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Authors

Milojevich, Helen M

Quas, Jodi A

Adams, Britni L

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Quality of Sibling Relationships in Maltreated Youth Residing in Out-of-Home-Care

Helen M. Milojevich¹, Jodi A. Quas², Britni L. Adams²

¹University of North Carolina at Chapel Hill

²University of California, Irvine

Abstract

When children are removed from their parents because of substantiated maltreatment and placed in out-of-home placements, they may be placed separately from siblings, potentially leading to even higher levels of stress in children. This possibility emerges insofar as siblings serve as a source of support during the uncertain times that accompany maltreatment and subsequent removal. We explored these issues in the present study, focusing on whether sibling relationship quality was related to post-removal behavioral functioning in maltreated children and adolescents. One hundred and two 6- to 17-year-olds residing in a residential facility completed questionnaires about their sibling relationship quality and behavioral functioning. With age, sibling relationships became more hostile; although in girls, sibling affection also increased with age, at least when their sibling was a girl. Sibling hostility was related to increases in aggression and behavioral problems. Surprisingly, greater reported sibling affection was associated with increased problems, particularly when children had little contact their sibling. Results provide insight into perceptions of sibling relationships in maltreated children and have implications for placement decisions.

Keywords

siblings; maltreatment; children; behavior problems

When child maltreatment has been identified, one potential consequence, particularly when that maltreatment is severe or prolonged, is that of removing the child from the custody of their maltreating parents. The child may be placed in a foster home or residential facility while social services and the legal system determine how best to protect the child and improve the parents' (and entire family's) functioning (Gilbert, Parton, & Skivenes, 2011). This removal, while often necessary to protect the child, leads to disruptions not only in the relationship between the child and her parents, but in that child's relationship to other family members, including siblings, who may also be removed and may or may not be placed with the child.

Correspondence concerning this article should be addressed to Jodi A. Quas, Department of Psychology and Social Behavior, University of California Irvine, 4201 Social & Behavioral Sciences Gateway, Irvine, CA 92697. jquas@uci.edu.
Helen M. Milojevich, Center for Developmental Science, University of North Carolina at Chapel Hill. Jodi A. Quas, Department of Psychology and Social Behavior, University of California, Irvine. Britni L. Adams, Department of Sociology, University of California, Irvine.

During this time of high uncertainty, some have argued that siblings should stay together, under the assumption that sibling presence serves as a buffer, protecting children from at least some of the negative effects of removal (Hegar & Rosenthal, 2009; Herrick & Piccus, 2005; James, Monn, Palinkas, & Leslie, 2008). Whether such a benefit emerges, though, may depend on the quality of the siblings' relationship to one another and the level of contact between siblings (for reviews, see Dirks, Persram, Recchia, & Howe, 2015; McBeath et al., 2014). In the current study, we explored these possibilities. We first documented the nature of relationships between siblings following removal, paying particular attention to the level of contact between siblings. Second, we investigated the links between sibling relationship quality and behavioral functioning post-removal and tested whether these links varied depending on sibling contact in conjunction with other factors known to influence sibling relationship quality, including age, gender, and birth order (i.e., younger versus older siblings).

Predictors of Sibling Relationship Quality

Studies of sibling relationships have considered not only the quality of such relationships, but how variations in quality relate to different behavioral outcomes. While much of the work has focused on community or convenience samples of siblings from the general population (e.g., Harper, Padilla-Walker, & Jensen, 2016; Kim, McHale, Crouter, & Osgood, 2007), studies have been expanded to include at-risk samples, including children exposed to stressful life events (e.g., accidents, illnesses, death; Gass, Jenkins, & Dunn, 2007), children exposed to domestic violence between their parents (Miller, Grabell, Thomas, Bermann, & Graham-Bermann, 2012; Piotrowski, Taylor, & Cormier, 2014), and children who have endured maltreatment (James et al., 2008; Linares et al., 2007; Mota & Matos, 2015). Across studies, relationship quality has typically been characterized according to children's feelings of affection or warmth toward a sibling and feelings of hostility toward or conflict with the sibling (Gass, Jenkins, & Dunn, 2007; Linares et al., 2007; Pike, Coldwell, & Dunn, 2005; Stocker & McHale, 1992).

Regarding affection, when asked how affectionate children feel towards their siblings, age, gender, and birth order all matter, often in conjunction with one another. Adolescents generally report greater affection toward their siblings than younger children (Richmond, Stocker, & Rienks, 2005), and affection is often higher for sister pairs rather than brother and opposite gender pairs (Buist & Vermande, 2014). For sister pairs, though, affection is highest when girls are reporting about closeness in middle childhood rather than in adolescence (Kim et al., 2007). Finally, when birth order is taken into account, both girls and boys report greater affection and closeness toward an older female rather than younger female or male sibling (Buist & Vermande, 2014; Dunn et al., 1994a).

Perceptions of hostility toward a sibling also vary across age, gender, and birth order. In middle childhood, for example, both boys and girls report similar (and relatively high) levels of hostility with a younger but not toward an older sibling (Buhrmester & Furman, 1990), whereas in adolescence, siblings report high hostility towards their sibling regardless of sibling age (Brody, Stoneman, and McCoy, 1994), though sibling conflict generally declines after early adolescence (Kim et al., 2007). Finally, boys report more hostility (e.g.,

quarreling) with their sibling than do girls (Buist & Vermande, 2014) and opposite-gender dyads tend to report being more hostile toward one another than same-gender dyads (Howe, Ross, & Recchia, 2011).

