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Maternal relationship quality and peer social acceptance as mediators between child maltreatment and adolescent depressive symptoms: Gender differences

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Abstract

Childhood maltreatment negatively impacts the development of maternal and peer relationships and may put adolescents at risk for depression. The present study examined gender differences in maternal relationship quality and peer social acceptance as mediators of the association between childhood maltreatment and adolescent depressive symptoms in 342 (151 female, 191 male) maltreated ($n = 198$) and nonmaltreated ($n = 144$) youth in the USA. An observer report Q-Scale measure of depressive symptoms was developed and received preliminary support. Social acceptance was a significant mediator for both genders. The significant association between maltreatment and maternal relationship quality was unique to females, and the association between maternal relationship quality and depressive symptoms was significantly stronger for females. Lower maternal relationship quality marginally significantly mediated the association between maltreatment and depressive symptoms for females only. Results have implications for the prevention and intervention of depression in adolescents with a history of childhood maltreatment.

Keywords

maltreatment; maternal relationship quality; peer social acceptance; depressive symptoms; gender; adolescence

Childhood maltreatment is a risk factor for the development of depression in adolescence (e.g., Hankin, 2005; Toth, Manly, & Cicchetti, 1992; Widom et al., 2007). However, the mediating processes that account for this association are still being identified. From a developmental psychopathology perspective, early adverse life events interact with risk and protective factors in different domains over time, thereby influencing children's development toward psychopathology (e.g., Cicchetti & Toth, 2016). One domain with important implications for child maltreatment and adolescent depression is interpersonal

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relationships. Relationships with parents and peers are critical in adolescence (Crockett, Losoff, & Peterson, 1984; Rice & Mulkeen, 1995), and the effect of maltreatment on these relationships can create significant risk for depression.

Maltreatment and Interpersonal Relationships

Research guided by attachment theory examines how early patterns of parent-child interactions influence the quality of the attachment relationship (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969). Negative characteristics of attachment relationships impacted by maltreatment may be carried forward into the adolescent-parent relationship. Although adolescents strive to achieve autonomy from caregivers, parents continue to serve as important resources in stressful circumstances (Crockett et al., 1984; Rice & Mulkeen, 1995; Rosenthal & Kobak, 2010). Adolescents with a history of maltreatment may find that patterns of negative interactions with parents in times of need influence their perceptions of this relationship. Stressful adolescent transitions can repeatedly activate adolescents' need for parental support and reinforce negative relationship qualities. Therefore, maltreatment can significantly affect the development of adolescent-parent relationships.

Children whose attachment relationships are affected by maltreatment may learn to view themselves as unworthy of love and others as frightening and untrustworthy (e.g., Crittenden, 1990), which may affect the development of peer relationships. Maltreatment may also impact peer relationships through its effect on aggression (e.g., Salzinger, Feldman, Hammer, & Rosario, 1993), withdrawal (e.g., Dodge, Pettit, & Bates, 1994), emotion understanding (Rogosch, Cicchetti, & Aber, 1995), and emotion regulation (Kim & Cicchetti, 2010). Maltreated children have been found to be less popular (e.g., Dodge et al., 1994; Haskett & Kistner, 1991; Rogosch & Cicchetti, 1994; Salzinger et al., 1993), have lower social competence (Shields, Cicchetti, & Ryan, 1994), and be less socially accepted (Shonk & Cicchetti, 2001). Further, maltreated children have lower self-worth (Burack et al., 2006) and a more negative self-concept (Cicchetti, Lynch, & Shonk, 1992; Vondra, Barnett, & Cicchetti, 1989), which may affect the way they perceive their peer relationships. There is evidence to suggest these trends in childhood peer relationships continue into adolescence (e.g., Lansford et al., 2002), perhaps through communication and perceptual difficulties (Ehrlich, Cassidy, Lejuez, & Daughters, 2014), hostile attributional biases (Dodge, 1993), and discomfort with attachment-related affect (Larose & Bernier, 2001; Spangler & Zimmermann, 1999). The effect that maltreatment has on attachment, self-worth, and social behavior has important implications for how adolescents perceive their social acceptance among peers.

