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Why Social Networks Matter: A Structural Approach to the Study of Relational Aggression in Middle Childhood and Adolescence

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Abstract   Prior studies have addressed the influence of individual-level demographic variables on relational aggression among children and adolescents, resulting in little information about effective points of intervention. This paper argues that the inherently social nature of relational aggression warrants an examination of the effects of peer social network features on these behaviors. Specifically, the paper reframes the literature linking two individual-level variables (sex and age) to relational aggression from a contextual perspective that considers peer social networks. Moreover, the paper offers implications regarding how these reframed findings can be applied to the development of effective prevention and intervention programs and future research efforts.

Keywords   Relational aggression · Indirect aggression · Social aggression · Peer social networks · Intervention · Sex · Age · Development · Middle childhood · Early adolescence

Early characterizations and empirical studies of childhood aggression focused exclusively on physical (e.g., hitting, shoving, kicking) and verbal (e.g., threats of physical aggression, yelling) forms of aggression (see Parke and Slaby 1983 for review). In contrast, recent definitions of childhood aggression have recognized that children and adolescents may also inflict harm by damaging their peers' social relationships. This paper examines such relational forms of aggression. Specifically, in order to identify more effective points of intervention, the paper introduces a structural framework that considers the influence of peer social networks on relational forms of aggression among children and adolescents.

Relational forms of aggression include deliberate behaviors designed to harm others through subtle injury to peer relationships such as rumor spreading, social exclusion, and betrayal of trust. Researchers have discussed these behaviors using three overlapping constructs: *relational aggression* (e.g., Crick and Grotpeter 1995), *indirect aggression*

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(e.g., Bjorkqvist et al. 1992a) and *social aggression* (e.g., Cairns et al. 1989; Underwood 2003). Because the similarities of these constructs outweigh their differences, with each identifying as the essential feature the "social exclusion, or the relational manipulation, of the other [person]" in this paper, *relational aggression* is used as an umbrella term to refer to all three constructs (Archer and Coyne 2005, p. 219).

Although there is evidence that relational aggression may have some adaptive consequences for aggressors (e.g., Cillessen and Mayeux 2004; Lease et al. 2002), research has demonstrated that these behaviors are also associated with negative social and psychological outcomes for both aggressors and their victims. Perpetrators of relational aggression are more likely to be disliked by peers, and to experience depression and loneliness (Crick 1996; Crick and Grotpeter 1995; Rys and Bear 1997; Tomada and Schneider 1997). Victims of relational aggression exhibit higher levels of anxiety, loneliness, psychological distress, social avoidance, and perpetration of aggressive behavior (Craig 1998; Crick et al. 2001; Crick and Nelson 2002; Henington et al. 1998). In addition, relational aggression may contribute to a negative school and classroom environment, interfering with learning (Underwood 2003). Effective interventions targeted at preventing and reducing relational aggression among school-age children and adolescents may help decrease these undesirable social, psychological, and environmental outcomes.

Currently, however, few programs for children and adolescents are designed specifically to impact relational aggression (Leff et al. 2001). Those that have addressed relational aggression have focused on changing cognitions and building social, emotional and behavioral skills as key points of intervention, with mixed results. For example, while the Social Aggression Prevention Program (SAPP) had a positive effect on social problem-solving strategies among fifth grade girls and increased prosocial behaviors among girls with high baseline levels of social problems, there were no significant main effects of the intervention on relational aggression (Cappella and Weinstein 2006). Third grade students receiving the Making Choices and Making Choices Plus interventions exhibited significantly lower levels of teacher-rated relational aggression than children receiving a health intervention (Fraser et al. 2005). However, these results must be interpreted with caution because teachers were not blind to the intervention condition, and lenient one-tailed tests were used in statistical analyses.

The lack of effective programs for decreasing relationally aggressive behaviors implies that researchers may be missing critical points of intervention. To date, research has documented the prevalence of relational aggression across multiple demographic groups with the hope of answering the question: Who commits relationally aggressive acts? In particular, many researchers have focused on the associations of sex and age with relational aggression. Although exploring these variables can provide interventionists with important information about which demographic groups to target, they provide little feedback on how to impact the mechanisms that underlie relational aggression. To accomplish this, researchers need to extend their focus to consider contextual factors that facilitate the process of relational aggression.

The structure of children's peer social networks serves as one contextual factor that deserves consideration in the literature on relational aggression. Because relational aggression involves harming others through the use of social channels, the organization of each child's peer relationships likely plays an important role in shaping and constraining his or her use of relationally aggressive strategies. For example, an isolated child would have difficulties engaging in socially exclusive behaviors, simply because he/she does not have relationships with other individuals whom he/she could exclude. Yet, beyond this obvious example, more nuanced social structures are also likely to play a role in the

execution of relationally aggressive behaviors. Thus, while most researchers have asked *who* commits relationally aggressive acts, it may also make sense to ask *where* in the web of social relations are children and adolescents who engage in these behaviors. Several empirical studies have explored the association between relational aggression and various types of peer social status (e.g., Cillessen and Mayeux 2004; Lease et al. 2002; Rose et al. 2004a; Rose et al. 2004b; Zimmer-Gembeck et al. 2005). To date, however, only a few studies have examined the association between relational aggression and peer social networks (Ellis and Zarbatany 2007; Xie et al. 2002a; Xie et al. 2002b).