A small body of work has investigated sibling relationships in maltreated children (see Katz & Hamama, 2016), including those exposed to domestic violence between their parents. Findings are mixed as to whether maltreated children's relationship quality with their sibling is similar to that of community samples. On the one hand, maltreated children may behave in a hostile manner toward siblings, modeling behaviors that they have observed and learned from their parent when in conflict situations (Miller et al., 2012). Indeed, children living in households with high levels of inter-parental conflict often behave more aggressively towards their siblings than children living in households with lower levels of inter-parental conflict (Miller et al., 2012; Stocker & Youngblade, 1999), and maltreated children in foster care often report high sibling hostility (Linares, 2006; Linares et al., 2007; 2015). Moreover, sibling relationship quality may also be related to children's self-regulation and stress responses (Kennedy & Kramer, 2008; Repetti, Taylor, & Seeman, 2002). Given that maltreated children often have atypical stress responses (McLaughlin, Sheridan, Alves, & Mendes, 2014) and struggle with self-regulation (Kim & Cicchetti, 2010), they may also be prone to heightened levels of hostility and reduced affection with their siblings. On the other hand, siblings in maltreating families may provide support and warmth to one another (Hegar & Rosenthal, 2009), and older siblings may protect a younger sibling from further harm (Katz, 2013), both of which could reduce perceived hostility. Findings with children exposed to domestic violence suggest that these children often report engaging in reciprocal caregiving and supportive behaviors towards one another (Lucas, 2002) and do not differ from siblings of non-violent families in either the support or aggression they display (Waddell et al., 2001). Whether sibling relationship quality varies across age, gender, and birth order in maltreated children, however, is unknown. Research has also yet to examine if these relations vary across maltreatment types (e.g., physical abuse vs. sexual abuse), despite indications that maltreatment type differentially predicts a range of child outcomes (Manly, Kim, Rogosch, & Cicchetti, 2001; Petrenko et al., 2012).

Sibling Relationship Quality and Behavioral Outcomes

For decades, placing siblings together has been the preferred option following removal due to maltreatment (§471(a)(31); P.L. 110–351 §206; Child Welfare Information Gateway, 2013), and child welfare agencies often exert considerable effort in this regard (Herrick & Piccus, 2005). Siblings can provide a source of familiarity and comfort during this time of uncertainty (Leathers, 2005), thus reducing some of the problems that arise or increase following removal (Child Welfare Information Gateway, 2013; Herrick & Piccus, 2005). A number of studies have found that being placed with at least one sibling is associated with better mental health outcomes (Shlonsky, Bellamy, Elkins, & Ashare, 2005; Tarren-Sweeney & Hazell, 2005).

What studies have not examined, but was the focus of the current work, is whether the benefits of sibling placement depend on the nature of the relationship between siblings, in terms of both quality and quantity. We considered affection and hostility as indices of

quality, and level of sibling contact as an index of quantity. Among non-maltreated children, greater sibling affection and warmth are predictive of improved outcomes: greater school bonding, fewer behavioral problems, and fewer expulsions (Buist & Vermande, 2014). Greater sibling affection has also been linked to fewer internalizing problems, although primarily when the sibling is older for community samples of children (Dunn et al., 1994a; Kim et al., 2007) and other at-risk children (Gass et al., 2007; Piotrowski et al., 2014). Meanwhile, greater hostility has been linked to negative behavioral outcomes, including internalizing problems, externalizing problems, aggression, and conduct problems (Pike et al., 2005; Richmond et al., 2005; Slomkowski et al., 2001; Stocker, Burwell, & Briggs, 2002; Piotrowski et al., 2014).

When maltreated children feel affectionate toward their sibling, remaining with that sibling following removal may reduce some of the stress commonly associated with removal and may help children adapt more positively (or at least less negatively) to the transition (Mota & Matos, 2015). In contrast, when maltreated children feel hostile toward a sibling, they may continue to engage in a range of maladaptive and aggressive behaviors toward the sibling, even after removal, as these behaviors reflect learned responses to perceived hostility in the family (Feinberg, Sakuma, Hostetler, & McHale, 2012). In fact, research with siblings exposed to domestic violence suggests that sibling hostility plays a greater role in children's behavioral functioning than does sibling affection (Piotrowski et al., 2014).

Linares et al. (2007) conducted one of the few investigations of sibling relationships in maltreated 7–10 year-olds living in foster care with or without a sibling. In a prospective study, Linares and colleagues examined changes in child adjustment as a function of sibling relationship and placement group. The maltreated siblings were classified in 1 of 3 placement groups: continuously together ($n = 110$), continuously apart ($n = 22$), and disrupted placement (siblings placed together were then separated; $n = 24$). Regardless of sibling placement, higher sibling affection was associated with fewer problems and higher hostility was associated with greater behavior problems. Thus, at least among this restricted age range, relationship quality was much more important than placement. It is worth noting, however, for children in the disrupted placement group, a child who initially had low behavioral problems went on to have more problems at the 14 month follow-up. Whether these associations would vary depending on children's gender and age, and the gender and birth order of the sibling, is not clear, but is important to consider in light of the potential influence of these characteristics on sibling relationships more generally (Wojciak, McWey, & Helfrich, 2013).

Surprisingly little attention has been paid to the role of sibling contact within the placement and relationship quality literatures, beyond simply whether the siblings are or are not placed together. Yet, the amount of contact siblings have, in general, may influence how they feel about one another and whether those feelings are related to behavioral functioning (Mota & Matos, 2015). For example, positive associations between hostility and adjustment problems may be strongest when siblings have high levels of contact, given that their hostility may be manifested in maladaptive interactions with others, including their siblings. Similarly, perhaps affection is particularly beneficial when contact is also high, given the availability of the sibling to serve as a source of support, a possibility in need of direct empirical test.

Present Study

Our primary aims were to investigate whether children's age, their and their sibling's gender, birth order, and contact were related to the quality of maltreated children's relationships with their sibling; and to examine whether relationship quality, directly and in conjunction with contact, was related to children's behavioral functioning in out-of-home placement.

Hypotheses were as follows: First, with age, children were expected to report less hostility and more warmth toward their sibling (Richmond et al., 2005). Second, regarding birth order, younger siblings were predicted to report more affection and less hostility than older siblings (Dunn et al., 1994a). These effects were anticipated to be further moderated by gender, such that affection would increase with age particularly for sister pairs, relative to brother and opposite gender pairs (Buist & Vermande, 2014). Third, we tentatively expected that sister pairs would become less hostile with age; but that brother and opposite gender pairs would not vary in their hostility across age and would in general report higher hostility (Brody et al., 1985). Fourth, we predicted that sibling contact would be associated with greater reported affection and reduced hostility toward their sibling (Mota & Matos, 2015).