The Interpersonal Theory of Depression

The interpersonal theory of depression suggests that problematic relationships contribute to depressive symptoms (Coyne, 1976), which may explain the development of depressive symptoms among adolescents whose relationships with parents and peers have been affected by their history of maltreatment. Adolescents who have negative relationships with their parents have been found to have higher rates of depression and greater internalizing symptoms (e.g., Bakermans-Kranenburg & van Ijzendoorn, 2009; Brumariu & Kerns, 2010;

Lee & Hankin, 2009). Adolescent-parent relationships have also been shown to mediate the association between childhood maltreatment and adolescent depression and internalizing symptoms (Flynn, Cicchetti, & Rogosch, 2014; Hankin, 2005). Of note, many studies utilize multiple self-report measures, creating a possible bias from shared method variance. To address this, this study aims to develop a new collateral-report assessment of depressive symptoms.

Negative peer relationships and peer rejection similarly create risk for the development of depression (Nolan, Flynn, & Garber, 2003; Rudolph, Flynn, & Abaied, 2008). When negative peer relationships were considered among maltreated school-aged children, maltreatment was related to internalizing symptoms directly and indirectly through its influence on social competence (Kim & Cicchetti, 2004). Self-worth is another important mediator of the association between childhood maltreatment and adolescent internalizing symptoms (Flynn et al., 2014), and the way adolescents perceive of themselves may influence whether they believe their peers like and accept them. To our knowledge, no studies have specifically examined the association between childhood maltreatment, adolescent perceptions of peer social acceptance, and adolescent depressive symptoms.

Gender

The literature on prevalence rates of depression has consistently shown that beginning in adolescence, females have higher rates of depression than males (e.g., Cohen, Cohen, Kasen, & Velez, 1993; Nolen-Hoeksema, 1990). Some researchers suggest that compared to males, females may be more influenced by relationships (Cyranowski, Frank, Young, & Shear, 2000; Feingold, 1994), may hold themselves more accountable for the quality of negative relationships, and may be more sensitized to interpersonal stresses (Nolen-Hoeksema & Jackson, 2001). Therefore, interpersonal consequences of childhood maltreatment may be particularly harmful for adolescent females as compared to males.

However, the empirical literature on gender differences in the association between maltreatment, interpersonal relationships, and depression has been mixed. Some studies suggest that women with maltreatment histories are at higher risk for depression than men (Fletcher, 2009; MacMillan et al., 2001), and others do not (e.g., Gershon, Minor, & Hayward, 2008; Kessler, Davis, & Kendler, 1997; Pimlott-Kubiak & Cortina, 2003). Studies examining the link between maltreatment and peer relationships, and peer relationships and depressive symptoms in adolescence have often not found gender differences (Bolger & Patterson, 2001; La Greca & Harrison, 2005; Witvliet, Brendgen, Van Lier, Koot, & Vitaro, 2010). To our knowledge, no studies have examined the effect of gender on interpersonal relationships and depression in adolescents with a history of maltreatment. Given the emergence of different prevalence rates of depression by gender beginning in adolescence, and the literature suggesting that interpersonal relationships may be more salient for females than males, it is important to determine whether interpersonal mechanisms for the development of depression among maltreated adolescents hold for both genders.

Study Hypotheses

We hypothesize that maternal relationship quality and peer social acceptance will mediate the association between childhood maltreatment and adolescent depressive symptoms. We further hypothesize that gender will moderate these interpersonal processes, such that mediation will be significant for females and not males. This study further aims to develop a new collateral-report measure of adolescent depressive symptoms. We propose that experimenter observations of adolescent characteristics and behaviors will provide a valid and reliable assessment of depressive symptoms.

