential nature on youth mental health. This understanding of the normative development of friendships in the lives of children and adolescents can help to inform greater understanding of the influence of friendships for those vulnerable to proceeding on negative developmental trajectories such as youth who have experienced maltreatment. Beyond risk for developing psychopathology, unfortunately for maltreated children, it is also well established that they experience profound difficulties in peer relations (Cicchetti & Toth, 2016; Flynn et al., 2014). Maltreated children often behave toward peers with either excessive aggression or excessive withdrawal and avoidance (Mueller & Silverman, 1989), which heightens their chances for experiencing rejection,

isolation, and victimization from their peers. When they do establish friendships, they tend to be characterized by less caring and validation and more conflict and betrayal than non-maltreated children (Cicchetti & Toth, 2016). One empirical study found that friendships dyads containing a physically abused 9- to -14-year-old child involved less intimacy and more conflict than friendships dyads without an abused child (Parker & Herrera, 1996). Due to these profound challenges, it is critical to examine how maltreated children's friendships influence their development of mental health problems relative to children who have not experienced maltreatment. Furthermore, in spite of the risk for peer difficulties and psychopathology, the ordinary magic of resilience reminds us that even youth who have experienced the most severe forms of adversity are able to cope successfully (Masten, 2001). For this reason, it is equally as important to understand under which circumstances peer relationships help to protect maltreated youth from developing mental health difficulties.

In addition to the normative principle, developmental psychopathology also emphasizes the developmental principle in that psychological problems occur in a developing organism and considering the developmental stage of the individual is essential for understanding, preventing, and treating the causes, problems, and consequences of psychopathology (Cicchetti & Toth, 2009; Cicchetti, 1984). To this end, it is important to consider how the influence of friendships on the development of psychopathology in maltreated youth may look differently depending on the developmental stage of the individual.

### Current study and implications for developmental psychopathology research

To address these questions, we conducted a systematic review of the current literature investigating how friendships influence the development of psychopathology in maltreated youth. Specifically, we aimed to synthesize findings from studies that examine how friendships influence the association between child maltreatment and mental health problems whether as a mechanistic pathway (e.g., mediation) or a factor that can buffer or exacerbate this association (e.g., moderation). In line with the normative principle, we selected studies with both a maltreated and a non-maltreated sample. Keeping with the developmental principle, a secondary aim was to examine whether the influence of friendship on the development of psychopathology in maltreated youth differs based on developmental stage (e.g., middle childhood, adolescence).

This review will help to assess our current understanding of how friendships influence the development of psychopathology in maltreated youth and identify important areas for future research that utilizes a developmental psychopathology perspective. Given the importance of friendships to child and adolescent development, the limited research examining their influence on maltreated youth's outcomes constitutes a significant neglect of a potentially crucial factor in the maltreated child's environment. By systematically reviewing the existing literature examining the influence of friendships on maltreated youth's mental health, we can assess what is already known and use this to inform future studies that integrate a developmental psychopathology lens. As noted, developmental psychopathology has already contributed to our understanding of how specific factors influence the association between child maltreatment and mental health using rigorous methodological designs (e.g., longitudinal and multi-level) that contextualize pathways toward mental health difficulties within expectations for normative development. Thus, using a

developmental psychopathology framework to investigate our understanding of the influence of friendships on the development of mental health problems in maltreated children has the potential to make a notable impact in informing targeted interventions to interrupt the negative developmental trajectory of maltreated children toward maladaptation.

## Method

The review protocol was built in accordance with the PRISMA-P checklist (Page *et al.*, 2021) and registered on OSF (<https://osf.io/hj2y5>). Our participants, exposures, comparison, outcome, and study design (PECOS) framework is as follows:

### Participants

The population of interest were those who experienced childhood maltreatment (e.g., physical abuse, sexual abuse, emotional/psychological maltreatment, and neglect).

### Exposures

We investigated how exposure to childhood and/or adolescent friendships influences psychopathological outcomes in relation to child maltreatment.

### Comparison

Eligible studies were required to include both a sample who had experienced child maltreatment and those who had not. We also considered studies focusing on individual subtypes (e.g., sexual abuse only) or a range of subtypes.

### Outcomes

We included studies that had as their outcome general psychopathology or very specific psychopathological outcomes, such as depression, anxiety, internalizing or externalizing behaviors, or a variety of disorders.

### Study design

We included a variety of study designs, but excluded other reviews, prevalence studies, and qualitative studies. Rather than setting one age range for all variables, we set age limits for specific variables. Eligible studies assessed both child maltreatment and friendship/peer relationship variables in youth up to the age of 18. Though the age range primarily assessed in the relevant area of literature limits participation to those 17 years and under, including studies with participants up to 18 years allowed researchers to include high school samples involving students in 12<sup>th</sup> grade ( $n = 1$ ). In addition to maltreatment and friendship variables assessed up to the age of 18 years, eligible studies investigated psychopathological outcomes up to the age of 24 years to give sufficient time for longitudinal data to investigate outcomes into early adulthood. Studies with participants outside the age ranges for the necessary variables were excluded. We included studies that examined maltreatment and friendship variables retrospectively if the time periods referenced were within our age parameters (e.g., asking young adult participants to retrospectively report on childhood maltreatment experiences prior to the age of 18 years).

The exposure variable was friendship. Eligible studies investigated friendship as an independent, moderating, or mediating variable and how friendship influences the association between child maltreatment and psychopathology; studies that measured friendship as an outcome variable were excluded. We excluded studies that did not distinguish

friendship support from other forms of social support, such as that from teachers, family, or community members. Friendship could be assessed in several ways including presence/absence of a best/close friend, number of friends, positive or negative qualities of friendships/peer relationships, or friend/peer social support. We excluded studies that focused on peer deviance and peer delinquency in general. Studies that investigated friendship and peer deviance without distinguishing the two, such as studies that asked about the number of delinquent or deviant peers, were excluded.