Fifth, turning to relationship quality and behavioral functioning, we expected greater affection and less hostility to be related to better functioning (Buist & Vermande, 2014; Mota & Matos, 2015; Piotrowski et al., 2014; Richmond et al., 2005; Slomkowski et al., 2001; Stocker et al., 2002). And sixth, we hypothesized that contact with a sibling, reflected in having always lived with a sibling versus not, would moderate the association between hostility and behavioral problems (James et al., 2008), such that greater hostility would be related to poorer behavioral functioning, particularly in siblings with high levels of contact. Conversely, hostility would be relatively unrelated to behavioral functioning in siblings with little or no contact.

Method

Participants

The present study was part of a larger project examining emotional development in maltreated children. A subset of 102 6- to 17-year-old ($M = 12.15$ years, $SD = 3.28$) maltreated children completed questionnaires about their siblings. Of the participants, 39 (38%) were boys. Participant ethnicity varied: Caucasian (22%), Hispanic non-Caucasian (44%), Asian American (2%), African American (2%), multiethnic (17%), and other/unknown (13%).

Children were recruited from a temporary residential care facility for maltreated youth, ages 6–17. Cases had been substantiated by Child Protective Services (CPS) and deemed severe enough to warrant removal. Regarding maltreatment type¹, 17% had a history of physical abuse, 9% had a history of sexual abuse, and 62% experienced only documented neglect. An

¹Maltreatment type was coded from court minute orders from the adjudication/disposition hearing (which contain summaries of the case history) via three trained coders using the Maltreatment Classification Scheme (Barnett, Manley, & Cicchetti, 1993) as a guide. Coders established reliability (> 85% agreement on all variables) on approximately 10% of the files. Disagreements were discussed and resolved, and the remaining files were distributed evenly across the coders.

additional 4% had experienced all three maltreatment types. Records were unavailable for eight of children.

Additional eligibility criteria were that the child was (1) fluent in English, and (2) free from medical conditions that could compromise the ability to understand the study measures. Eight children were excluded. Seven did not complete the sibling measure, and one reported not having a sibling.

Materials and Procedure

The present study utilized a quantitative design. Questionnaires were read to children in an interview format with cue cards containing response options included to ensure that all children understood the questions. The study was approved by the relevant Institutional Review Board, as well as the local county juvenile court and social service agency. Sessions were conducted in a quiet, private room at the residential facility. Children were approached for an interview between approximately 3–5 days of their arrival at the facility. For 50% of the maltreated sample ($N = 51$), this was their first formal removal from home, although several had been involved in previous social service or dependency cases. The number of days since the youth were removed from home ranged from 6 to 4536 ($M = 522$ days or less than 2 years). A researcher explained the study, and children provided written assent. Only questionnaires relevant to the present study are described here.

A demographic questionnaire asked about children's age, ethnicity, language spoken in the home, and grade in school. To assess sibling affection and hostility, the Sibling Relationship Inventory (SRI) (Stocker & McHale, 1992) was administered, as follows: First, children indicated the age and gender of their closest sibling, and whether they sometimes, always, or never lived with that sibling. Then children completed 17 items reporting how often they engaged in behaviors or had specific feelings toward that sibling on a 5-point scale (1 = "never" to 5 = "always"). Items tapped affection (e.g. how often they shared secrets with their sibling), hostility (e.g. how often they felt mad at their sibling), and rivalry (e.g. how often they were jealous of their sibling). Four questions referenced parents along with siblings (e.g., "How often do you feel sort of jealous about your mother's attention or affection toward [target sibling]?"). These were removed because the children were not residing with their parents. Doing so reduced the rivalry subscale to only two items. It was thus excluded from the study, and we instead focus on children's feelings of affection and hostility toward their sibling. The SRI has satisfactory internal consistency and test-retest reliability (Boer et al., 1997) ($\alpha = .78$ and $.79$ for affection and hostility, respectively, in the current sample).

Measures of behavioral functioning included the Child Aggression Questionnaire (CAQ) (Raine et al., 2006) and Strengths and Difficulties Questionnaire (SDQ) (Goodman, Meltzer, & Bailey, 1998). The CAQ is a well-established modification of the Reactive-Proactive Aggression Questionnaire (Raine et al., 2006) that assesses aggressive tendencies. Children respond never, sometimes, or always, to 23 items regarding how often behaviors are characteristic of them. The measure yields separate scores for reactive (e.g., "Gotten angry when others threatened you") and pro-active (e.g., "Yelled at others so that they would do

things for you”) aggression. It has strong reliability and validity (Raine et al., 2006) ($\alpha = .86$ and $.87$ for reactive and proactive aggression, respectively, in the current sample).

The SDQ is a widely used 25-item measure of behavioral adjustment. Children rate how often (“never”, “sometimes”, or “always”) items describing thoughts, feelings, and behaviors have applied to them over the past six months. Questions tap five domains: emotional problems, conduct problems, hyperactivity/inattention, peer problems, and prosocial behaviors. These (with prosocial behaviors reversed scored) are then combined to create a total problem score. The SDQ has high internal consistency and test-retest reliability (Goodman, 2001) ($\alpha = .70$ for the current sample). At the end of the session, children were thanked and thoroughly debriefed.

Results

Preliminary Analyses

We initially compared children included in the present investigation (i.e., children who were administered the sibling questionnaire) to the larger sample of children tested at the residential facility on key demographic variables (i.e., age, length of stay in the facility, gender, ethnicity, maltreatment type). No differences emerged, $t(262) < .20$, *n.s.*, $\chi^2(1-9) < 12.01$, *n.s.* Next, we compared children who experienced different forms of maltreatment across the sibling relationship quality (affection, hostility) and behavioral functioning (aggression and behavior problems) measures via one-way maltreatment type (physical abuse, sexual abuse, or neglect; the four children who experienced all three types were excluded) ANOVAs. Significant maltreatment effects emerged for sibling affection, such that children who experienced sexual abuse reported more affection and less hostility toward their sibling than children who experienced physical abuse or neglect, $F(2, 81) > 3.84$, $p < .03$. These differences must be interpreted with caution, however, because only girls were included in the sexual abuse group and girls reported more sibling affection than did boys. We return to the issue of maltreatment differences in sibling relationships in the Discussion².