Method

Recruitment and maltreatment classification procedures

This study was approved by the university IRB and followed the standard procedures for the protection of human participants. Families meeting criteria for substantiated maltreatment were randomly contacted by a DHS recruitment liaison who explained the study. Because national demographics suggest that maltreated children reside predominantly in low-income families (Sedlak et al., 2010), demographically comparable families receiving Aid to Families with Dependent Children and with no history of DHS records of child maltreatment were also invited to participate by the DHS liaison. Parents in both groups signed a release of contact information for research staff to continue recruitment. Parent consent and child assent were obtained. Parents also provided consent for any DHS records pertaining to child maltreatment to be reviewed. Additionally, all families completed the Maternal Maltreatment Classification Interview (Cicchetti, Manly, & Toth, 2003) to further confirm a lack of maltreatment in the comparison group and to assess additional maltreatment in families recruited for maltreatment histories. Youth and families were compensated for their involvement.

Participants

Participants in this longitudinal investigation included youth from a mid-sized city in Western New York assessed across 3 waves of data collection: ages 7 to 9 years (Wave 1 [W1]; i.e. childhood), early-mid adolescence (Wave 2 [W2]; $M = 14.19$ years, $SD = 1.12$), and mid-late adolescence (Wave 3 [W3]; $M = 16.58$ years, $SD = 1.28$). The outcome measure of interest was added to the study battery after data collection had begun, and therefore the following analyses were run on a subset of the total sample ($N = 342$) that included both maltreated ($n = 198$) and nonmaltreated ($n = 144$) youth (151 female, 191 male). The sample included a high minority representation in both race (54.4% black, 29.8% white, 15.8% “other”) and ethnicity (11.4% Hispanic, 88.6% non-Hispanic).

At W1, children attended a summer camp research program designed for school-aged low-income children (see Cicchetti & Manly, 1990). Participants were subsequently invited to take part in a series of assessments at two waves across adolescence (W2 and W3) spaced approximately two years apart. At each wave, adolescents completed assessments¹ over five

¹Relevant assessments are listed below in the order they were administered.

visits, after which the research assistant completed the California Q Set (Block, 1961), described below.

Measures

Maltreatment—At W1, DHS maltreatment records were collected and coded using the Maltreatment Classification System (MCS; Barnett, Manly, & Cicchetti, 1993; Manly, 2005; Manly, Kim, Rogosch, & Cicchetti, 2001). The MCS designates the subtype of maltreatment children have experienced (i.e., neglect, emotional maltreatment, physical abuse, sexual abuse). From this information, a variable was computed that counted the number of subtypes of maltreatment each child had experienced. Conceptualizing maltreatment in this way allows for comparability with the analyses conducted by Flynn and colleagues (2014) and provides greater statistical variability.

Peer social acceptance—Adolescents' perception of social acceptance among peers was assessed with the Social Acceptance scale of the Harter Self-Perception Scale for Adolescents (Harter, 1988). All items provided two responses, for example, "Some teenagers have a lot of friends, but other teenagers don't have very many friends." Participants indicated which was true for them, and then selected whether it was "sort of true" or "really true." Items were placed on a 1 to 4 scale, with higher scores indicating greater competence, and the 5 Social Acceptance items were averaged ($\alpha = .691$).

Maternal relationship quality—The majority of adolescents in this sample lived in female-headed, single-parent households and almost all mothers were implicated in the perpetration of maltreatment (see Results). Therefore, maternal relationships are specifically examined in this study. Maternal relationship quality at W2 was assessed using the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987). The IPPA evaluates adolescents' perceptions of their relationship with their primary female caregiver using 25 self-report items within the domains of trust (e.g., "I trust my mother"), communication (e.g., "Talking over my problems with my mother makes me feel ashamed or foolish," [reverse scored]), and anger/alienation (e.g., "I get upset easily around my mother,") on a Likert scale from 1 = "almost never or never true" to 5 = "almost always or always true". Negatively worded items were reverse coded. Composite maternal relationship quality was computed as the average of the subscales. Higher scores reflect higher maternal relationship quality ($\alpha = .928$).

