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Crossing social contexts: Relational aggression between siblings and friends during early and middle childhood☆

Kirstin Stauffacher [a,*], Ganie B. DeHart [b]

[a] Department of Psychology, University at Buffalo, 243 Park Hall, Buffalo, NY 14260-4110, USA
[b] State University of New York, College at Geneseo, USA

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Abstract

Children often learn and apply behaviors in sibling interactions before they routinely use such behaviors in peer interactions. As part of a longitudinal study of relational aggression, 46 children were videotaped at home in semi-structured free play situations with siblings and with friends at age 4 and again at age 8. Observations revealed that sibling dyads exhibited a higher rate of relationally aggressive behaviors than did friend dyads at age 4, but by age 8, sibling and friend dyads showed similar rates of relationally aggressive behavior. Overall, this shift occurred because relational aggression between siblings decreased whereas relational aggression between friends increased. However, this pattern varied to some degree with the sex of the target child and whether the sibling was older or younger than the target. These results suggest significant implications for the development and transmission of children's social behaviors across contexts, highlighting the importance of intervening early in childhood and in the sibling context.

Keywords: Relational aggression; Siblings; Friends; Longitudinal; Sex differences

1. Introduction

Over the last 10 years, it has been well documented that children and adolescents who engage in or are victims of high levels of relational aggression (e.g., spreading rumors, excluding others, intentionally ignoring, and threatening to terminate a friendship) are at high risk for social and psychological adjustment problems (e.g., Crick, 1997; Crick & Grotpeter, 1995; Rys & Bear, 1997; Werner & Crick, 1999). However, surprisingly little is known about the roots of

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* Corresponding author. Tel.: +1 110 716 645 3650x585.
E-mail address: kgros@buffalo.edu (K. Stauffacher).

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relational aggression. The extent to which its use is normative in early childhood, the emergence of individual differences in its use, or the ways in which individual children's use of relational aggression may vary across interaction partners and change over time is as yet unknown. A more complete understanding of these issues could help in the early identification of children most at risk for problems with relational aggression and the development of interventions and parenting strategies to reduce that risk.

Several recent studies have documented the existence and significance of relational aggression among peers in early childhood (e.g., Nelson, Robinson, & Hart, 2005; Ostrov & Keating, 2004; Ostrov, Woods, Jansen, Casas, & Crick, 2004). However, peer interactions are not the only social context in which preschoolers might use relational aggression. In fact, preschoolers with siblings often spend at least as much time with their brothers and sisters as they do with peers outside the family (McHale & Crouter, 1996). There are several reasons to believe that sibling relationships may be an important context in which to observe the early development of relationally aggressive behaviors. Research suggests that social cognitive skills are often observable earlier in sibling interactions than in interactions with peers (e.g., Dunn & Dale, 1984), lending credence to the idea that sibling relationships might be one of the first social contexts in which children exhibit relational aggression. Several features of sibling relationships during early childhood also suggest that children may be more likely to use relational aggression in interactions with brothers and sisters than with peers and friends. During early childhood, siblings spend more time together, have a longer shared history, share a wider range of contexts and experiences, and demonstrate a higher level of intimacy than do friends (for a review, see DeHart, 1999). These relationship qualities provide siblings with a wide range of information that can later be used as ammunition to hurt or embarrass each other. In early childhood, siblings are also more likely than friends or peers to share many highly valued relationships that can potentially be vulnerable to attack, including relationships with parents, other relatives, friends, babysitters, and neighbors (O'Brien, 1999). Competition for attention from these influential people provides another explanation for why siblings might try to damage their siblings' relationships with others. In addition, because children display higher rates of conflict and physical aggression with siblings than they do with peers (DeHart, 1999), it is reasonable to expect that they may also display higher rates of relational aggression in sibling relationships than in peer relationships.

Several researchers have already demonstrated that the sibling relationship is a fruitful social context in which to observe relational aggression (Lockwood, 2002; O'Brien, 1999; Updegraff, Thayer, Whiteman, Denning, & McHale, 2005). Both Lockwood (2002) and O'Brien (1999) demonstrated that brothers and sisters reported engaging in rates of relational aggression that were not unlike rates reported for peer contexts. Further, their work highlights the potential influence of the sex of siblings on rates of relational aggression. Lockwood demonstrated that although research on relational aggression between peers has demonstrated that females engage in more relational aggression than do males, no such difference exists when brothers and sisters are compared. Updegraff and colleagues (2005) demonstrated that sibling intimacy and relationship negativity were highly related to adolescents' reports of their relational aggression with their siblings.

Although these findings suggest that sibling relationships are a highly conducive context for developing relational aggression, this context may become less significant in relational aggression as children age. During middle childhood peer relationships dramatically increase in salience and influence, and friendships become increasingly intimate and important (for a review, see Bernd, 2004). At the same time, sibling relationships become less intimate, less exclusive, more egalitarian, less asymmetrical, and less intense (for a review, see Buhrmester & Furman, 1990). As a result of these two processes, the differences between sibling and friend relationships diminish in important ways as children grow older-in part because the increasing symmetry in sibling relationships makes them resemble peer relationships, and in part because the increasing intimacy of friendships makes them resemble sibling relationships (DeHart et al., 2002).