It is useful to provide descriptive information about the characteristics of the sibling pairs in our sample (see also Table 1), specifically in terms of children’s contact with their sibling, and whether children’s self-reported closest sibling was younger or older. We dichotomized children as having always lived with their sibling until being placed at the residential facility versus having never or only sometimes lived with their sibling. We dichotomized contact in this fashion for two main reasons. First, prior work (James et al., 2008; Linares et al., 2007) suggests that maintaining constant contact with the sibling may be uniquely important relative to intermittent contact. Second, it was difficult to discern whether children who had only sometimes lived with their sibling actually had a greater amount of contact with their sibling than children who reported not having lived with their sibling. Finally, we coded

²Because differences in sibling relationship quality and behavioral functioning may be affected by trauma and/or removal history, we conducted additional analyses to determine whether severity of maltreatment, number of previous removals, or length of time since initial removal was related to any of the main study variables. First, severity of maltreatment was unrelated to sibling relationship quality, $r < .10$, *n.s.*, but was positively associated with reactive aggression, $r = .23$, $p = .03$. Second, neither the number of previous removals nor the length of time since initial removal was significantly associated with sibling relationship quality or behavioral functioning, $r < .19$, *n.s.*

siblings as younger or older (one child had a twin and was thus excluded from the birth order analyses).

For sibling contact, 53% reported having always lived with their closest sibling (of those, 60% were residing with their sibling at the residential facility). Boys were less likely than girls to report having always lived with their sibling; $\chi^2(1) = 7.07, p < .01$, but sibling gender was unrelated to contact; $\chi^2(1) = .542, n.s.$ Also, children who reported having always lived with their sibling were younger ($M = 11.44$) than those who reported never or only sometimes having lived with their sibling, as might be expected ($M = 13.21$), $t(90) = 2.74, p < .01$. Regarding birth order, 48% of the sample reported being closest to a younger sibling: 60% of girls, and 42% boys; of all female siblings, 45% were younger, and of all male siblings, 62% were younger. None of these gender differences was significant. Children's age, as well, was unrelated to whether they selected a younger or older sibling as their closest sibling.

Sibling Relationship Quality and Links with Behavioral Functioning

Our primary aims were twofold: We sought to evaluate whether children's age, their and their sibling's gender, birth order, and contact were related to the quality of children's relationships with their sibling in manners similar to that observed in other samples of children; and we investigated whether relationship quality, directly and in conjunction with contact, was related to children's behavioral functioning in out-of-home placement. Table 1 shows means, standard deviations, and ranges for and bivariate correlations among all key study variables. Of note, children reported greater affection ($M = 3.76$) toward their sibling relative to hostility ($M = 2.08$). Moreover, as found previously (Buhrmester & Furman, 1990; McGuire, McHale, & Updegraff, 1996), sibling affection and hostility were not significantly correlated ($r = -.16$).

To address our first aim, we conducted analyses of covariance (ANCOVAs) predicting sibling affection and hostility. Given the lack of significant associations between the two domains of relationship quality, these were analyzed separately (Linares et al., 2007). Children's age was entered as a continuous covariate. Our sample size was not sufficiently large to include all variables concurrently. Thus, we analyzed children's and siblings' genders first and then substituted sibling contact and birth order for sibling gender.

When we investigated gender differences in sibling affection and hostility, several significant effects emerged. For affection, the child gender \times sibling gender interaction was significant, but was subsumed by the child gender \times sibling gender \times child age three-way interaction (Table 2). Follow-up analyses, conducted separately for girls and boys (Figure 1), revealed that girls reported more affection toward their female sibling with increasing age, $r = .41, p = .01$; while girls' affection toward their male sibling did not vary with age, $r = -.25, n.s.$ Boys' level of affection did not vary with age, regardless of whether their sibling was female, $r = -.24$, or male, $r = .11$. For hostility, only the age effect was significant (Table 3). With age, reported hostility towards their sibling increased.

When we included sibling contact and birth order instead of sibling gender for sibling affection, both contact and birth order were significant (Table 4). Children who had always

lived with their closest sibling reported more affection toward that sibling than children who had never or only sometimes lived with that sibling, and children who identified a younger sibling as their closest reported more affection than children who identified an older sibling. For sibling hostility, no significant effects emerged other than the previously noted age effect (Table 5).

To address our second aim, we conducted linear regressions predicting reactive and proactive aggression and total behavioral problems. Reactive and proactive aggression, although significantly correlated, were analyzed separately given previous findings suggesting that they are separate constructs that differentially relate to maltreated children's functioning (Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Hubbard, McAuliffe, Morrow, & Romano, 2010). Predictors included children's age in years and gender (Model 1), children's affection and hostility and sibling contact (Model 2), and the affection x contact and hostility x contact interactions (Model 3). Variables were centered prior to inclusion per Aiken and West (1991).

For reactive aggression, Models 1, 2, and 3 were significant (Table 6). In Model 1, age emerged as a significant predictor; with increasing age children reported more reactive aggression. In Model 2, sibling hostility and sibling contact were significant as was the sibling affection x contact interaction in Model 3. More sibling hostility and less contact were both associated with higher levels of reported reactive aggression. To interpret the interaction, we plotted the associations between affection and reactive aggression separately for children who had always lived with or had never or sometimes lived with their sibling (Figure 2, end points denote 1 SD above and below the mean for affection). As is can be seen, for children who had never or sometimes not lived with their sibling, greater reported affection was associated with increased reactive aggression, slope $r = .43$, $p = .01$, whereas for children who always lived with their sibling, reported affection was unrelated to reactive aggression, slope $r = -.05$, *n.s.*

When proactive aggression was considered, Models 2 and 3 were significant (Table 7). Hostility and contact emerged as significant predictors. Greater hostility and less sibling contact both predicted more proactive aggressive tendencies. No significant interactions were found.