California Q-Set—The California Q-Set (CAQ; Block, 1961) is an observer-report assessment of an individual's personality, cognitive, and social traits. The CAQ consists of 100 diverse statements that raters sort into nine categories ranging from 9 = "most characteristic" to 1 = "least characteristic" of the target individual. The CAQ is unique because it allows researchers to evaluate particular characteristics within a comprehensive personality profile (Block, 1961). Further, it reduces response bias because observers are naïve of target constructs and are required to sort items into fixed distributions (Waters, Noyes, Vaughn, & Ricks, 1985).

At W2 and W3, research assistants used the CAQ to rate the adolescent with whom they had spent approximately 10 hours conducting a series of private interviews and assessments. Different raters completed the CAQ at W2 and W3.

There is currently an Internalizing Q-Sort for the Child California Q-Set (Block & Block, 1980), but the only internalizing scoring system for the adult CAQ that has been published (Kremen, 1996) does not have strong face validity or map onto the DSM-5 criteria for depression. Therefore, we developed a new Depressive Symptoms Q-Scale (DSQ) with greater validity.

Depressive Symptoms Q-Scale: We asked 15 doctoral-level psychologists with expertise in clinical diagnosis to select the 10 items most like and the 10 items least like a prototypical individual with depression from the total 100 items of the CAQ. Raters selected their items based on the DSM-5 criteria for depression.

Literature on the development of criterion Q-Scales (e.g., Shields & Cicchetti, 1997; Teisl, Rogosch, Oshri, & Cicchetti, 2012) using Block and Block's (1980) methodology traditionally asks expert raters to sort all 100 CAQ items to characterize an individual who exhibits prototypical characteristics in the construct of interest. Composite Q-Scale definitions are created by averaging all 100 items according to their ranking category. Items rated as most salient (i.e., 10 highest and 10 lowest) are used to create the Q-Scale. Scale specificity and homogeneity can be enhanced by only using items identified as most or least descriptive of the construct and omitting items lacking in discriminant validity (Eisenberg et al., 1996; John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994). We felt that having raters select the 10 items most like and 10 items least like (to be reverse coded) the prototypic individual with depression would achieve the same goal more expeditiously. However, it should be noted that in order to use the resulting scale, the entire CAQ must be administered.

Items selected by the expert raters were compiled and ranked by the frequency with which they were selected. Items selected by at least 10 of the 15 expert raters were included in the following analyses. This selection process resulted in 10 items, 4 of which were reverse coded. Items were analyzed using the confirmatory factor analysis described below. All 10 items and their factor loadings are listed in Table 1. Four of these items with factor loadings below 0.5 were eliminated in this process, as described in detail later. The mean of the final 6 items was used in subsequent analyses, with higher values indicating greater depressive symptoms. Because only the primary interviewer had extensive contact with the participant, only this person completed the CAQ for each individual; thus, interrater reliability could not be computed (W2 $\alpha = .829$; W3 $\alpha = .816$).

Results

Maltreatment Parameters: Descriptive Information

The majority (69%) of maltreated youth in this sample experienced more than one subtype of maltreatment (2 subtypes = 31.3%, 3 subtypes = 27.8%, 4 subtypes = 9.6%). There was no difference between genders with respect to number of subtypes experienced, $\chi^2(3, N =$

342) = 3.562, $p > .05$. Among maltreated youth, 82.3% experienced neglect, 62.6% experienced emotional maltreatment, 50.5% experienced physical abuse, and 21.7% experienced sexual abuse. Females were significantly more likely to experience sexual abuse than males, $\chi^2 (1, N = 342) = 10.0, p < .01$. Youth had experienced mothers as a perpetrator of maltreatment in 95% of cases, whereas fathers had been a perpetrator in 47% and others (e.g., grandparent, stepparent, family friend, stranger, etc.) had been a perpetrator in 37% of cases.