Several features of friendships during middle childhood make them a likely context for the increased use of relational aggression. As children age, they share a wider range of experiences with their friends (school, home, neighborhood, and extracurricular activities), and friendships tend to last longer than they did during younger years (Bernd, 2004; Sullivan, 1953). These changes make friends privy to an ever-widening range of information that can be used to hurt or embarrass each other. Whereas sibling relationships might have consumed most of preschoolers' social time and much of their experiences, in middle childhood friendships increasingly take over many of the niches previously reserved for siblings. During middle childhood, children's social groups also begin expanding in size (Sullivan, 1953), likely providing additional influential relationships for children to utilize during such relationally aggressive behaviors as secret-sharing or exclusion from the group.

These features suggest that relational aggression may become an increasingly useful tool with which to hurt friends as children enter middle childhood. In addition, general increases in social–cognitive skills during middle childhood would be expected to produce an overall increase in children's use of relational aggression and their sophistication in using it. Indeed, many studies have demonstrated high frequencies of relational aggression in peer relationships during this developmental period (e.g., Cillessen & Mayeux, 2004; Crick, Grotpeter, & Bigbee, 2002; Giles & Heyman, 2005; Henington, Hughes, Cavell, & Thompson, 1998; Roecker Phelps, 2001; Rose, Swenson, & Waller, 2004; Rys & Bear, 1997; Sumrall, Ray, & Tidwell, 2000; Tomada & Schneider, 1997; Xie, Farmer, & Cairns, 2003).

Although several studies have examined relational aggression in sibling relationships (Lockwood, 2002; O'Brien, 1999; Stauffacher & DeHart, 2005; Updegraff et al., 2005), as yet the extent to which relational aggression is transferred between sibling and peer contexts has not been examined, in part because previous studies have not included data from both sibling and peer interactions. Several studies have suggested that physical aggression is learned and practiced in the sibling context and then later applied to the peer context (Duncan, 1999; MacKinnon-Lewis, Starnes, Volling, & Johnson, 1997). It is reasonable to expect that a similar process might operate for relational aggression. This study is the first of its kind in its aim to examine the transmission of relationally aggressive social behaviors between the sibling and peer context. Although sibling relationships are a likely place to observe the earliest forms of relational aggression, children may gradually begin applying these behaviors to friend relationships as friendships become more intimate and stable during middle childhood.

Previous studies have found that amount and type of relational aggression vary, depending on the sex and age composition of sibling dyads (O'Brien, 1999; Stauffacher & DeHart, 2005). In O'Brien's study, younger sisters were more likely than younger brothers to report using relational aggression toward their older siblings, and older siblings were more likely to report using relational aggression toward their younger sisters than toward their younger brothers. In our own data on preschoolers (Stauffacher & DeHart, 2005), we did not find child sex–age composition differences in overall rates of relational aggression, but we did observe differences in the form of relational aggression used and in children's likelihood of receiving relational aggression from friends and siblings. Based on these findings, we anticipated that the specific sex composition of dyads would make a difference in the rates at which children use relational aggression with their siblings. However, the physical aggression literature contains mixed results when considering specific sibling sex constellations (Abramovich, Corter, Peplar, & Stanhope, 1986). As yet, no study has examined the role that sibling sex constellation plays in the likelihood that aggressive behaviors will cross social contexts. Given the paucity of research on the effect of sibling sex and age constellations on relational aggression, specific hypotheses regarding individual sibling gender–age compositions are premature. However, given the strong rationale for transmission of social behaviors between the sibling and friend contexts, it was expected that if sibling sex and age constellation plays a role in predicting children's relational aggression in the sibling context, a similar effect would be observed in the friend context.

Our primary goals were to examine: (1) how the rates at which children use relational aggression with siblings and with friends change as they move from early to middle childhood, and (2) how the age and sex composition of sibling pairs is related to the rate of children's relationally aggressive behavior both inside and outside of the sibling relationship. This information is important in furthering our understanding of how relational aggression within the sibling relationship facilitates the development of similar interactions in friend relationships. We anticipated that children's overall use of relational aggression would increase from early to middle childhood, but that the difference in levels of relational aggression between the sibling and friend contexts would decrease. We further expected that the age and sex composition of the sibling dyad would make a difference in target children's use of relational aggression with both siblings and friends.

2. Method

2.1. Participants

As part of a longitudinal study examining sibling and friend interaction in early and middle childhood, 63 middle-to-upper-middle-class Euro-American families from small towns and suburban communities in western New York were recruited for participation in a study through fliers and word of mouth. Families did not receive monetary compensation for participating in the study, but they were offered copies of their children's videotaped sessions, and each child received a small toy as a reward for their participation. At Time 1, 33 of the families included same-sex sibling pairs (17

brother pairs, 16 sister pairs) with a 4-year-old target child (M=54.79; SD=5.60 months) and a sibling who was either 15–30 months older (n=17; M=33.81; SD=4.68 months) or 15–30 months younger (n=16; M=75.59; SD=7.37 months) than the target child. Thirty of the families included mixed-sex sibling pairs (14 older sister–younger brother pairs, 16 older brother–younger sister pairs) with a 4-year-old target child (M=58.20; SD=5.38 months) and a sibling who was either 15–30 months older (n=20; M=76.00; SD=13.78 months) or 15–30 months younger (n=10; M=36.80; SD=5.94 months) than the target child.