Finally, for total behavior problems according to the SDQ, Model 2 was significant (Table 8). Increases in reported hostility toward a sibling were associated with increases in general behavior problems. In addition, and surprising, greater affection toward their sibling also predicted increases in behavior problems. The affection x contact interaction was nonsignificant.

Exploratory analyses.—Given the surprising result of the 2-way interaction of affection x contact predicting reactive aggression (Figure 2), we conducted some additional exploratory analyses to determine whether sibling hostility could perhaps help explain these findings. Specifically, we conducted the same three regressions as noted above, but we added in the affection x hostility 2-way interaction, as well as the affection x hostility x contact 3-way interaction. Overall, for all three predictors (reactive aggression, proactive

aggression, and total behavioral problems), no significant interactions emerged. Thus, youth who never or sometimes lived with a sibling did not necessarily have higher levels of affection and levels of hostility that might explain the increased reactive aggression. Similarly, the counterintuitive finding of sibling affection predicting increases of total behavior problems seemingly was not further dependent upon levels of sibling hostility.

Discussion

The overarching aims of the present study were to describe the nature of sibling relationships in maltreated children and to examine whether the nature of these relationships was predictive of behavioral outcomes while children were living in an out-of-home placement setting. Several noteworthy findings emerged, some consistent with and some divergent from those obtained with other samples of children, including high-risk samples of children exposed to domestic violence.

With regard to relationship quality, although individual differences emerged in level of affection and hostility, overall children reported more hostility toward their siblings with age regardless of the children's or their sibling's gender. This age-related increase in hostility is in line with previous findings with low-risk children (Brody et al., 1994). Given the high-risk nature of our sample, it is not surprising that this hostility continued to increase at least through age 17 (Piotrowski et al., 2014). Ample evidence suggests that sibling relationship quality is influenced by parent-child relationships and family dynamics broadly (Brody et al., 1994; Miller et al., 2012). Maltreated children observe (and endure) their parents' aggressive, violent, or demeaning behavior and angry outbursts (Hamby, Finkelhor, Turner, & Ormrod, 2010). Children may well model the behavior of their parents with siblings, leading to hostile and conflictual interactions in the entire family (Miller et al., 2012). Moreover, even in normative developmental samples, adolescence marks a time of significant changes in parent-child relationships and in family dynamics more broadly (Seiffge-Krenke, Overbeek, & Vermulst, 2010). In early adolescence challenges and conflicts with parents increase as roles are re-negotiated (Van Doorn, Branje, & Meeus, 2011), leading to more frequent parent-child conflict, and higher levels of anger, yelling, and withdrawal (Van Doorn et al., 2011). In maltreated adolescents, these patterns may be exacerbated by characteristics of maltreating parents and by the stress associated with maltreatment and legal involvement, resulting in sustained hostility in the entire family.

Many children in our sample also reported feelings of affection toward their sibling, although these feelings varied across age and gender. Girls who identified a female sibling as their closest reported more affection towards that sibling than did girls who identified a male sibling as their closest. Boys' reported affection did not vary with age or gender of their closest sibling, and boys' level of affection overall seemed to be fairly comparable to that reported by girls toward their female sibling. The fact that older girls reported higher levels of affection than younger girls is consistent with previous literature with community samples of children and highlights the perhaps greater significance of attachment relationships for girls with their siblings, especially during the transition to adolescence (Buist & Vermande, 2014). Insofar as this affection serves as a buffer when faced with stress or uncertainty, sisters may provide emotional support for one another, particularly as they age and become

more cognizant of the challenges they face as a result of the maltreatment and removal. For boys, though, simply having a close sibling may be more important than the gender of that sibling in terms of providing emotional support.

One other point is worth noting regarding children's perceptions of the quality of their relationship with their sibling. Specifically, with regard to the association between children's reported levels of affection and hostility toward their sibling, although the correlation was nonsignificant ($r = -.16$), as has been reported in some prior studies (Buhrmester & Furman, 1990; McGuire, McHale, & Updegraff, 1996) the two dimensions did not appear entirely unique: 91% of our sample reported levels of affection above the median of the scale, or 2.5 on the 5.0 scale (very few children were at ceiling on the measure). Among these children, 33% reported levels of hostility above the scale's median on the same 5.0 scale, while 67% reported hostility levels below the scale's median. Thus, while children could report high levels of both hostility and affection or low levels of both, relatively few children actually did so. Instead, a majority of the children in our sample felt, on average, fairly affectionate toward at least one sibling in their family, and of these, 2/3 concurrently felt relatively low levels of hostility toward that sibling.

Turning to the links between the children's relationship to their sibling and behavioral adjustment, first, across all three behavioral adjustment indicators-reactive and proactive aggression and general problems-greater hostility toward a sibling was related to more problems. These trends are consistent with previous studies, including those that assessed behavioral adjustment among children living in foster care with or without their siblings (Linares et al., 2007, 2015; Mota & Matos, 2015) and studies with children exposed to domestic violence (Piotrowski et al., 2014). Perhaps hostility toward siblings is simply an index of broad adjustment problems in children, problems that may or may not stem from the maltreatment itself and may manifest themselves in an array of negative behavioral outcomes. Hostility may also be a reflection of a learned style of interacting with others in children who are likely regularly exposed to high levels of conflict and aggression in their caregivers (Hamby et al., 2010; Miller et al., 2012) and who gradually learn to approach others, including siblings, in an angry and aggressive manner. Measuring sibling relationship quality, therefore, may provide an indirect method of assessing children at risk for a range of behavioral problems and hence may need extra support and guidance following maltreatment and subsequent removal.