A structural perspective that considers how features of children's peer social networks enhance or constrain their ability to engage in relational aggression offers a promising lens for framing and interpreting past research findings linking individual-level variables to relationally aggressive behaviors. This perspective also has the potential to enhance our understanding of effective points of intervention for preventing and reducing relational aggression. Therefore, in this paper, I demonstrate how knowledge of peer social networks can be used to build upon and enrich our current understanding of relational aggression in middle childhood and adolescence. First, I provide a description of a structural perspective and social network analysis. Next, I use theory and empirical studies related to the characteristics of children's peer social networks to frame and reinterpret findings linking two common individual-level variables, sex and age, to relational aggression. I also discuss the implications that each of these reinterpretations has for intervention efforts targeted at the prevention and reduction of relational aggression. To conclude, I discuss suggestions for future research and intervention efforts.

A Structural Perspective

From a structural perspective, it is not the individual per se, that is under investigation, but rather his or her position within a social structure. Structuralists suggest that individuals' positions within a web of relationships constrains their behavior. In this sense, the framework of structuralism implies that external forces such as the size and shape of individuals' social networks drive behavior. This viewpoint departs sharply from an individualist perspective, which holds that individual-level attributes including demographics, attitudes, and emotions drive behavior (Wellman 1988).

Social network analysis offers a fitting method of exploring relational aggression from a structuralist perspective. This technique quantifies the structure of relationships between individuals (For a comprehensive treatment of social network analysis, see Wasserman and Faust (1994) and Hanneman and Riddle (2005)). Researchers typically conduct network analysis using a finite group of actors (e.g., students in a classroom, workers in a business), referred to as a system, although smaller building blocks including dyads, triads, and subgroups can also be examined. Several features of social network systems, subgroups, and individuals' placement in these networks have been used to examine human behaviors and/or outcomes.

Properties of Network Systems and Subgroups

Size, homophily, and stability represent properties of network systems and subgroups. Size refers to the number of actors in a system or subgroup (Wasserman and Faust 1994). Homophily refers to the degree to which actors in a network system or subgroup associate

with others who exhibit similar individual characteristics (McPherson et al. 2001). Commonly, subgroups of children and adolescents demonstrate homophily on demographic characteristics such as sex, race, and age (Cairns and Cairns 1994; Ryan 2001). Finally, stability refers to the degree to which the structure of relational ties in systems and subgroups remain intact over time (Cairns and Cairns 1994).

Position of Actors

The position of actors within network systems and subgroups is also important for understanding human behavior. Many network analysts have brought attention to actors' placement or position within the network system or subgroup, with studies of youth social networks often focusing on the positions of clique members, liaisons, and isolates (e.g., Ennett and Bauman 1993, 1994; Ryan 2001; Shrum and Cheek 1987). Clique members are typically defined as actors who belong to a tightly knit subgroup of peers and who share many of their relational ties with each other. Liaisons, on the other hand, do not belong to cliques, but have multiple ties to members of different cliques or other liaisons, and thus serve as indirect connections between other actors in the network system. Finally, isolates are actors who have few or no relational ties with other actors within the system or subgroup.

Reframing Relational Aggression from a Structural Perspective

Many empirical studies have posited direct effects of sex and age on relational aggression. Yet, while the findings of these studies provide some information about who commits relationally aggressive acts, they do not address the social conditions required to enact these behaviors. Information about children's peer network structures can help illuminate linkages between individual attributes and relational aggression, and may also provide insight into how children's peer relationships shape their ability to engage in relationally aggressive behaviors. In short, turning to social networks allows us to evaluate the claim that enacting relationally aggressive behaviors has less to do with *who* one is, and more to do with *where* one is in the social system. If correct, this has important implications for points of intervention to prevent and reduce relationally aggressive behaviors among children and adolescents.