Families were contacted for the follow-up study shortly after the target child turned 8 years old, and 46 (73%) of the original families agreed to participate in the follow-up. The most common cause for family attrition was family life changes, including divorce, maternal employment, moving out of the area, or the birth of an additional child. There were no statistical differences in Time 1 aggression, target child age, sibling sex or age composition between those families that completed Time 2 assessments and those that did not. In additional two cases, friend visit video data were collected but were of poor quality and were therefore uncodable. The final sample at Time 2 consisted of 26 same-sex sibling pairs (13 brother pairs, 13 sister pairs) with an 8-year-old target child (M=94.58; SD=6.59 months) and a sibling who was either 15–30 months older (n=12; M=114.00; SD=7.12 months) or 15–30 months younger (n=14; M=74.29; SD=5.66 months) than the target. Eighteen of the families included mixed-sex sibling pairs (8 older sister–younger brother pairs, 10 older brother–younger sister pairs) with an 8-year-old target child (M=100.44; SD=3.70 months) and a sibling who was either 15–30 months older (n=11; M=102.27; SD=24.60 months) or 15–30 months younger (n=7; M=109.57; SD=27.69 months) than the target child.

For both the Time 1 and Time 2 visits, each family was asked to select a friend of the target child to participate in the study. They were told to choose a friend who was, in order of importance: (1) a frequent playmate of the target child, (2) the same age as the target child, and (3) the same sex as the target child. In cases in which parents had difficulty choosing a friend who met all three of these criteria, parents were asked to select a friend of their child who met the first two criteria. Three families did not meet all three of these criteria in that they selected an opposite sex friend for participation in the friend portion of the project. All three of these cases were younger brothers who did not have any male friends that they played with frequently. Rate of aggression for these children did not differ significantly from those with same-sex friend partners.

2.2. Procedure

2.2.1. Home visits

At both Time 1 and Time 2, two or three trained undergraduate research assistants made four visits, approximately one visit a week for a month, to each family's home. During the first visit, the research assistants got acquainted with the parents and children, explained the study, collected parental consent forms, and obtained children's verbal assent. The second and third visits were videotaping visits. In one taping visit, the siblings were videotaped playing together; at the other taping visit, the target child was videotaped playing with the friend. The order of sibling and friend taping visits was counterbalanced across all families. At the end of the taping visit with a friend, the target child, the sibling, and the friend each were allowed to select a small toy from a box of prizes.

The visit protocol for Time 2 visits was virtually identical to Time 1 visits, described in detail by Stauffacher and DeHart (2005). There were two significant changes made to visit procedures between Time 1 and Time 2. To adjust for the increases in cognitive capacity that occur between the ages of 4 and 8 years, specifically longer periods of sustained attention, the standard length of the play sessions was increased from the initial 15 min to 30 min. At both Time 1 and Time 2, some videotaping sessions were extended to compensate for time in which children spent more than a few minutes off camera or in conversation with third parties. Additionally, children's increased capacity for attention and self-reflection at age 8 enabled us to gather interview data from the children regarding their relationships with their sibling and their friend following the tapings.

As occurred at Time 1, the fourth home visit entailed one parent of the target child watching the videotapes of the play sessions and completing questionnaires rating the typicality of the situation and the children's behavior based on a 5-point Likert-type scale. As reported elsewhere (Stauffacher & DeHart, 2005), parents' mean typicality ratings for Time 1 suggested that children displayed minimal reactivity towards the cameras and experimenters and that there were no systematic differences in the ways in which children responded when in front of the camera and the ways in which they normally played at home. Typicality ratings at Time 2 also suggested that the camera had little effect on the children's play. Time 2 average (and SD) ratings for each partner were 4.58 (SD=.70) for the target child when playing

with the sibling, and 4.51 (*SD*=.74) for the target child when playing with the friend; the play typicality rating was 4.56 (*SD*=.73) for the sibling when playing with the target child and 4.62 (*SD*=.62) for the friend when playing with the target child. At both time points, there were also no differences in typicality ratings based on child age or child or sibling sex.

2.2.2. Materials and tasks

For Time 1, the children engaged in free play with a wooden village toy play set during one visit and a wooden farm toy play set during the other (for greater detail, see Stauffacher & DeHart, 2005). For Time 2, the children engaged in three different activities during each taping session: a construction task, a board game, and free play. First, they were given 10 min to complete the construction task using a building set to duplicate a model they were provided with. Then, they were asked to play a board game for 10 min, and finally they were given 15 min for free play with a play set provided by the experimenters. Only the data obtained from the free play interactions were analyzed for the present study. In addition to the wooden village toy play set used during the Time 1 free play visits, a wooden model train set was used to replace the wooden farm set from the Time 1 visits. The farm set was too simple to hold the interest of the children now that they were 4 years older and provided less interesting play themes than the village or the train sets did. As was the case in the previous study Stauffacher and DeHart (2005) study, the play sets were selected to provide opportunities for conflict and joint pretend play. Specifically, to elicit conflict (and potentially aggression), each set of toys included several particularly desirable pieces (such as one caboose and one loader in the train set), an uneven number of some popular items (e.g., three little boats in the village set), some items whose identity or functions were ambiguous (e.g., mailboxes in the village set, figures that could be males or females in the train set), and several pieces that were difficult to assemble (such as a figure eight in the train set and a church in the village set).