Affection was also related to adjustment problems, at times in surprising ways and in conjunction with the amount of contact children had with their sibling. For reactive aggression, when children had minimal contact with their self-reported closest sibling, greater affection toward that sibling was associated with higher levels of aggression. However, when children had always lived with a close sibling, not only was aggression lower in general, but affection was unrelated to aggressive behavior. For maltreated children, who have likely experienced minimal or variable parental support, affectionate siblings may act as a buffer, helping children with regulation when they perhaps lack the skills themselves. Thus, when the sibling is not present, the children may be unable to regulate their emotions and may act out in anger or engage in aggressive responses when provoked by others. These children may also be experiencing an additional sense of loss or grief,

along with a sense of helplessness or lack of control, which manifests in more reactive aggression. Such an interpretation for the present results is in keeping with the broader literature demonstrating that maltreated children often have a bias toward perceiving hostile intentions in ambiguous situations (Pollak, Cicchetti, Hornung, & Reed, 2000), and explains why a comparable association did not emerge for proactive aggression.

Of note, our aggression was measured via self-report, and response biases may have underestimated the children's true levels of aggression. However, only 8.8% of the participants indicated, across the items, no reactive aggression; 39% reported no proactive aggression. These percentages are in line with findings that reactive and proactive aggression tap into separate aggression constructs (Dodge et al., 1997; Hubbard et al., 2010) and suggest that participants were agreeing to at least some of the items, particularly for reactive aggression. In subsequent work, it will be important to evaluate children's actual aggressive behavior, for example, aggressive acts while in placement, to obtain behavioral rather than just self-reported tendencies.

When general behavior problems according to the SDQ were analyzed, a direct association between affection (higher levels) and problems was uncovered. The interaction between contact and affection, though, was nonsignificant, although less contact was marginally predictive of more problems. We were somewhat puzzled by the association between affection and problems, given evidence from other studies that suggests sibling closeness is associated with fewer problems (Buist & Vermande, 2014; Dunn et al., 1994a; Gass et al., 2007; Kim et al., 2007; Linares et al., 2007). However, a few studies have also found similar links between sibling affection and behavioral problems (Piotrowski et al., 2014; Slomkowski, Rende, Conger, Simons & Conger, 2001). Regarding these findings, the authors argued that siblings provide social learning or training models for developing antisocial tendencies. Therefore, siblings with strong emotional bonds may promote each other's antisocial behaviors, insofar as such behavioral tendencies already exist. Such an explanation would seemingly hold for participants in the current study who had a history of maltreatment and trauma exposure. Because our findings run contrary to most other work on sibling relationships and behavioral adjustment (Buist & Vermande, 2014; Gass et al., 2007; Kim et al., 2007), we hesitate to overstate the finding that affection predicts increased problems following removal until future studies confirm such a counterintuitive association. Future longitudinal work might enable some disentanglement of how sibling affection and behavior problems unfold and influence each other over time.

Although the present study provides important insights into the nature of sibling relationships and their role in the behavioral functioning of maltreated children, it is not without limitations. One concerns the cross sectional study design. Children spanned a wide age range, allowing us to examine age-related changes in perceptions of sibling relationships. However, children only provided data at a single point in time, and no data were available pre-removal. Thus, our results cannot address questions regarding developmental changes in children's own perceptions per se or in causal relations between sibling perceptions and behavioral outcomes. In other words, poor behavioral functioning could lead to decreases in sibling quality, rather than poor sibling quality leading to poorer functioning. Longitudinal studies could provide insight into how children's perceptions of

their sibling changes developmentally and into the causal role of sibling relationship quality on children's behavioral functioning.

A second limitation concerns difficulties discerning between affection and hostility. Sibling affection and hostility are often treated as separable dimensions, a strategy we followed in the current research. However, as we mentioned previously, the two in our study were not entirely unique, and in fact, the two may be related for some children in interesting ways. Among maltreated children, for example, siblings might provide a source of comfort and aggravation when siblings are in the same placement location (Linares et al., 2007; Mota & Matos, 2015). More work is needed to understand the balance between affection and hostility in high-risk children, which has implications for interventions and placement policies (see Katz & Hamama, 2016, for a similar recommendation). Future research should also differentiate between conflict and hostility, as mundane conflict often occurs in the course of daily interactions when siblings share space and resources, and may or may not involve a great degree of hostility (but rather perhaps annoyance). Hostility, on the other hand, may reflect more intense negative affect.

Third, although the present study included a relatively large sample of maltreated children, we lacked the statistical power to include child gender, sibling gender, and birth order all in the same analyses. Given the roles that these child and family characteristics may play individually and in combination, including all of these characteristics in the same model would extend the present results and provide additional insight into the complex nature of sibling relationships. A larger sample would also allow us to examine, in a more comprehensive manner, differences across maltreatment type and ethnicity.

Additional limitations of the present study provide avenues for future directions. Studies should move beyond the self-report measures included in the present study to include qualitative measures that provide a richer understanding of children's perspectives on their siblings. Future work investigating perceptions of sibling relationship quality from both siblings in the dyad, as well as a more comprehensive range of behavioral outcomes, is also needed.

Implications of Findings

As mentioned, placing siblings together has been the preferred option following removal due to maltreatment (§471(a)(31); P.L. 110–351 §206; Child Welfare Information Gateway, 2013), and child welfare agencies often exert considerable effort to co-place siblings (Herrick & Piccus, 2005). However, while co-placement and sibling visitation are the most common sibling-focused intervention strategies, findings from the present study suggest that these strategies may not sufficiently address the complex needs of maltreated siblings residing in out-of-home care. Specifically, although siblings can provide a source of comfort and support, as seen in the present study and elsewhere (Dunn et al., 1994b; Pike et al., 2005; Piotrowski et al., 2014; Richmond et al., 2005; Slomkowski et al., 2001; Stocker et al., 2002), conflictual relationships can also be linked to more problematic behaviors.

One way to circumvent these potentially negative relationship outcomes is through more intensive sibling-specific interventions. Although sibling-based interventions for residential

or foster care youth are rare, some that may prove beneficial are Promoting Sibling Bonds, Supporting Siblings in Foster Care, Siblings are Special, and More Fun with Sisters and Brothers (Feinberg et al., 2012; Kennedy & Kramer, 2008; Linares et al., 2015). Though these interventions vary somewhat in their design and implementation, what they all share is an emphasis on improving the quality of sibling relationships (i.e., increasing affection and decreasing hostility) through developing emotion regulation skills, prosocial behaviors, and communication. Overall, by strengthening the bonds between siblings and decreasing hostile relationship patterns, the sequelae of maltreatment and removal may be mitigated. Additionally, the unique circumstances of each child (e.g., temperament) and family (e.g., levels of negativity) should be considered in the context of the general trends identified in the present study.