A range of measures formed the outcome variable of interest, psychopathology. This included measures assessing symptoms or diagnoses for specific disorders such as depression. See Table 1 for details on variables measured. We also included studies assessing psychopathology more broadly such as internalizing and externalizing symptoms, clinical diagnoses or broad symptomology, or psychological distress.

Exclusion decisions focused first on study design: other reviews/meta-analyses, qualitative studies, and prevalence studies were excluded. We excluded several studies that had independent variables related to, but not distinguished from, childhood maltreatment experiences such as studies of exposure to interpersonal violence, community violence, war trauma, or adverse childhood experiences. Studies that investigated maltreatment variables along with adversity variables, such as adverse childhood experiences (ACEs; Felitti *et al.*, 1998) studies, were eligible only if they distinguished between maltreatment variables and other types of adversity. We searched PubMed, PsycInfo, and ProQuest at the inception of the systematic review, as well as OpenGrey to locate grey literature to account for publication bias. However, OpenGrey returned zero studies and ProQuest was used instead to locate grey literature. The lead reviewer (RW) repeated the initial search and searched the references of related systematic reviews after the second screening phase, prior to evaluating the included studies.

We built our search strategy through collaboration between the second and third authors (RW and AJ), who served as the lead reviewer and co-reviewer, respectively. RW and AJ met repeatedly with a university librarian who provided valuable expertise. They ran trial attempts to ensure that identified terms located studies generally within the scope of this review. AJ applied the primary search strategy to PubMed. Upon completion of this process, RW and AJ consulted with the first author (MB) who served as the senior reviewer. Then, RW proceeded with the initial search, filtering to include English studies and exclude books.

The final draft of our search strategy is as follows:

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((maltreat* OR abus* OR neglect* OR trauma* OR depriv* OR
"Child Protective Services" OR "Child Welfare" OR foster OR
molest* OR assault* OR abandon*) AND (Adolescen* OR Teen*
OR Youth OR Child* OR Infan*)) AND ((friend* OR "peer relation"
OR "peer group" OR "peer support" OR loner OR dyad*) AND
("young adult" OR teen* OR adolescen* OR child* OR youth) AND
("developmental psychopathology" OR "mental health" OR emo-
tion* OR internaliz* OR externaliz* OR revictimiz* OR victimiz*
OR disorder* OR anxious* OR anxiet* OR depress* OR behavio$*
OR "self-harm" OR "self-injurious" OR adapt* OR maladapt* OR
maladjust* OR adjust* OR resilien*)
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### Screening process

RW and AJ used Rayyan to perform both screening phases. Rayyan's automation tool located potential duplicates which RW examined and either confirmed or denied that they were