Preliminary analyses

Maltreated and nonmaltreated youth were comparable in gender, $\chi^2 (1, N = 342) = .009, p > .05$; race $\chi^2 (2, N = 342) = 4.579, p > .05$; ethnicity $\chi^2 (1, N = 342) = .696, p > .05$; and family history of receipt of public assistance, $\chi^2 (1, N = 342) = 1.184, p > .05$. There were no gender differences in reports of maternal relationship quality, $t(332) = -0.921, p > .05$, or mean DSQ at W2, $t(296) = -0.789, p > .05$, or W3, $t(340) = 0.006, p > .05$. There were no DSQ differences by gender in either the maltreated, W2 $t(171) = -0.873, p > .05$, and W3 $t(196) = 0.491, p > .05$, or the nonmaltreated, W2 $t(123) = -0.257, p > .05$, W3 $t(142) = -0.552, p > .05$, adolescents.

Data Analytic Plan

Analyses were performed using MPlus Version 7.3 (Muthén & Muthén, 1998–2015) with maximum likelihood estimator with robust standard errors to handle the non-normal distribution of outcome variables. First, measurement modeling determined the appropriate factor structure of the CAQ items used as indicators of the DSQ. The reliability and validity of the DSQ was also examined. Next, structural equation modeling (SEM) examined maternal relationship quality and peer social acceptance as distinct mediators in the association between child maltreatment and adolescent depressive symptoms (see Figure 1). Finally, multiple-group SEM examined moderated mediation by gender. Mediation was tested using the products of the coefficients method with 95% asymmetric confidence intervals.

Missing data for endogenous variables was handled using full information maximum likelihood (FIML). Model fit for confirmatory factor analyses (CFAs) and SEMs was evaluated using chi square (χ^2), comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). A nonsignificant χ^2 statistic, CFI values greater than 0.95, RMSEA values less than 0.06, and SRMR values less than 0.06 are considered evidence of good model fit (Hu & Bentler, 1999; Yu & Muthén, 2002).

Measurement modeling

CFA was conducted to determine the appropriate factor structure of the 10 depression prototype CAQ items. This model was a poor fit to the data at W2 ($\chi^2 (35) = 211.287, p < .001$, RMSEA = 0.121, CFI = 0.796, SRMR = 0.070) and W3 ($\chi^2 (35) = 172.947, p < .001$, RMSEA = 0.100, CFI = 0.866, SRMR = 0.057). Factor loadings ranged from 0.150 to 0.810 at W2, and from 0.253 to 0.845 at W3. Of the 10 items included in these analyses, 4 items

had factor loadings less than 0.5 at one or both waves, and were dropped from further analyses (see Table 1 for full items and factor loadings of retained and excluded items).

Results of the subsequent CFA of the 6 remaining items indicated that the model was an adequate fit to the data at W2 ($\chi^2(8) = 21.765, p < .05$, RMSEA = 0.071, CFI = 0.975, SRMR = 0.032) and at W3 ($\chi^2(8) = 18.662, p < .05$, RMSEA = 0.058, CFI = 0.984, SRMR = 0.023). It should be noted that the χ^2 statistic is sensitive to sample size, and therefore a model with a significant χ^2 value may still have good or adequate fit to the data if the sample is larger than 300 (Kline, 2015). Factor loadings of remaining items were all significant at $p < .001$ and ranged from 0.514 to 0.804 at W2 and from 0.504 to 0.855 at W3. Residual covariance was modeled between item 72 and item 74.

Longitudinal measurement invariance testing examined invariance across waves for the latent variable DSQ. A model that constrained factor loadings to be equal across time and constrained residual covariances between corresponding items at W2 and W3 was tested and demonstrated good fit to the data ($\chi^2(51) = 96.758, p < .001$, RMSEA = 0.048, CFI = 0.964, SRMR = 0.051). A model that relaxed all constraints across groups was tested next and also evidenced good fit to the data ($\chi^2(45) = 89.829, p < .001$, RMSEA = 0.050, CFI = 0.965, SRMR = 0.047). The unconstrained model was not a significantly better fit to the data than the constrained model ($\chi^2(6) = 6.929, p > .05$), demonstrating longitudinal measurement invariance.