In conclusion, the present study is among only a handful of investigations focused on sibling relationship quality in maltreated children residing in out-of-home care, and work in this area is desperately needed, as recently noted by Katz and Hamama (2016). Findings from the present study enhance our understanding of potential associations between sibling relationship quality and children's behavioral functioning. Given that child maltreatment has been extensively linked to negative developmental outcomes in essentially every domain of functioning, that child maltreatment is linked to harsh and hostile family environments, and that siblings may serve a critical role, either in terms of support or aggravation, understanding when and how siblings protect versus harm one another following legal intervention has crucial implications for placement policies.

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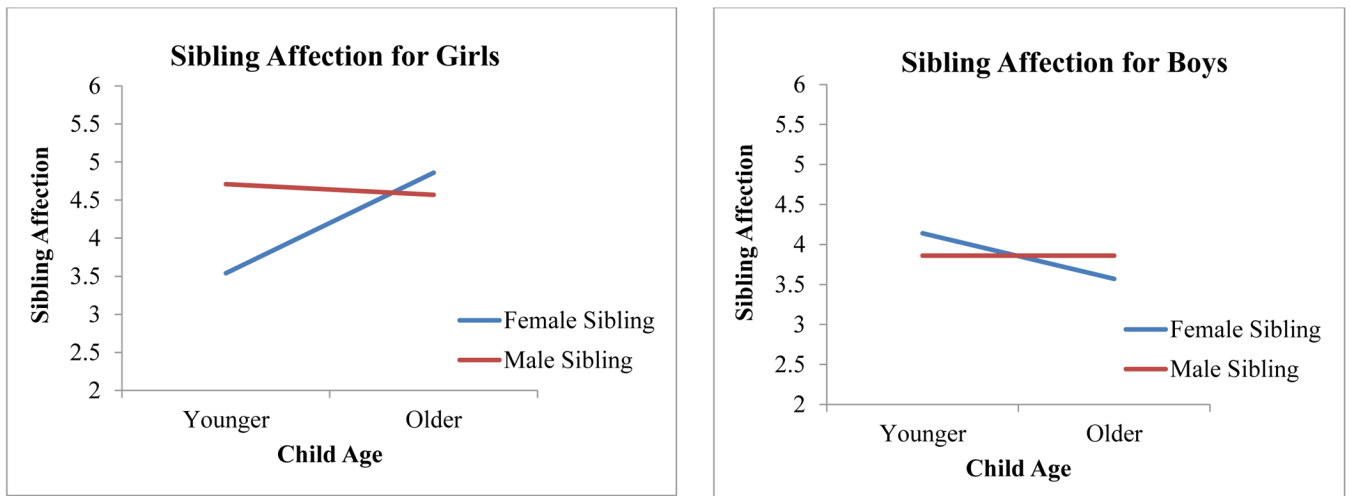


Figure 1.
Significant Three-Way Interaction for Sibling Affection Plotted by Child Gender
Note. For ease of interpretation, a median-split was used to categorize age dichotomously.

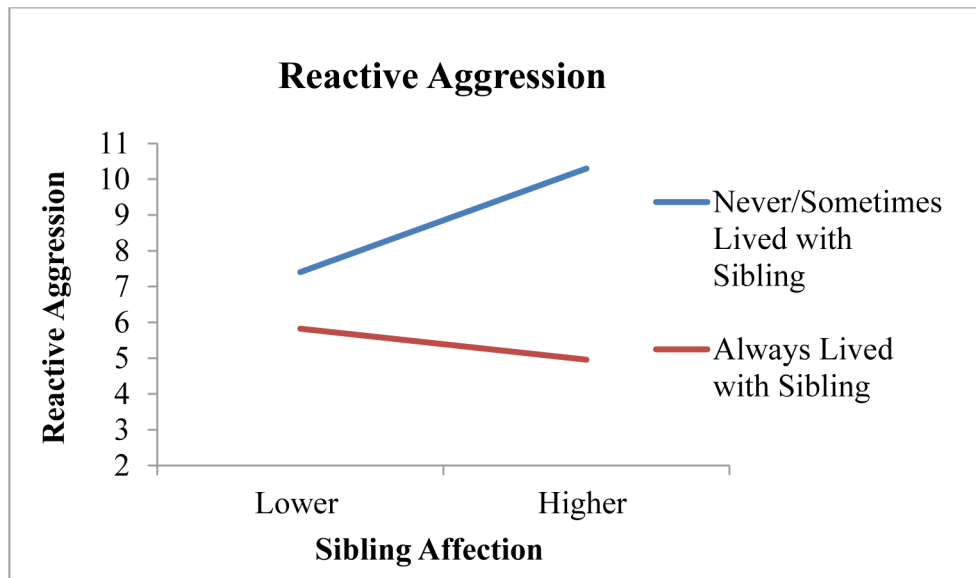


Figure 2. Significant Two-Way Interaction for Reactive Aggression Plotted by Sibling Contact

Table 1

Descriptive statistics of and correlations between study variables

Variable	N	M	SD	Range
Children's Age in Years	102	12.15	3.28	6–17
Sibling Affection	95	3.76	.82	2.14–5.00
Sibling Hostility	95	2.08	.82	1.00–3.20
Reactive Aggression	102	6.85	4.51	0–18
Proactive Aggression	101	2.63	3.73	0–16
Total Behavioral Problems	102	12.07	5.08	2–24

	Age	Affection	Hostility	Reactive Aggression	Proactive Aggression	Total Behavioral Problems
Children's Age in Years	1	.07	.28*	.24*	.00	.03
Sibling Affection	--	1	-.16	-.02	-.11	.15
Sibling Hostility	--	--	1	.57*	.35*	.28*
Reactive Aggression	--	--	--	1	.57*	.59*
Proactive Aggression	--	--	--	--	1	.40*
Total Behavioral Problems	--	--	--	--	--	1

* $p < .05$.