**Table 1.** Results of the included studies

Reference	Design	Participants	Key variables	Psychopathology	Measures	Key findings
Alto et al. (2018)	L	<i>N</i> = 342 (198 Mal, 144 Non-mal); Ages 7-9 (W1); Ages 13-15 (W2); Ages 15-17 (W3); Summer camp sample	Maltx (R, S, C); Peer relationships (MED, SR, C, W2); Depression (OR, W2, W3)	Depression	Social Acceptance (Harter, 1985); California Q-set (Block, 1961); Depressive symptoms Q-scale (Alto et al., 2018)	Maltreatment led to decreased social acceptance, which led to increased psychopathology.
Brown (2019)	L	<i>N</i> = 545 (295 Mal, 250 Non-mal); Ages 6-9 (W1); Ages 13-15 (W2); Ages 15-18 (W3); Summer camp sample	Maltx (R, C); Friendship Quality (MED, SR, C, W2); Psychopathology (W2, W3)	Psychopathology: Composite of internalizing and externalizing behaviors and PTSD	YSR (Achenbach, 1991); CCDS (Riggio, 1986; Riggio & Carney, 2003); IPPA (Armsden & Greenberg, 1987)	Friendship did not mediate between maltreatment and psychopathology.
Chen et al. (2023)	L	<i>N</i> = 859; <i>M</i> <sub>age</sub> = 12.73, 7 <sup>th</sup> grade (W1); 8 <sup>th</sup> grade (W2); 9 <sup>th</sup> grade (W3); Convenience sample	Family violence:12-month history of parental abuse (SR, C, W1); Peer relationships (MOD, PN & SR, C, W1); Depressive symptoms (SR, C, W3)	Depressive symptomology	CES-D (Radloff, 1977); CTS, Parent-to-Child (Straus & Hamby, 1997); NRI (Furman & Buhrmester, 2009); Revised Class Play (Masten et al., 1985)	Peer support exacerbated depression for youth who experienced family violence.
Cheung et al. (2017)	CS	<i>N</i> = 10,148 (54.7% Mal [includes IPV exposure]; 45.7% Non-mal); Ages 13-17; National Comorbidity Survey of Adolescents (NCS-A) dataset.	Maltx (SR, C); Friend support (IV, SR, C); Mental health indicator (SR, C); One year history of disorders, suicidal ideation, mental health (SR, C)	Overall mental health status	CTS (Straus et al., 1998); CTQ (Bernstein et al., 1994)	Overall friend support did not improve overall mental health. However, readiness to open up to friends was protective for Mal youth but not Non-Mal youth.
Dion et al. (2016)	L	<i>N</i> = 605 (18.9% Mal, 81.1% Non-Mal); Age 14 (W1); Age 16 (W2); Age 18 (W3); Age 24 (W4); School based sample	Maltx (SR, C, W1, W4); Friend support (IV, SR, C, W1); Psychological distress (SR, C, W1, W2, W3, W4)	Psychological distress	Mal (Deschesnes et al., 1997); Sexual abuse (Tourigny et al., 2008); Psychological Distress Index (Deschesnes, 1998; Prévile et al., 1992); Friendship (Bellerose et al., 2002)	Friend support predicted lower psychological distress over time and friend support accounted for significant variance in the rate of change of psychological distress despite the significant association between Maltx and psychological distress.
Forster et al. (2020)	CS	<i>N</i> = 73,648 (< 20% Mal); 2 groups; average ages 14 and 17; 2016 Minnesota Student Survey	Family-based adversity (SR, D, S); Peer support (MOD, SR, C); Depressive symptoms (SR, D); Non-suicidal self-injury (NSSI), suicide ideation (SI), and suicide attempts:all SR, D	NSSI as measured after adjusting for depressive symptoms	ACEs (Felitti et al., 1998); Student Engagement Instrument (Appleton et al., 2006); PHQ-2 (Kroenke et al., 2003)	High peer support in the context of high teacher support moderated the effect of parental dysfunction + maltx on NSSI and SI. High peer support mitigated the link between familial adversity and all suicidal behaviors for 11 <sup>th</sup> graders in the parental dysfunction + maltreatment class.
Nam et al. (2022)	CS	<i>N</i> = 709 (471 Mal, 238 Non-Mal); 7 <sup>th</sup> – 11 <sup>th</sup> grade; South Korea's Children and Adolescent Survey dataset	Past year child abuse (SR, C); Peer attachment (MOD, SR, C); Adolescent to Parent Violence (APV, SR, C)	APV	CTS (Straus, 1979); PCCTS (Straus et al., 1998); IPPA (Armsden & Greenberg, 1987)	Peer attachment decreases the likelihood that abused youth will engage in violence towards parents.
Negriff et al. (2019)	L	<i>N</i> = 454 (303 Mal, 151 Non-Mal); Age 9-13 (W1); Ages 10-14 (W2); Recruited via records and school lists of 10 counties	Maltx (R, C); # of supportive friends (MED, SR, W1, W2); Depressive symptoms (SR, C, W1, W2)	Depressive symptoms	CDI (Kovacs, 1981, 1992)	Peer support did not mediate the association between maltreatment and depressive symptoms.
Salzinger et al. (2007)	L	<i>N</i> = 200 (100 Mal, 100 Non-Mal); <i>M</i> <sub>age</sub> = 10.5 (W1); Age 16 (W2); Recruited via records and school	Physical abuse (R, D, W1) Verbal & physical abuse (SR, C, W2); Peer attachment (IV, MED, MOD, SR, C, W2); Violent delinquency (SR, C, W2)	Adolescent violent delinquency	SRD (Elliott & Ageton, 1980); IPPA (Armsden & Greenberg, 1987)	Peer relationships did not mediate between child abuse and delinquency. However, abusive behavior with best friends exacerbated the association between Maltx and delinquency.

(Continued)



Table 1. (Continued)

Reference	Design	Participants	Key variables	Psychopathology	Measures	Key findings
Seeds et al. (2010)	CS	<i>N</i> = 101; Ages 13-18; Recruited through school district	Maltx (SR, C); Size of peer network (MED, SR, C); Depression severity (SR, C)	Depression symptom severity	BDI-II (Beck, 1996); CECA (Bifulco et al., 1994)	Number of friends did not mediate between Maltx and depression severity.
Toth and Cicchetti (1996)	CS	<i>N</i> = 92 (52 Mal, 40 Non-mal); Ages 8-12; Recruited via agencies serving them	Maltx (R, S); Patterns of relatedness (IV, SR, C); Depression (SR, C); Self-Perception (SR, C)	Depressive symptomology; Self-concept	Relatedness Scales (Wellborn & Connell, 1987); CDI (Kovacs, 1981); Self-Perception Profile for Children (Harter, 1985)	Mal children with confused patterns of relatedness reported more depressed symptoms than Non-mal children with optimal/adequate relatedness.
Wan and Gong (2022)	CS	<i>N</i> = 1,763 (28.7% Mal, 71.3% Non-mal); Ages 9-16; Recruited via cluster sampling in low-SES locales	Past year maltx (SR, C); Peer support (MOD, SR, C); Depression in the past two weeks (SR, C)	Child depression	JVQ (Radford et al., 2011); DSM-5 (American Psychiatric Association, 2013)	Peer support exacerbated the association between maltreatment trauma and depressive symptoms.
Zhang et al. (2021)	L	<i>N</i> = 1,809 after imputation; <i>M</i> <sub>age</sub> = 8 (W1); <i>M</i> <sub>age</sub> = 13 (W4); <i>M</i> <sub>age</sub> = 14 (W5); Recruited through schools	Maltx (PR, SR, C, W1, W4, W5); Positive childhood experiences including friendship (MOD, SR, C, W5); Psychopathology (SR, C, W5)	Depressive symptoms; Oppositional Defiant; Disorder Conduct Disorder	SDQ (Goodman, 1997)	Higher peer support was protective against the effect of polyvictimization (experiencing two or more subtypes of child maltx on a frequent basis) on psychopathological symptoms.
Zhao et al. (2021)	CS	<i>N</i> = 1,802; 7 <sup>th</sup> and 8 <sup>th</sup> grades/ages 13-15; Recruited via random cluster sampling	Emotional neglect (SR, C); Friendship quality (MOD, SR, C); Depressive symptoms (SR, C)	Depressive symptoms	CTQ, short form (Chinese) (Bernstein et al., 1994; Zhao et al., 2005); FQQ (Chinese) (Parker & Asher, 1993; Zou et al., 1998); CDI (Chinese) (Yu & Li, 2000)	Higher friendship quality buffered the impact of emotional neglect on adolescent depression among girls.