Assignment of the train set and village set to sibling and friend sessions was counterbalanced within each of the eight sibling sex composition groups (8-year-old girl/5-year-old girl, 8-year-old girl/9-year-old girl, 8-year-old girl/5-year-old boy, 8-year-old girl/9-year-old boy, etc.). The research assistants emptied the pieces of the play set out of their container at the beginning of the free play segment of the taping session and told the children to play with the toys together. If the children asked what they were supposed to do with the toys, the research assistants told them "just play however you'd like."

2.2.3. Transcribing and coding

Trained undergraduate research assistants who were blind to the specific hypotheses of the study and had not attended the original visit completed all transcribing and coding. The methods employed to train coders, transcribe the children's speech and behaviors during the task, and develop the coding scheme are described in detail in Stauffacher and DeHart (2005). The children's behaviors during both Time 1 and Time 2 sessions were coded for social engagement, conflict, relational, physical, and verbal forms of aggression, cooperation, competition, prosocial behavior, and pretend play (see Cornwall et al., 2004; DeHart, 1999; DeHart, Kucharczak, Petri, & Kilpatrick, 1999; DeHart & Stauffacher, in preparation; Wozniak, DeHart, Duffy, DeAngelo, & Stornelli, 1999). Only data for relational aggression were analyzed for the present study.

The behavior of each child in a dyad was coded separately. Aggression by both target child and partner (sibling or friend) was coded to provide measures of the overall level of aggression of the dyad, as well as each child's contribution to the dyad's interaction. In particular, examination of aggression at the individual level made it possible to compare the target child's behavior with two different interaction partners and examine how their aggressive behavior changed with the social context of sibling versus friend as a play partner. Instances of relational aggression were identified based on a general definition described in a subsequent section, and the relationally aggressive behaviors were further coded for form and function. Inter-observer reliability was obtained for 20% of the total videotaped sessions. Cronbach's α for incidence of relational aggression was .97 for Time 1 and for .90 for Time 2, suggesting an acceptable level of reliability.

2.2.3.1. Social engagement. Social engagement was coded at 10-second intervals, using categories based on Parten (1932)—associative play, cooperative play, parallel play, solitary play, onlooker, unoccupied, and indeterminate. Following Hart, Nelson, Robinson, Olsen, and McNeilly-Choque (1998), these categories were collapsed into three superordinate categories. That is, intervals were categorized as *engaged* (partners mutually engaged-associative and

cooperative play), *semi-engaged* (only one partner attending to the other-solitary/onlooker, unoccupied/onlooker), or *unengaged* (neither partner attending to the other-parallel play, combinations not involving onlooker.

2.2.3.2. Relational aggression. The coding scheme for relational aggression used operational definitions and examples taken from a review of the literature, including previous questionnaire research conducted on relational aggression with siblings (O'Brien, 1999) and observational research conducted with preschool-aged peers (Ostrov & Keating, 2004). Specifically, relational aggression was defined as any verbal or nonverbal behavior that: (a) excluded or ignored the partner (e.g., refusing to acknowledge partner's clear communication attempts), (b) threatened to exclude or ignore the partner (e.g., "I won't play with you any more"), (c) intentionally embarrassed or humiliated the partner in front of others (e.g., "Did you see the video where he cries?"), (d) tried to damage the relationship the partner has with a third party (e.g., "MOM! Jakey is being bad and needs a spanking"), (e) threatened to damage the relationship the partner has with a third party (e.g., "I'll tell Asher you hit me and he won't like you"), or (f) attacked or insulted the partner's relationship with the target (e.g., "You're a crappy brother" or "I hate you").

First, acts of relational aggression were identified as any behavior with the clear intent to harm a partner through damage (or threat to damage) a relationship with either the partner or a third party. Several indications for intent to harm the victim were included, such as changes in the overall pattern of interaction, the presence of negative affect from one or both children, disengagement from interactions or play following the incident, crying, making dejected faces, appealing to the partner to stop, or seeking assistance from a third party. Second, all acts of aggression were coded for which child (target or partner) was the aggressor.

3. Results

Findings of previous studies show that siblings and friends differ in the amount of time spent in engaged and semi-engaged interaction (e.g., Stauffacher & DeHart, 2005), suggesting that frequencies of observed behavior needed to be adjusted for the amount of time the dyad spent in engaged or semi-engaged play in order to compare social behavior across the contexts. Consequently, the frequency of relational aggression by each dyad (or by individuals within the dyad) was divided by the number of minutes the dyad spent engaged or semi-engaged, to correct for differences in the proportion of time spent in social engagement and semi-engagement and in the overall length of play sessions. Because of the low incidence and high variability of the time-corrected relational aggression rates, a square-root transformation ($\sqrt{(X+.5)}$) was applied to these data before they were analyzed.[1] The square-root transformation of Time 1 and Time 2 data successfully reduced skewness and kurtosis, such that the data were substantially more normal in distribution following transformation (see Osborne, 2002).

3.1. Dyad level of aggression

A 2 (social context: sibling, peer) by 2 (time: Time 1, Time 2) by 2 (target child's age: older sibling, younger sibling) by 2 (target child's sex: sister, brother) mixed factorial ANOVA was conducted on the frequency scores for relational aggression, with time and social context as within participants factors and target child's age and sex as between participants factors (Table 1).