Table 2

ANCOVA Results for Sibling Affection with Child Sex and Sibling Sex as Predictors

	<i>F</i>	<i>p</i>	η_p^2	<i>M</i> _{group 1}	<i>M</i> _{group 2}
Child Sex	.009	.924	.000	3.980	3.453
Sibling Sex	.831	.365	.010	3.607	3.826
Age	.000	.992	.000		
Sex × Age	.503	.480	.006		
Sibling Sex × Age	.383	.527	.004		
Sex × Sibling Sex	4.433*	.038	.049		
Sex × Sibling Sex × Age	5.376*	.023	.059		

Note.

**p* < .05.

For means, group 1 refers to girls and group 2 to boys.

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Table 3

ANCOVA Results for Sibling Hostility with Child Sex and Sibling Sex as Predictors

	<i>F</i>	<i>p</i>	η_p^2	<i>M</i> _{group 1}	<i>M</i> _{group 2}
Child Sex	.584	.447	.007	2.075	2.127
Sibling Sex	.067	.796	.001	2.070	2.131
Age	5.208*	.025	.057		
Sex × Age	.527	.470	.006		
Sibling Sex × Age	.131	.718	.002		
Sex × Sibling Sex	.000	.994	.000		
Sex × Sibling Sex × Age	.020	.887	.000		

Note.

* $p < .05$.

For means, group 1 refers to girls and group 2 to boys.

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Table 4

ANCOVA Results for Sibling Affection with Sibling Contact and Birth Order as Predictors

	<i>F</i>	<i>p</i>	η_p^2	<i>M</i> _{group 1}	<i>M</i> _{group 2}
Child Sex	2.342	.130	.028	3.807	3.539
Sibling Contact	4.152 *	.045	.049	3.489	3.857
Birth Order	4.004 *	.049	.047	3.851	3.495
Age	2.407	.125	.029		
Sex × Sibling Contact	.011	.916	.000		
Sex × Birth Order	2.416	.124	.029		
Contact × Birth Order	.282	.597	.003		
Sex × Contact × Birth Order	.751	.389	.009		

Note.

* $p < .05$.

For sex, group 1 = girls and group 2 = boys. For sibling contact, group 1 = No or sometimes contact, group 2 = always have contact. For birth order, group 1 = sibling is younger, group 2 = sibling is older.

Table 5

ANCOVA Results for Sibling Hostility with Sibling Contact and Birth Order as Predictors

	<i>F</i>	<i>p</i>	η_p^2	<i>M</i> _{group 1}	<i>M</i> _{group 2}
Child Sex	.035	.852	.000	2.090	2.056
Sibling Contact	.125	.724	.002	2.039	2.106
Birth Order	2.194	.142	.026	1.935	2.211
Age	9,288*	.003	.103		
Sex × Sibling Contact	.022	.883	.000		
Sex × Birth Order	.074	.786	.001		
Contact × Birth Order	.405	.526	.005		
Sex × Contact × Birth Order	.732	.395	.009		

Note.

* $p < .05$.

For sex, group 1 = girls and group 2 = boys. For sibling contact, group 1 = No or sometimes contact, group 2 = always have contact. For birth order, group 1 = sibling is younger, group 2 = sibling is older.

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Table 6

Regression Results for Reactive Aggression

Predictor	Model 1			Model 2			Model 3					
	B	SE	Beta	p	B	SE	Beta	p	B	SE	Beta	p
Child Age	.374*	.148	.259	.013	-.048	.133	-.033	.718	.022	.133	.015	.868
Child Sex	-.133	.953	-.014	.889	-.669	.801	-.072	.406	-.866	.784	-.093	.273
Sibling Contact					-3.527**	.838	-.384	.000	-3.520**	.816	-.383	.000
Affection					.920	.494	.168	.066	.604	.498	.110	.229
Hostility					3.063**	.493	.545	.000	3.131**	.493	.557	.000
Contact × Affection									-2.388*	.944	-.215	.013
Contact × Hostility									.105	.920	.009	.910
R ²			.067*			.433				.475**		
R ²						.366				.042*		

Note.

* $p < .05$,

** $p < .01$.

Table 7

Regression Results for Proactive Aggression

Predictor	Model 1			Model 2			Model 3					
	B	SE	Beta	p	B	SE	Beta	p	B	SE	Beta	p
Child Age	.065	.120	.057	.591	-.117	.128	-.102	.362	-.092	.131	-.080	.488
Child Sex	1.136	.771	.154	.144	.672	.771	.091	.386	.729	.774	.099	.349
Sibling Contact					-1.825*	.807	-.250	.026	-1.810*	.805	-.248	.027
Affection					.055	.476	.013	.909	.102	.491	.023	.836
Hostility					1.317**	.475	.296	.007	1.154*	.486	.259	.020
Contact × Affection									-.211	.932	-.024	.812
Contact × Hostility									-1.387	.908	-.158	.130
R ²			.029								.186*	
R ²							.163**					.023
							.135**					

Note.

* $p < .05$,

** $p < .01$.

Table 8

Regression Results for Total Behavior Problems

Predictor	Model 1			Model 2			Model 3					
	B	SE	Beta	p	B	SE	Beta	p	B	SE	Beta	p
Child Age	.069	.172	.042	.689	-.233	.184	-.142	.209	-.179	.188	-.109	.344
Child Sex	-1.702	1.106	-.161	.128	-1.588	1.110	-.151	.156	-1.792	1.110	-.170	.110
Sibling Contact					-2.063	1.162	-.197	.079	-2.063	1.155	-.197	.078
Affection					1.495*	.686	.240	.032	1.186	.704	.190	.096
Hostility					2.042**	.683	.320	.004	2.172**	.697	.340	.003
Contact × Affection									-2.096	1.336	-.166	.120
Contact × Hostility									.671	1.320	.053	.608
R ²				.027							.186*	
R ²											.129**	.029

Note.

* $p < .05$,

** $p < .01$.