Note: L = Longitudinal; Mal = Maltreated, Non-mal = Non-maltreated; W = Wave; Maltx = Maltreatment; R = records; S = Subtypes; C = Continuous; MED = Mediator; SR = Self-report; OR = Observer-report; YSR = Youth Self-Report; CCDS = Checklist of Child Distress Symptoms; IPPA = Inventory of Parent and Peer Attachment; MOD = Moderator; PN = Peer nominations; CES-D = Center for Epidemiological Studies - Depression; CTS = Conflict Tactics Scale; NRI = Network of Relationships Inventory; CS = Cross-Sectional; IPV = intimate partner violence; IV = Independent variable; CTQ = Childhood Trauma Questionnaire; D = Dichotomous; ACEs = Adverse Childhood Experiences; PHQ = Patient Health Questionnaire; PCCTS = Parent-Child Conflict Tactics Scale; CDI = Children's Depression Inventory; SRD = Self-Report of Delinquency; BDI-II = Beck Depression Inventory, 2nd ed.; CECA = Childhood Experience of Care and Abuse; JVQ = Juvenile Victimization Questionnaire; DSM-5 = Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> edition; SDQ = Strengths and Difficulties Questionnaire; FQQ = Friendship Quality Questionnaire.

duplicates, deleting *n*-1 of every duplicate set. To confirm duplication, RW compared title, author list, date(s) of publication, and DOI. RW then toggled Rayyan's blind feature "on" and both RW and AJ independently screened titles and abstracts, taking a generously inclusive approach at this stage. RW toggled the blind off at the end of this stage to allow for discussion of conflicts. Upon completion of this stage, RW uploaded the full texts into Rayyan, turned Rayyan's blind feature on, and corresponded with authors whose full texts were unavailable or for whom additional follow-up was needed to confirm study eligibility. At this stage, RW and AJ primarily focused on the Method sections. RW and AJ separately reviewed the studies, discussed consistent themes to gain clarity, and consulted regularly with MB regarding these themes. Once thematic discourse was insufficient to resolve differences, RW and AJ lifted the blind and resolved conflicts. At this point, RW repeated the search strategy and searched the reference pages of systematic reviews involving similar topics. This process located two more studies, one of which was excluded upon review of title and abstract, and one of which was excluded for failing to distinguish between friendship-focused questions and bullying.

When RW and AJ had completed the second screening stage, MB then gave final approval or disapproval of each included study to verify adherence to PECOS. We then assessed the quality of the included studies. Given that both longitudinal and cross-sectional studies were included, we included questions pertaining to both. Our quality assessment was based on quality assessment tools

developed by the National Heart, Lung, and Blood Institute (*Study Quality Assessment Tools* | NHLBI, NIH, 2021)

### Quality assessment

For each study, RW and AJ performed a quality assessment containing six domains indicating biases arising from study clarity, sample size, control group parameters, confounding variables, measurements, and reporting. Each study could receive an individual rating of low risk, some risk, or high risk for every domain. RW and AJ assessed all studies individually in a preliminary phase and then discussed agreements and edits in a secondary phase. There was one disagreement that had to be resolved by MB. Once all ratings were decided, AJ created a Quality Assessment Table and determined the overall risk of bias within each domain by combining all 84 individual ratings (see Figure 2).

### Results

The initial search strategy returned 11,526 results. De-duplication via a combination of automated and human resources resulted in 206 results being deleted. Based on a review of the remaining 11,320 titles and abstracts, 235 studies were included for full review. The full text for two studies could not be retrieved. For the 233 remaining studies, we focused on reviewing the Method sections to verify that the studies examined the variables of interest.