The ANOVA revealed significant main effects for time of assessment, $F(1, 30)=5.59$, $p=.02$, $\eta_p^2=.13$, and for social context, $F(1, 39)=9.30$, $p=.004$, $\eta_p^2=.19$, which were qualified by a significant social context by time interaction, $F(1, 39)=40.92$, $p<.001$, $\eta_p^2=.51$) and a significant social context by time by target child sex and sibling age interaction, $F(1, 39)=4.34$, $p=.04$, $\eta_p^2=.10$. To breakdown the four-way interaction between time of assessment, social context, and target child's sex and age, simple effects were conducted in which the target child's sex was held constant. The three-way interaction between time of assessment, social context, and target child's age was significant for girls, $F(1, 18)=4.50$, $p=.04$, $\eta_p^2=.19$, but not for boys, $F(1, 21)=.79$, $p=.38$. Mean comparisons were conducted to determine the specific nature of the time of assessment by social context by target child age interaction by comparing the relational aggression rates for each of the sibling age and sex compositions across time for each social

[1] Parallel analyses to those presented in the results section were conducted on the untransformed data. Those analyses revealed a pattern of results identical to those presented on the square-root transformed data.

Table 1
Mean and *SD* dyad-level relational aggression scores per engaged/semi-engaged minute (transformed) as a function of social context, and target child's age and sex

Sex and age group of target child	Sibling context		Friend context	
	M	*SD*	*M*	*SD*
Time 1				
Older sister	1.18	.69	.76	.17
Older brother	1.19	.61	.86	.24
Younger sister	1.01	.42	.91	.29
Younger brother	1.23	.50	.78	.17
Time 2				
Older sister	.42	.55	1.18	.65
Older brother	.80	.81	1.03	.29
Younger sister	.32	.33	.81	.24
Younger brother	.30	.44	.93	.27

context (see Fig. 1). The comparisons, conducted on estimated marginal means and adjusted for multiple comparisons utilizing the Bonferroni correction, showed that sibling dyads in which the target child was an older sister (mean difference = − .42, $SE = .16$, $p = .01$), a younger brother (mean difference = − .44, $SE = .14$, $p = .003$) or an older brother (mean difference = − .33, $SE = .15$, $p = .03$) showed a significant decrease in relational aggression

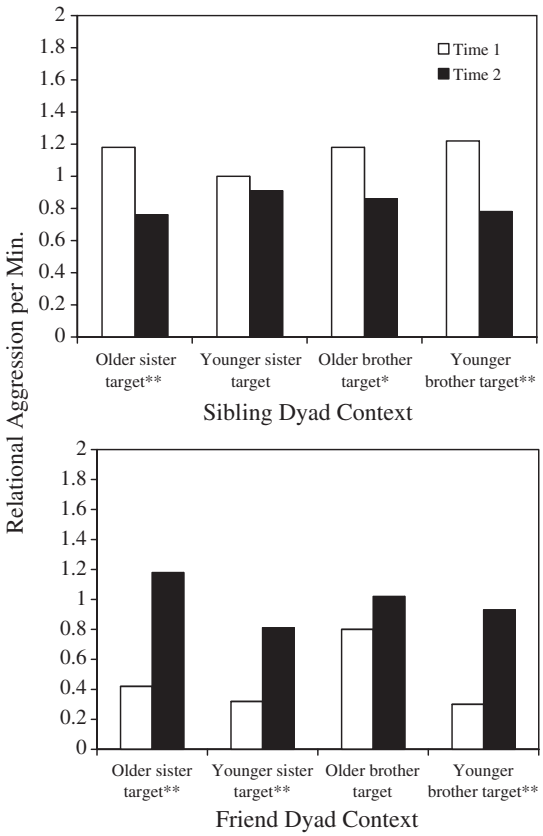

Fig. 1. Estimates of marginal means for dyad level relational aggression per engaged/semi-engaged minute (transformed), as a function of social context, data collection time, and target child's age and sex. *Note*. Single asterisks denote sibling constellation groups that differed significantly across time and peer context at the $p < .05$ level. Double asterisks denote sibling constellation groups that differed significantly across time and peer context at the $p < .01$ level.

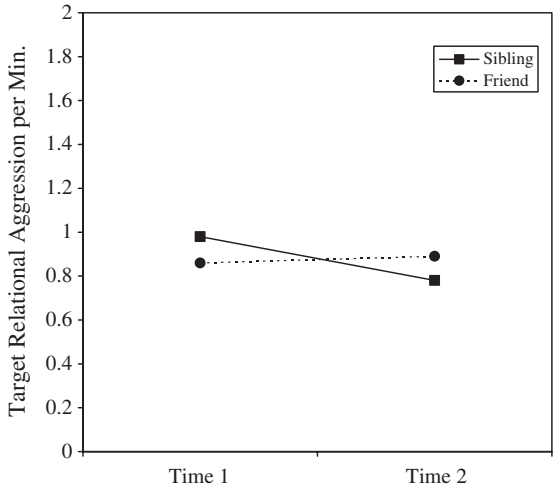

Fig. 2. Target child's average relational aggression per engaged/semi-engaged minute (transformed), as a function of social context and data collection time.

between Time 1 and Time 2. However, sibling dyads in which the target child was a younger sister did not show a significant change in relational aggression in the sibling context between Time 1 and Time 2 (mean difference = − .10, $SE = .15$, $p = .51$). Friend dyads in which the target child was a younger brother (mean difference = .63, $SE = .19$, $p = .002$), an older sister (mean difference = .75, $SE = .22$, $p = .002$), or a younger sister (mean difference = − .49, $SE = .20$, $p = .02$) showed a significant increase in relational aggression in the friend context between Time 1 and Time 2. However, friend dyads in which the target child was an older brother (mean difference = .23, $SE = .20$, $p = .27$) did not show any change in relational aggression between Time 1 and Time 2 (Fig. 2). Together these results suggest that for most sibling constellations, but not all, relational aggression decreases over time in sibling interactions and increases in time in friend interactions. All other interaction effects were non-significant (p values > .05).