Reliability and Validity of the DSQ

The mean DSQ was significantly correlated with the Youth Self-Report internalizing subscale (YSR; Achenbach, 1991) at W2, $r = .218, p < .001$, and W3, $r = .269, p < .001$, and with the number of major depressive symptoms endorsed on the Diagnostic Interview Schedule for Children (DISC; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) at W3, $r = .249, p < .001$ (DISC data was not collected at W2), such that higher DSQ scores were associated with higher self-report symptoms. The strength of these cross-informant correlations is consistent with literature on multi-informant ratings of social, emotional, and behavior problems in children (r values around 0.28; Achenbach, McConaughy, & Howell, 1987; De Los Reyes & Kazdin, 2005).

Multiple-group SEM

First, a model (see Figure 1) with all structural paths constrained to be equal between genders was tested and showed good fit to the data ($\chi^2(7) = 9.317, p > .05$, RMSEA = 0.044, CFI = 0.970, SRMR = 0.049). Greater W1 childhood maltreatment significantly predicted lower W2 maternal relationship quality ($\beta = -0.146, p < .01$), lower W2 peer social acceptance ($\beta = -0.175, p < .01$), and greater W2 depressive symptoms ($\beta = 0.227, p < .001$). Lower W2 maternal relationship quality did not predict significantly higher levels of depressive symptoms at W3 ($\beta = -0.099, p > .05$). However, greater depressive symptoms at W3 were predicted by greater W1 childhood maltreatment ($\beta = 0.129, p < .05$), lower W2 peer social acceptance ($\beta = -0.197, p < .01$), and greater W2 depressive symptoms ($\beta = 0.146, p < .05$).

Next, a series of partially unconstrained models were conducted to test gender moderation of the paths including maternal relationship quality. A model that freely estimated the path from W1 maltreatment to W2 maternal relationship quality, and the path from W2 maternal relationship quality to W3 depressive symptoms, across genders showed good fit to the data ($\chi^2(5) = 2.706, p > .05$; CFI = 1.000; RMSEA = 0.000; SRMR = 0.023) and was a significantly better fit than the fully constrained model ($\chi^2(2) = 6.611, p < .05$). This indicates that the strengths of these associations differ by gender such that: 1) maltreatment predicts significantly lower maternal relationship quality for females ($\beta = -0.288, p < .001$), but not for males ($\beta = -0.069, p > .05$); and 2) lower maternal relationship quality predicts marginally significantly greater depressive symptoms for females ($\beta = -0.153, p = .05$), but not for males ($\beta = -0.017, p > .05$). Allowing a third path from W1 maltreatment to W3 depressive symptoms to additionally vary between genders showed good fit to the data ($\chi^2(4) = 2.509, p > .05$; CFI = 1.000; RMSEA = 0.000; SRMR = 0.021), but was not a significantly better fit than the fully constrained model ($\chi^2(3) = 6.81, p > .05$).

Next, a series of partially unconstrained models were conducted to test gender moderation on the paths including peer social acceptance. A model that allowed the path from W1 maltreatment to W2 social acceptance, and the path from W2 social acceptance to W3 depressive symptoms, to be freely estimated across genders showed good fit to the data ($\chi^2(5) = 8.98, p > .05$; CFI = 0.949; RMSEA = 0.068; SRMR = 0.046), but was not a significantly better fit than the fully constrained model, ($\chi^2(2) = 0.337, p > .05$). Allowing a third path from W1 maltreatment to W3 depressive symptoms to additionally vary between genders showed an adequate fit to the data ($\chi^2(4) = 8.713, p > .05$; CFI = 0.94; RMSEA = 0.083; SRMR = 0.045), but was not a significantly better fit than the fully constrained model ($\chi^2(3) = 0.604, p > .05$). Thus, there was no evidence of gender moderation for the paths including peer social acceptance.