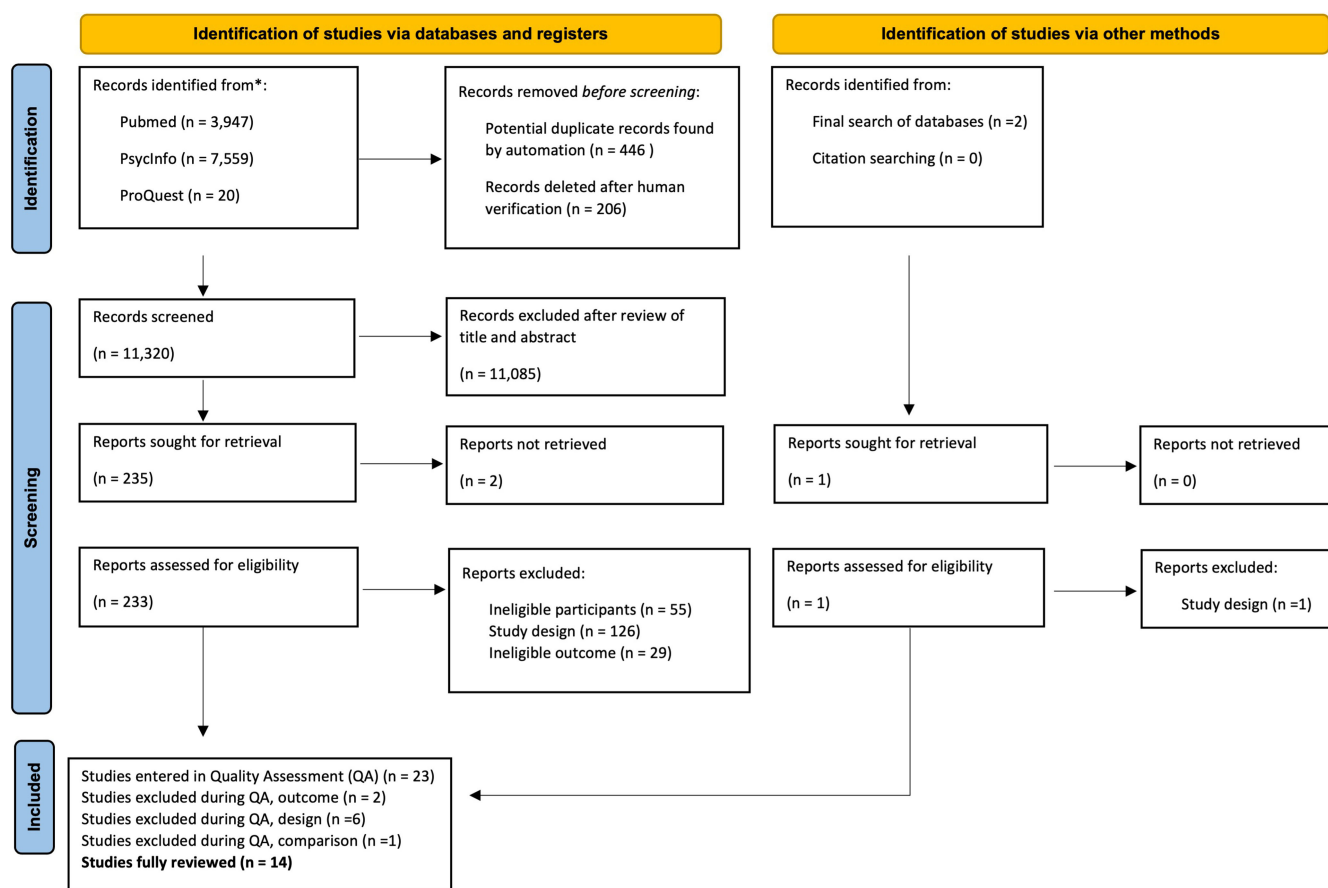


Figure 1. PRISMA flow chart (Page et al., 2021).

Twenty-three studies were entered into the quality assessment stage (see Figure 1).

Nine studies passed through full review but were excluded shortly thereafter, with guidance by MB. Two were excluded due to investigating an outcome related to, but slightly outside the scope of, the PECOS framework (Bolger et al., 1998; Bolger, 1997). One was excluded due to lack of a non-maltreated comparison group (Haag et al., 2023), and one was excluded due to not distinguishing friendships from other forms of social support (Shapiro & Levendosky, 1999). For the other five excluded studies, though each of them measured all variables of interest, they did not investigate associations between them in a way that addressed our primary aim (Cho & Galehan, 2020; Ellis et al., 2003; Lim, 2015; Linder & Collins, 2005; Neumark-Sztainer et al., 2000).

The remaining 14 studies' methods were heterogeneous and thus incompatible for a meta-analytic review. Recruitment methods, participants' ages, variables, scales, and hypotheses differed significantly between the final 14 studies.

### Study characteristics

See Table 1 for study characteristics such as study design, sample sizes, variables measures, and individual study findings.

### Participants

Seven of the 14 included studies involved children under 10; seven exclusively involved children and/or adolescents between 10 and 18. Sample sizes ranged from  $N = 92$  (Toth & Cicchetti, 1996) to

$N = 79,348$  (Forster et al., 2020). The total number of participants assessed in this review was  $N = 98,676$ . Some studies clearly distinguished maltreated participants from non-maltreated participants, but not every study specified the number in each group or presented a percentage of participants in each group. Thus, we are unable to report the total number of maltreated and non-maltreated participants in this review.

### Exposures

There was a high degree of variability in measuring the exposure variable, friendship, between studies. For example, two studies each asked one question pertaining exclusively to friendship/peer support (Forster et al., 2020; Seeds et al., 2010) whereas Negriff and colleagues (2019) used a series of questions to create a unidimensional, quantitative measure of friendship and Cheung and colleagues (2017) asked three questions. The remainder used a variety of validated scales, including the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987), the Network of Relationships Inventory (NRI; Furman & Buhrmester, 2009), and the Friendship Quality Questionnaire (FQQ; Parker & Asher, 1993).

The ages at which friendship was assessed ranged from 8 to 18 years. Three studies assessed the friendships of children during middle childhood (i.e., age 12 years or under), but the studies' sample sizes for two of these included adolescent participants (Negriff et al., 2019; Wan & Gong, 2022). Findings were conflicting. Toth and Cicchetti (1996) found that friendship protected against the influence of maltreatment on psychopathology whereas Wan and Gong (2022)

found that it exacerbated maltreatment's effects and Negriff and colleagues (2019) found no effect. The remaining studies assessed friendship in adolescence with heterogeneous findings.

### Comparison

Included studies differed in both identifying and describing maltreated and control participants. Most of the studies used self-report measures for the maltreatment variable. Five of the 14 studies verified maltreatment via records, and one used both a self- and a parent-report measure for maltreatment. One of the included studies matched maltreated and non-maltreated participants. However, most of the studies provided adequate information regarding age, race, ethnicity, and socioeconomic status on both groups to verify that the two groups were reasonably comparable. Most of the studies examined lifetime maltreatment experiences; however, several examined maltreatment or abuse only within the past year.

### Outcomes

Eight of the 14 studies exclusively examined internalizing behaviors (mostly depression), two exclusively examined externalizing behaviors, and four examined general psychopathology/mental health. Outcomes were measured between the ages of 9 and 24 years. As with the friendship variable, the 14 included studies used a variety of approaches to measure psychopathology. See Table 1 for details.