3.2. Target initiated relational aggression

In order to better understand how relational aggression may have varied with target child's age and sex within the sibling and friend contexts, analyses that specifically examined the target child's frequency of relational aggression, regardless of overall dyad level of aggression, were conducted. A 2 (social context: sibling, peer) by 2 (time: Time 1, Time 2) by 2 (target child's age: older, younger) by 2 (target child's gender: sister, brother) mixed factorial ANOVA was conducted on the frequency of relational aggression by target children per engaged/semi-engaged minute, with time and social context as within participants factors, and target child's age and sex as between participants factors.

Similar to the findings of the dyad-level analyses, the target child-level analyses revealed a significant main effect for sibling age group, $F(1, 38) = 15.29$, $p < .000$, $\eta_p^2 = .29$, such that target children who were older siblings ($M = .96$) engaged in more relational aggression per engaged/semi-engaged minute than did target children who were younger siblings ($M = .79$). This finding was qualified by a significant social context by time interaction, $F(1, 38) = 7.40$, $p = .01$, $\eta_p^2 = .16$. Post-hoc comparisons comparing the target child's relational aggression rates for each social context across time (based on estimated marginal means and adjusted for multiple comparisons utilizing the Bonferroni correction) indicated that over time target children engaged in significantly less relational aggression with their siblings ($M = -.20$, $SE = .06$, $p = .002$), but did not significantly change in their rates of relational aggression with friends ($M = .022$, $SE = .06$, $p = .73$). These effects were not dependent on sibling age–sex constellation as all other interactions were non-significant, p values > .20; the main effect for time approached significance ($F(1, 39) = 2.90$, $p = .10$, $\eta_p^2 = .07$).

3.3. Stability over time

To examine how individual children's relative position on relational aggression may have changed across time, the stability of relational aggression rates was examined using Pearson's product-moment correlation coefficients. Results

suggested that target children's overall rates of relational aggression summed across context were not stable across time ($r = -.19$, $p = .23$). Further, target children's rates of relational aggression within a given social context (sibling and friend) were also not stable across time ($r = -.10$, $p = .52$; $r = -.19$, $p = .23$, for sibling and friend contexts, respectively). Combined with the dyad and target level analyses presented, these findings suggest that there is considerable variability in individual target children's relational aggression across both time and contexts.

4. Discussion

This study provides the first evidence that children's use of relational aggression changes depending on both age and interaction partner. During preschool age, children engaged in little relational aggression with their friends but there were high levels of relational aggression observed with their siblings. The high levels of intimacy in the sibling relationship provide embarrassing stories, secrets, and knowledge of the most painful buttons to push, whereas the sibling status ensures that awkward or overly intense behaviors will not end the relationship. Our finding regarding high levels of relational aggression among siblings is consistent with several studies that suggest that during the preschool years the sibling relationship is a relatively ideal situation for children to practice relational aggression (Lockwood, 2002; O'Brien, 1999; Updegraff et al., 2005).However, as these children age, a far different pattern is observed. The current findings reflect the developmental changes that occur in the sibling and friend relationships during middle childhood in that the sibling dyads were observed to engage in markedly less relational aggression whereas friends were simultaneously engaging in significantly higher rates of relational aggression. During middle childhood, sibling relationships become more egalitarian and less intense (for review, see Buhrmester & Furman, 1990). At the same time, friendships become increasingly intimate and salient for children (for review see Bernd, 2004). Between preschool and middle childhood, friendship dyads appear to become increasingly comfortable in their relationships as they also begin to fine-tune their relational aggression skills. Perhaps these new features of the friend relationships facilitate the application of relationally aggressive behavior in these contexts without fear of relationship loss.

Further examination of the dyads' behaviors suggests that the observed increases in dyad-level relational aggression between friends appear to be the result of the partner's aggressive behaviors and not the target child's behavior per se. For example, when the target child's behavior over time was examined, we found that the target children were indeed decreasing their use of relational aggression with their siblings, but they did not appear to be any more or less aggressive with their friends than they were previously. This suggests that factors other than the target child's behavior may be contributing to the rise in relationally aggressive behaviors in the friendship context. The current project's observations suggest that, overall, friend dyads are becoming increasingly like intimate sibling dyads during the transition from early to middle childhood, but this is not due to the behavior of the target child alone.

Rather than finding evidence of similarity between the relationships, the observed drop in the overall rate of relational aggression in the sibling context may instead indicate children's increased effectiveness or an increasingly covert application of relational aggression that our coding scheme was unable to pick up. Indeed, relational aggression in middle childhood and adolescence has been described as having a covert and subtle nature (Crick, Ostrov, Appleyard, Jansen, & Casas, 2004), which may be more easily employed and harder to detect as children gain the patience, behavioral control, and social cognitive skills that come with the transition into middle childhood. Perhaps the preschool sibling relationship serves as a period of intense practice of relationally aggressive behaviors in preparation for more selective covert application of the behaviors during relationships in middle childhood. Additional research utilizing methodologies more sensitive to children's use of subtle or covert behaviors is necessary to further understand the true nature of this apparent decline in relationally aggressive behavior toward siblings.