Mediation and Moderated Mediation

Mediation analyses tested whether W2 maternal relationship quality and W2 social acceptance mediated the association between W1 maltreatment and W3 depressive symptoms. The significance of the indirect effects was evaluated using the RMediation web applet (Tofighi & MacKinnon, 2011) which calculates 95% asymmetric confidence intervals (CIs). CIs without the value 0 are considered statistically significant.

W2 social acceptance significantly mediated the relationship between W1 maltreatment and W3 depressive symptoms (indirect effect estimate = 0.036, SE = 0.016, 95% asymmetric CI [0.01, 0.071]) for both genders. W2 maternal relationship quality marginally significantly mediated the relationship between W1 maltreatment and W3 depressive symptoms for females (indirect effect estimate = 0.043, SE = 0.028, **95%** asymmetric CI [-0.005, 0.105]; indirect effect estimate = 0.046, SE = 0.028, **94%** asymmetric CI [0.001, 0.105]), but not for males (indirect effect estimate = 0.001, SE = 0.008, 95% asymmetric CI [-.016, .021]). These results provide preliminary evidence that for females, maternal relationship quality may mediate the relationship between childhood maltreatment and adolescent depressive symptoms.

Discussion

This study examined maternal relationship quality and peer social acceptance as mediators between childhood maltreatment (as indexed by experiencing a greater number of subtypes of maltreatment) and adolescent depressive symptoms in males and females. Additionally, a new collateral-report measure of symptomatology using the CAQ was developed and validated.

Maternal relationship quality marginally significantly mediated the association between childhood maltreatment and adolescent depressive symptoms for females but not males. Maltreatment predicted significantly lower maternal relationship quality, and lower maternal relationship quality predicted marginally greater depressive symptoms uniquely for females. The female-specific association between childhood maltreatment and perceived maternal relationship quality in adolescence suggests that maltreatment may have a unique effect on mother-daughter, as compared to mother-son, relationships. Gender role identification (Bem, 1981; Petersen, 1988; Smith & Leaper, 2006) may make mothers important role models for adolescent females who are developing a sense of how they should feel and behave, particularly once physical changes take place during puberty (Usmiani & Daniluk, 1997). Because males do not typically experience gender role identification with mothers, the effect of maltreatment on the mother-child relationship may be particularly important for adolescent females who are looking to their mothers for guidance. It may also be that females are more sensitive to parental relationships in general compared to males. However, the predominance of single-parent female-headed households in this sample precluded the involvement of fathers in these analyses, and therefore it is unclear whether it is the mother-daughter or parent-daughter relationship that is driving these findings. Future research should include fathers to explore these associations.

Peer social acceptance, however, appears to be equally important for both genders in accounting for the link between childhood maltreatment and adolescent depressive symptoms. This is consistent with literature on the developmental importance of peer relationships in adolescence, and replicates prior studies that have not found gender differences in the association between maltreatment and peer relationships (e.g., Bolger & Patterson, 2001), and peer relationships and adolescent depression (e.g., La Greca & Harrison, 2005; Ladd & Troop-Gordon, 2003).

Interestingly, our study did not find gender differences in levels of depressive symptoms on the DSQ, which could be a function of our collateral-report assessment of depressive symptoms. Females may be more willing to report depressive symptoms, but depressive symptoms may be observable in both males and females.

In addition, maternal relationship quality and peer social acceptance were significantly correlated. Internal working models associated with early attachment relationships may account for this association. Adolescents who report negatively on one relationship may also have a tendency to report negatively on all relationships. Alternatively, adolescents who feel that they do not have a strong relationship with their mothers may have more trouble making friends or view themselves as less socially competent.