### Study design

Seven (50%) of the 14 included studies were longitudinal and seven (50%) were cross-sectional. They investigated a variety of associations between the variables of interest. Five of the 14 studies investigated moderation, five investigated mediation, and four analyzed data using other designs (e.g., odds ratios). Several studies examined multiple possible associations.

### Measures

The studies reviewed used a variety of approaches to measure the variables. See Table 1 for detailed information regarding variables and scales. Where a variable is listed but no corresponding scale is given, the study did not indicate a validated scale for that variable.

### Quality assessment

Three studies had a low risk of bias, nine had some risk of bias, and two had a high risk of bias. See Figure 2 for complete details on the risk of bias assessment.

### Findings

Eleven of the 14 included studies found that friendship influences outcomes after child maltreatment. Of these 11 studies, most found that positive aspects of friendships decreased maltreated youth's vulnerability to psychopathology; however, two of these studies found that peer support exacerbated the association between maltreatment and depression (Chen *et al.*, 2023; Wan & Gong, 2022). Two of the three studies that did not find friendship to influence outcomes after child maltreatment were longitudinal, assessed for mediation, and were found to have a low risk of bias in the quality assessment (Brown, 2019; Negriff *et al.*, 2019). The fourteen studies reported heterogeneous results, both in overall

findings, and in the direction of the pathways. We report patterns based on study characteristics below.

### Mediation

Of the five studies that investigated friendship as a mediating variable between maltreatment and psychopathological outcomes, only one reported significant findings in that maltreatment predicted lower peer social acceptance, which helped to explain maltreated children's greater risk for depression (Alto *et al.*, 2018). The other four studies did not find friendship variables to mediate the association between maltreatment and psychopathological outcomes (Brown, 2019; Negriff *et al.*, 2019; Salzinger *et al.*, 2007; Seeds *et al.*, 2010).

### Moderation

All five studies that examined friendship as a moderating variable reported significant findings. Three studies found positive aspects of the friendship buffered against the association between maltreatment and psychopathology (Forster *et al.*, 2020; Nam *et al.*, 2022; Zhao *et al.*, 2021) whereas one found that peer support exacerbated the association between child maltreatment and depression (Chen *et al.*, 2023). An additional study focused on a negative aspect of friendship, abusive behaviors with best friends, and found that this exacerbated the association between maltreatment and violent delinquency (Salzinger *et al.*, 2007).

### Other assessments of the influence of friendships

Studies that assessed for associations other than mediation or moderation reported heterogeneous findings. Two studies found friendship to decrease vulnerability to psychopathology in maltreated youth (Dion *et al.*, 2016; Zhang *et al.*, 2021) but Wan and Gong (2022) found that peer support exacerbated the association between maltreatment and depression. Toth and Cicchetti (1996) reported variances based on patterns of relatedness: maltreated youth with confused patterns of relatedness reported more depressive symptoms than youth with adequate or optimal patterns of relatedness. Cheung and colleagues (2017) did not find friendship overall to be protective from the effect of child maltreatment on depression but noted that the ability to open up to friends was positively associated with mental well-being only in the maltreated sample. These studies used a variety of approaches to assessing friendship (e.g., validated measures, singular questions).

### Internalizing and externalizing behaviors

Eight of the studies examined internalizing behaviors (Alto *et al.*, 2018; Chen *et al.*, 2023; Forster *et al.*, 2020; Negriff *et al.*, 2019; Seeds *et al.*, 2010; Toth & Cicchetti, 1996; Wan & Gong, 2022; Zhao *et al.*, 2021), two examined externalizing behaviors (Nam *et al.*, 2022; Salzinger *et al.*, 2007), and four examined general psychopathology/psychological distress/mental health (Brown, 2019; Cheung *et al.*, 2017; Dion *et al.*, 2016; Zhang *et al.*, 2021). Within two of the groups, findings differed: eight of those that solely examined internalizing behaviors found effects but were split 4:4 on whether friendship protected from deleterious outcomes or exacerbated psychopathology/found no effect. The two studies that examined externalizing behaviors were consistent in finding that positive aspects of friendship buffered the association between maltreatment and psychopathology whereas negative friendship qualities exacerbated this association. The four studies that examined psychopathology in general behaviors

Quality Assessment

References	1	2	3	4	5	6	
Alto et al., (2018)							Low
Brown (2019)							Low
Chen et al., (2023)	■		■				Some
Cheung et al., (2017)	■		■		■		Some
Dion et al., (2016)				■			Some
Forster et al., (2020)			■		■		Some
Nam et al., (2022)	■				■		Some
Negriff et al., (2019)							Low
Salzinger et al., (2007)	■				■		Some
Seeds et al., (2010)	■	■	■		■		High
Toth and Cicchetti (1996)		■		■		■	High
Wan and Gong (2021)	■				■		Some
Zhang et al., (2021)	■		■		■		Some
Zhao et al., (2021)			■		■		Some

Low risk: □ Some risk: ■ High risk: ■

Columns indicate risk of bias arising from:

1. Study clarity
2. Sample size
3. Control group parameter
4. Confounding variables
5. Study measurements
6. Reporting bias

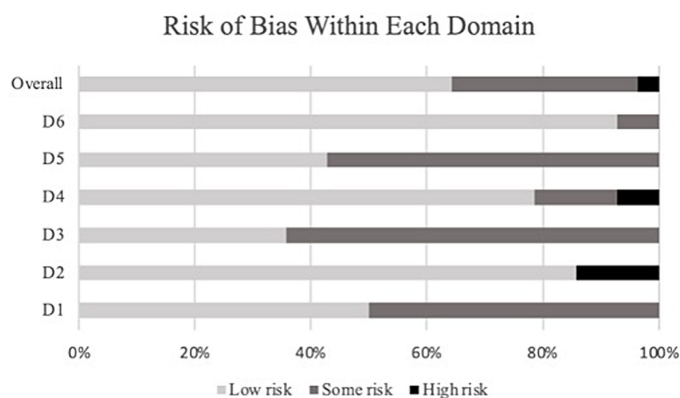


Figure 2. Quality assessment.

varied on whether they found effects related to friendship. See Table 1 for details regarding each study’s assessment of internalizing and/or externalizing behaviors.