Interestingly, our findings do not suggest that the sex of the child by itself makes a difference in the level of children's relationally aggressive behaviors. For both sibling and friendship interactions, target boys and girls did not significantly differ in their rates of relational aggression. That is, target child sex alone did not predict changes in relational aggression over time. Despite the fact that several researchers have reported observed sex differences in children's use of relational aggression with peers (e.g., McNeilly-Choque, Hart, Robinson, Nelson, & Olsen, 1996; Ostrov & Keating, 2004; Ostrov et al., 2004), some researchers have failed to find girls engaging in more relational aggression than boys (Hart et al., 1998; McEvoy, Estrem, Rodriguez, & Olson, 2003; Stauffacher & Colder, submitted for publication; Updegraff et al., 2005). The type of setting and partner may be partially responsible for this effect. For example, Updegraff and colleagues (2005) failed to find sex differences in their study of adolescents' relational

aggression with siblings, finding instead that boys and girls both reported engaging in relational aggression at similar rates. Perhaps the presence of many important and intimate adult relationships, as occurs in a family context, may enable boys to try out forms of relational aggression that are not normally gender-normative forms of aggression. Research has suggested that children may be less likely to behave in gender-typical ways at home than at school. Past research on preschool sibling interaction has suggested that gender-typical behavior observed in preschoolers' interactions with peers does not necessarily carry over to interactions with siblings at home (e.g., DeHart, 1996). Although the home-based nature of the observations makes the current project unique, it also may make the results less comparable to previous research. Although more research needs to be conducted to further our understanding of how the sibling relationship context may function to facilitate boys' use of relational aggression, it appears as though boys' and girls' individual rates of aggression are similar within the sibling context.

The current findings highlight the importance of extending research beyond investigation of simple sex differences in order to consider features of the sibling constellation when examining frequency of relational aggression in either friend or sibling dyads. Dyads with a target child that was either an older sister or a younger brother evidenced higher rates of relational aggression in the sibling context during Time 1 than during Time 2. These dyads also simultaneously evidenced higher rates of relational aggression in the friend context during Time 2, compared with Time 1. This pattern of findings suggests that some for some sibling age–sex combinations, target children's sex and sibling age have significant implications for not only the frequency of relationally aggressive behaviors during sibling interactions, but also the frequency of relationally aggressive behaviors during present and future friend interactions as well.

Two of the sex compositions, dyads in which the target child was an older brother or a younger sister, did not evidence these patterns of change across the two different social contexts. Instead, sibling dyads with a target child who was a younger sister evidenced similar rates of relational aggression during early and middle childhood, demonstrating little if any change over time. Further, when these younger sisters were engaged in play with friends, we observed these dyads engaged in significantly more relational aggression as the children transitioned from early to middle childhood. These factors suggest that features of this sibling composition facilitate the transmission of relationally aggressive behaviors from the target child's sibling context to their friend context, while simultaneously retaining the behaviors in the sibling context. The unique component of these dyads seems to be the failure of the sibling context to evidence decreases in relational aggression over time. Perhaps being a younger sister may facilitate retention of both intimacy and inequality in the sibling relationship, which may help to retain the use of relational aggression in the sibling context.

Like the other two sibling sex–age constellations, sibling dyads in which the target child was an older brother were observed to show decreasing rates of relational aggression at age 8. Friend dyads including these target children were observed to demonstrate similar levels of relational aggression at both time points. Thus, for older brothers, relational aggression did not seem to increase in either social context. Here it appears that being an older brother may somehow serve as a protective factor against displays of relational aggression. Some features of these children's experience in using relational aggression in the sibling context at age 4 may lead these children to decide that this is not an appropriate social behavior to evidence with friends. Reactions from their siblings and parents between age 4 and 8 years may communicate to these children that relational aggression is a gender non-normative form of aggression for boys to exhibit within friend contexts. Although the mechanism behind this pattern of results is not clear, further examination and understanding of the nature of these boys' friendships may help to elucidate their reduced risk for increasing rates of relational aggression.

4.1. Applied implications

The findings of the present study suggest that the social behaviors employed in the sibling context may have the potential to be transferred into other social contexts as children age. The presence of relationally aggressive behaviors in multiple social domains further highlights the need for wrap-around service programs in which intervention is applied through children's many social contexts simultaneously. Given the extensive literature suggesting that significant social and psychological difficulties can result from relational aggression during peer interactions (Crick, 1997; Crick & Grotpeter, 1995; McNeilly-Choque et al., 1996; Rys & Bear, 1997; Werner & Crick, 1999), early identification of children at risk is pivotal to prevention. One factor that was important in determining which children later went on to use high rates of relational aggression with their peers was the child's sibling status (older vs. younger; sister vs. brother). Because relationally aggressive behaviors appear to be more apparent in the sibling context during

preschool years, this may well be the period in which early prevention programs would be most applicable, and in which examination of children's social behavior with their siblings could potentially help to identify which children are at an elevated risk for relationally aggressive friendships, thereby enabling application of targeted prevention programs. However, the present findings also suggest that there is considerable variability in the amount of relational aggression children use and that stability of relationally aggressive behaviors in the home context is low, making identification of at risk children potentially more difficult.