A further contribution of this study is its preliminary support for the DSQ as a new assessment of depressive symptoms. Using this measure, our findings replicate those of Flynn and colleagues (2014), which suggest maternal relationship quality mediates the association between childhood maltreatment and adolescent internalizing symptoms as measured by the YSR. The DSQ reliably captures depressive symptoms across adolescence and with different raters. It also increases the diversity of measures available to psychopathology researchers. Q-Sort methodology minimizes response bias and can be used with a wide range of ages. Very few collateral-report measures of depressive symptoms exist, allowing this assessment to fill a gap in the literature. It also addresses shared method variance in studies using multiple self-report measures. The DSQ will enable researchers to examine depressive symptoms in extant datasets that contain the CAQ. However, further validation of this scale with other samples will be important.

This study uses a prospective longitudinal design, employs a stringent analytic approach, and assesses maltreatment through systematic classification of records. The assessment of multiple mediators between genders over time is a strong example of the developmental psychopathology framework (e.g., Cicchetti & Toth, 2016).

Limitations

It is informative to consider adolescents' perceptions of maternal relationship quality, but this method of assessment does not serve as a direct measure of attachment or of objective characteristics of the parent-child relationship. Further, this research does not address whether maltreatment affects adolescents' perceptions of paternal relationships, and what implications this might have for the development of psychopathology or the uniqueness of the mother-daughter (compared to father-daughter or father-son) relationship. In addition, adolescents' perceptions of their social acceptance do not serve as a direct measure of peer acceptance. More research is also needed to determine if there are unique mediators of the association between maltreatment and depressive symptoms for males. Additionally, because this sample was low-income and included a high minority representation, the findings may not be generalizable to other populations in the United States and elsewhere. Lastly, it is possible to operationalize maltreatment according to alternative dimensions on the MCS or different subtype groupings.

Implications

Despite these limitations, our findings have important implications for the prevention and treatment of depressive symptoms in adolescence. Preliminary support for maternal relationship quality as a mediator suggests attachment-based interventions such as Child Parent Psychotherapy (CPP; Cicchetti, Rogosch, & Toth, 2006; Lieberman, Ghosh Ippen, & Van Horn, 2015) may be particularly valuable for maltreatment populations (also see Toth, Gravener-Davis, & Guild, 2013) and for females specifically. Social acceptance findings suggest that relational interventions in adolescence, such as Interpersonal Psychotherapy for Adolescents (IPT-A; Moreau, Mufson, & Weissman, 1991; Mufson, Moreau, & Weissman, 1996; Mufson, Moreau, Weissman, & Klerman, 1993), could be a particularly effective treatment for maltreatment populations. These programs could work to both alleviate current depressive symptoms and to prevent later psychopathology.

By identifying mediators of the relationship between maltreatment and depressive symptoms in adolescence, we can better target mechanisms of intervention. Understanding how this developmental trajectory is differentially expressed in males and females allows us to understand for whom each intervention is most likely to be effective. In building more comprehensive knowledge about the development of depression in the context of maltreatment, we can cultivate more effective prevention and treatment efforts.

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Figure 1. Standardized path coefficients for the fully constrained model. W1 = Wave 1, W2 = Wave 2, W3 = Wave 3. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$

Table 1

Depressive Symptoms Q-Scale Items

CAQ No.	CAQ Item	W2 Loading	W3 Loading
Retained Items			
22	Feels a lack of meaning in life	0.703	0.688
54	Is sociable, gregarious; emphasizes being with others *	0.627	0.504
72	Has doubts about own adequacy as a person; appears to have feelings of inadequacy, either consciously or unconsciously	0.603	0.611
74	Feels satisfied with self; is consciously happy with person s/he believes self to be; is unaware of self-concern *	0.568	0.523
79	Tends to ruminate and have persistent, preoccupied thoughts	0.514	0.602
84	Is cheerful, happy *	0.804	0.855
Excluded Items			
18	Initiates humor; makes spontaneous, funny remarks *	0.476	0.582
34	Is irritable; overreacts to minor frustrations	0.466	0.380
42	Reluctant to commit self to any definite course of action; tends to delay or avoid making decisions or taking action	0.278	0.449
47	Has a readiness to feel guilty	0.150	0.253

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* Reverse scored