Discussion

The primary aim of this systematic review was to synthesize findings from studies that investigate how friendships during childhood/adolescence influence the association between child maltreatment and mental health problems. We were informed by a developmental psychopathology perspective, particularly the normative principle, in our selection of studies that included a non-maltreated sample. As a secondary aim, informed by the developmental principle, we explored whether the influences of friendships on the development of psychopathology in maltreated youth differed based on the developmental stage (e.g., middle childhood, adolescence) during which friendships were examined. We identified 14 studies that met our criteria. We were unable to conduct a meta-analysis due to a high degree of heterogeneity in various aspects of the identified studies, namely variability in assessment of all variables.

Overall, most studies (11 of 14) found that some aspect of youth’s friendships influenced the association between maltreatment and psychopathological symptoms. In general, positive aspects of the friendship (e.g., higher friendship quality, more peer support/social acceptance) played a role in reducing the impact of maltreatment on psychopathology whereas negative aspects of the friendship (e.g., abusive behavior with friends or lower levels of the

positive friendship variable measured) increased psychopathological symptoms among maltreated children. However, there were two studies that found higher levels of peer support exacerbated maltreated children’s risk for mental health challenges (Chen et al., 2023; Wan & Gong, 2022). Though conflicting, these findings are characteristic of the peer relations literature which has similarly noted that though friendships are often protective against psychopathology, they can also maintain or exacerbate maladaptive trajectories through positive reinforcement of negative behaviors such as delinquency or co-rumination among friends who are both experiencing depression (Prinstein & Giletta, 2016).

Regarding whether there were developmental differences in the pattern of findings, we were unable to adequately address this aim, as 11 of the 14 studies assessed friendship variables in adolescence. Only three of these studies assessed friendship during middle childhood with one of them cross-sectionally investigating the influence of peer support in a sample that ranged in age from 9 to 16 years without considering whether there were differences in findings based on developmental stage (Wan & Gong, 2022). Furthermore, for these three studies that examined friendship in middle childhood, findings were conflicting among each of them. Taken together, it is unclear whether and how friendship during the middle childhood stage influences the association between maltreatment and psychopathology.

Though there was some variability when assessing friendship during adolescence, all but two studies (Brown, 2019; Seeds et al., 2010) found that some aspect of friendship influenced the association between maltreatment and psychopathology. Notably, peer support



increased vulnerability to depression in two of these (Chen *et al.*, 2023; Wan & Gong, 2022). Thus, it appears that overall, adolescent friendships exert significant influence on the association between maltreatment and psychopathology and can either protect against or exacerbate this risk. Considering that adolescence is the developmental stage when the amount of time spent with peers reaches its peak and peers become the primary source of socialization, exceeding the influence of parents (Mueller & Silverman, 1989; Parker *et al.*, 2006), it is expected that friendships during this stage have important implications for maltreated youth's vulnerability to mental health challenges.

Beyond the specific aims of this systematic review, there were several other aspects of the included studies that we considered to discern potential patterns in findings. Notably, four of the five studies examining a friendship variable as a mediator did not find an effect at all. Conversely, each of the studies investigating the influence of friendship on the association between maltreatment and psychopathology in other ways (e.g., moderation) consistently found an effect. However, as noted, two of these studies found that peer support actually exacerbated the impact of maltreatment on depressive symptoms (Chen *et al.*, 2023; Wan & Gong, 2022). This suggests that it is most likely that friendships exert their influence on maltreated children's vulnerability to psychopathology through either buffering or exacerbating this association instead of functioning as a mediating pathway indirectly explaining the association between maltreatment and psychopathology.

With regard to study design, only one of the seven cross-sectional studies found no effect of friendship on the association between maltreatment and psychopathology (Seeds *et al.*, 2010) with one of these studies finding that peer support exacerbated this association (Wan & Gong, 2022). The longitudinal studies presented more variability with two finding no effect of friendships (Brown, 2019; Negriff *et al.*, 2019) and one finding peer support to exacerbate the association between maltreatment and psychopathology (Chen *et al.*, 2023). Only two studies specifically examined how friendships influenced the association between maltreatment and externalizing psychopathology. Out of these two studies, they followed the general pattern of positive aspects of the friendship protecting against the development of externalizing behaviors (Nam *et al.*, 2022) and negative aspects of the friendship exacerbating this association (Salzinger *et al.*, 2007). Therefore, the inconsistent pattern of findings was specific to studies examining internalizing symptoms or psychopathology/mental health/psychological distress overall as an outcome. The pattern of findings did not notably differ from the overall pattern across all 14 studies based on the use of validated versus unvalidated measures of friendship or risk of bias.

This is the first systematic review that has been conducted investigating how friendships influence the association between maltreatment and psychopathology. However, Scheuplein and van Harmelen (2022) published a systematic review examining the importance of friendships in reducing brain responses to stress in adolescents exposed to childhood adversity. They were only able to identify four studies for inclusion, only two of which directly tested their research question. Overall, they were not able to make definitive conclusions due to the low number of identified studies and limitations of the studies identified but made several recommendations for future research that are relevant to the current review. These include considering differential dimensions of friendship and developmental differences.