In contradiction to the hypotheses derived from the deviancy training model of aggression development (e.g., Aguilar, O'Brien, August, Aoun, & Hektner, 2001; Bandura, 1973; Bullock & Dishion, 2002), it did not appear as though the sibling dyad served as a training ground for all younger siblings modeling older siblings' relationally aggressive behaviors. When the target's role in the dyad's level of relational aggression was examined separately, a virtually identical picture emerged for older and younger siblings. Regardless of social context, target children with younger siblings engaged in more relationally aggressive behavior than did target children with older siblings, at both data collection times. This not only shows the impact that the sibling relationship has in the friendship context, but it also suggests that for both contexts, it is the older sibling who is engaging in the majority of the relational aggression, and it is not the case that the younger sibling models the older child's behavior.

Future work should continue to examine what features of being an older or a younger sibling facilitates the transmission of relationally aggressive behaviors across social contexts. For example, it appears as though target children who are older brothers may experience less relational aggressive behaviors in both sibling and friend contexts. Further examination of what facets of this sibling constellation may serve to buffer the development of relationally aggressive behaviors may prove helpful in the development of prevention programs. Conversely, individuals who are younger sisters seem to be at particular risk for engaging in and receiving relationally aggressive behavior in their friend and sibling relationships. However, it is still unclear how these transactions unfold and which factors mediate the use of the aggression. Little is known yet about relationship features and transaction patterns of specific sibling gender–age constellations, making identification of mechanisms that facilitate relationally aggressive behaviors difficult. Nevertheless, the potential application of such information could inform the field's understanding of the development of relational aggression and would facilitate the development of prevention programs substantially. Future work should continue to elucidate the dynamics of specific sibling combinations and further examine the nature of the relationships over time.

4.2. Limitations

The unique coding scheme we employed may partially explain the lack of observed sex differences. The scheme used was designed to detect minute features for a fine-grained analysis of videotaped behavior, which may enable some features more common in boys' relational aggression to be more readily observable than in more broad-based coding schemes (Stauffacher & DeHart, 2005). Specifically, our coding scheme included children sharing embarrassing stories and secrets with parents and other adults in its definition of relational aggression, which other relational aggression observational coding schemes do not (Ostrov & Keating, 2004; Ostrov et al., 2004). Previous analyses suggest that the use of the adult relationship as a vehicle for harm and the sharing of embarrassing stories is much more typical relationally aggressive behavior for boys than for girls (Stauffacher & DeHart, 2005) and that this may be particularly important in the sibling context.

Unfortunately, the limited sample size at Time 1, attrition within the longitudinal sample, and the low stability in relational aggression across time and contexts limited our ability to test group differences in the form or the function of relationally aggressive behaviors. This information might have further illuminated why certain target children and certain sibling age–sex constellations are more likely to use relational aggression. Previous work using this coding scheme has suggested that differences in the relationship attacked (dyad relationship, other peer relationship, or adult relationship), the form of the aggression (primarily verbal, primarily physical, or primarily ignoring behaviors), and the interaction context of the aggression (response or unprovoked) can highlight the ways in which different sibling constellations engage in relationally aggressive behaviors in subtly unique ways (Stauffacher & DeHart, 2005). This more fine-grained coding scheme was also found to be able to distinguish unique features of boys' and girls' relational aggression reliably (Stauffacher & DeHart, 2005). Larger sample sizes that can utilize similar methods or that can apply nested models may be able to explain the lack of sex differences and the unique developmental trajectories observed in specific sibling constellations in the present study. Further, even more fine-grained analyses of the overall interaction

context of younger sister and older brother sibling constellations may enable researchers and practitioners to better understand the development and course of relationally aggressive behaviors.

A significant limitation associated with our use of videotaped observations is reactivity. Although virtually all the parents reported that their child's behavior on our tapes was typical, it is likely that children did respond to the presence of the experimenters. Whereas this provided us with some opportunities to observe children's use of relationships with research assistants as vehicles of aggression, it may also have affected the type and frequency of the relational aggression we were able to observe, particularly as the children grew older. Relational aggression is built on high levels of intimacy and shared secrets, and it utilizes social cognitive skills. Consequently, as children age, they probably become more adept at inflicting harm on their partners without audibly commenting on a secret or embarrassing story. Further, because relational aggression often occurs away from adults (O'Brien, 1999; Stauffacher & DeHart, 2005), children are probably increasingly less likely with age to produce relationally aggressive behaviors when they know they are being observed. Reactivity and a limited period of observation may have prevented us from picking up some of these more covert instances of relational aggression, especially as the children got older.

4.3. Summary and general conclusions

As the first longitudinal study to use home-based observational methods to assess siblings' and friends' use of relational aggression, the present study expands existing knowledge of the normative development of relational aggression in early and middle childhood and provides some of the first evidence of the transfer of relationally aggressive behaviors across social contexts. Although longer observational periods and a greater range of observational settings might have changed the types of relationally aggressive behaviors that were readily apparent, many covert behaviors may not be observable in sibling and friend relationships with the current paradigm. Using sibling, friend, teacher, or parent questionnaires in *addition* to behavioral observations would add additional support to the current findings and could potentially identify other more subtle relationally aggressive behaviors. Despite the limitations of the methods of the present study, our findings provide support for the assertion that studies of sibling relationships have tremendous value for expanding our understanding of how children develop relationally aggressive behaviors over time.

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