### Conclusion: Friendship and future research directions for developmental psychopathology

Findings from our systematic review have important implications for the future of developmental psychopathology research investigating how friendships influence the mental health of maltreated youth. Presently, there is a wealth of maltreatment research utilizing the developmental psychopathology perspective to inform study design and research questions. There is also an abundance of literature that uses rigorous methodological designs to examine how friendships influence child and adolescent development, including their risk for psychopathology. However, there is little overlap between these literatures. Developmental psychopathology research on the impact of maltreatment mostly does not consider the influence of friendships. When it does, this research is often not informed by existing knowledge regarding the normative development of friendships. Further, it is limited by its use of ancillary survey questions or unvalidated measures of friendship instead of well-validated measures that are established within the peer relationships literature. Though we were able to identify 14 studies to address our overall research questions, the limitations of our review reflect the limitations of the included studies yet allow us to identify important opportunities for future research directions to strengthen our understanding of how friendships influence the development of psychopathology in maltreated youth.

In line with the recommendation suggested by Scheuplein and van Harmelen (2022), it is imperative that future research consider developmental differences in friendship experiences. Only three of the 14 studies in our review included assessment of friendship prior to adolescence and two of these studies assessed their friendship variable using an age group that included both middle childhood and adolescence without consideration of developmental differences. As developmental psychopathology has repeatedly emphasized, psychological problems occur in a developing organism and considering the developmental stage of the individual is essential for understanding, preventing, and treating the causes, problems, and consequences of psychopathology (Cicchetti & Toth, 2009; Cicchetti, 1984). Similarly, the peer relations literature has clearly established that the nature of peer relationships and friendships transforms across childhood and adolescence (Mueller & Silverman, 1989; Parker *et al.*, 2006; Prinstein & Giletta, 2016). Accordingly, the next generation of scholarship in this area should incorporate longitudinal designs that begin when youth are in middle childhood during the early stages of youth establishing meaningful, reciprocal friendships and follow them throughout adolescence. This research could include assessment of friendship experiences over time, informed by the peer relations literature, to clarify how the developmental trajectory of maltreated children's friendships may diverge from what is expected of normative development with subsequent implications for psychopathology.

Expanding on ensuring that research on the influence of friendships on maltreated children's vulnerability to psychopathology is informed by our knowledge of the normative development of friendships, assessment of friendships in other areas of developmental psychopathology research should utilize the variety of widely used and well-validated measures assessing youth's friendships rather than relying on one or a few questions. Some of these measures include the IPPA (Armsden & Greenberg, 1987),

NRI (Furman & Buhrmester, 2009), and FQQ (Parker & Asher, 1993). Friendships are not simple and our investigative approaches to them should not be either. This complexity is reflected by the unexpected finding in some studies that positive aspects of friendship increased maltreated youth's vulnerability to psychopathology. Therefore, it is not enough to assess whether youth report high levels of friend support/quality. Rather, research should also address under which circumstances peers/friends can be harmful. For example, some of the highest quality and intimate friendships may still involve high levels of co-rumination and reinforcement of delinquent behaviors, which is difficult to capture using traditional assessments.

Importantly, all our included studies utilized self-report measures to assess friendship and developmental psychopathology has demonstrated the value of conducting research across multiple levels of analysis. Accordingly, we agree with Scheuplein and van Harmelen (2022) that future research is needed that investigates whether friendships aid mental well-being through reducing neurobiological stress responses in adolescents with a history of childhood adversity. Beyond including neurobiological measures, observational coding of dyadic interactions between friends may help to provide critical information that illuminate our understanding of how friends influence maltreated youth's risk for psychopathology. An example from the peer relations literature is a study that developed a coding scheme to evaluate expressed vulnerability and friendship support during adolescent girls' processing with a friend following exposure to a laboratory stressor while measuring cortisol reactivity (Calhoun et al., 2021). Future developmental psychopathology scholarship with maltreated children and adolescents could similarly incorporate such multi-method and multi-level designs to further strengthen conclusions regarding how specific aspects of friendship influence the development of psychopathology.

Aside from content matters, our review identified that specific domains commonly rated as indicating a high risk of bias pertained to clarity of hypotheses and sample characteristics, control group parameters, and the validity of measures used. The overall quality of the literature in this review would improve with increased use of validated measures, especially for friendship as noted. Additionally, it is important for future research including maltreated and non-maltreated samples to take the developmental psychopathology approach of providing clear descriptions of the non-maltreated comparison group to provide increased confidence that findings are attributable to differences based on maltreatment status. This can be done prior to study initiation when designing the sampling strategy by carefully considering how to recruit a demographically comparable non-maltreated comparison group. Finally, general best practices for research in developing hypotheses that specify direction of mediating and/or moderating variables would further strengthen the next generation of scholarship in this area. Future research that incorporates knowledge of the normative development of friendships and validated measures from the peer relations literature combined with prospective, multi-method, and multi-level design that spans developmental stages informed by the developmental psychopathology perspective has enormous potential to make a sizeable impact in informing targeted interventions to interrupt the negative developmental trajectory of maltreated children toward maladaptation.

**Funding statement.** The preparation of this manuscript was supported by a career development award (R00 HD103958) and a Loan Repayment Program Award (L40 HD103019) to the first author by the Eunice Kennedy Shriver National Institute of Child Health and Human Development. We would like to

thank Marilee Birchfield, a librarian at the University of South Carolina, for her invaluable guidance in developing our search strategy and instructing us in how to conduct a systematic review.

**Competing interests.** None.

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