Sex and Relational Aggression Revisited from a Social Networks Perspective

Overview

The association between sex and relational aggression is one of the most heavily researched and controversial relationships in the literature. Despite recent media claims that relational aggression is more common among girls than boys (e.g., Simmons 2002; Wiseman 2002), mixed empirical findings suggest that the relationship between sex and relationally aggressive behaviors is complex. Our understanding of this relationship may benefit from a better knowledge of the effects of social network features on the relationship between sex and relational aggression. Figure 1 illustrates the main arguments of this section. First, I discuss the existing theory and empirical evidence connecting sex directly
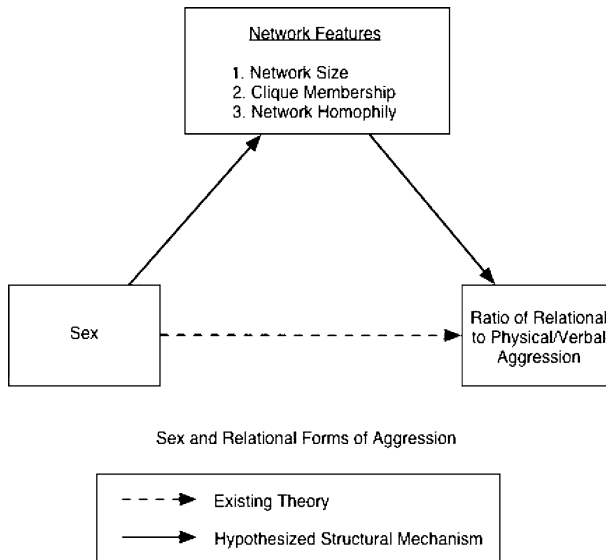
Fig. 1 Proposed influence of social network features on the relationship between sex and relational aggression

to the ratio of relational to physical/verbal forms of aggression (as illustrated by the dotted line in the figure).[1] Then, I demonstrate how network features including network size, clique membership, and network homophily differ by sex. Finally, I show how these network features serve as mediating structural mechanisms linking females to higher ratios of relational to physical/verbal aggression. After reframing the relationship between sex and relational aggression to include features of children's peer networks, I discuss implications for intervention.

Existing Theory and Empirical Evidence Linking Sex Directly to Relational Aggression

Research on relational aggression burgeoned, in part, as an attempt to identify a form of aggression common among girls (e.g., Feshbach 1969; Crick and Grotpeter 1995;

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[1] This paper focuses on sex differences the ratio of relational to physical aggression because studies using a variety of methods including peer nominations, peer ratings, observations, and interviews about interpersonal conflicts have painted a mixed picture of the relationship between sex and absolute levels of relational aggression (see Archer and Coyne for a review). Several studies have yielded at least partial support for the theory that girls display higher levels of relational aggression than boys (Bosacki 2003; Cairns et al. 1989; Crick and Grotpeter 1995; Crick 1997; Feschbach 1969; French et al. 2002; Lagerspetz et al. 1988, Owens and MacMullin 1995; Xie et al. 2003; Xie et al. 2002a, b; Zimmer-Gembeck et al. 2005). Interestingly, however, other studies provide evidence that boys exhibit higher levels of relational aggression than girls (David and Kistner 2000; Henington et al. 1998; Peets and Kikas 2006; Tomada and Schneider 1997) or no evidence of sex differences in levels of relational aggression (Craig 1998; Osterman et al. 1994; Rys and Bear 1997; Strough and Diriwachter 2000; Tiet et al. 2001). A meta-analysis found that the presence of sex differences in relational aggression depended in part on the type of measurement employed, with the highest effect sizes occurring among observational studies and the lowest effect sizes occurring among peer nomination studies (Archer 2004). Given these mixed results, evidence of sex differences in absolute levels of relational aggression remains inconclusive.

Lagerspetz et al. 1988). Prompted by empirical evidence of girls' low levels of physical and verbal aggression, researchers postulated that gender differences in socialization and value systems influence girls to rely more heavily on relational aggression, while boys engage in multiple forms of aggression.

Research has demonstrated consistent sex differences when examining the ratio of relational to physical/verbal forms of aggression among males and females. Specifically, studies using peer nominations that have classified children into four groups (non-aggressive, physically/verbally aggressive only, relationally aggressive only, or combined aggressive) have consistently yielded the same sex effect (Crick and Grotpeter 1995; Henington et al. 1998; Rys and Bear 1997; Tomada and Schneider 1997). These studies demonstrated that girls are disproportionately represented in the relationally aggressive only group while boys were more likely to be represented in the physically/verbally aggressive only and combined groups. This suggests that relational aggression may represent the dominant form of aggressive behavior among girls. In contrast, boys may exhibit a more varied repertoire of aggressive behaviors that includes physical, verbal, and relational aggression.

Sex Differences in Network Features

An understanding of sex differences in peer social networks can help explain why relational aggression is the dominant form of aggression among girls while boys use a more diverse set of aggressive strategies. Features of girls' social networks may facilitate the effective use of relationally aggressive strategies, making these behaviors more appealing for girls than their physical and verbal alternatives. Features of boys' social networks, on the other hand, may not enhance the use of relationally aggressive strategies, making boys equally likely to engage in relational and overt forms of aggression.

Several ethnographic studies focused on observing children's play in school settings have noted differences in the size and play activities of girls' and boys' peer groups (Goodwin 2002; Lever 1978; Thorne 1993). These studies have indicated that boys tend to play in large groups engaged in competitive games such as sports, while girls tend to play in smaller groups and engage in play activities that encourage intimacy and collaboration. For example, in her ethnography, Goodwin (2002) noted that boys dominated the sports fields while girls "preferred to play games where they were in ecologically close huddles, permitting conversation" (p. 399).

With few exceptions (e.g., Bagwell et al. 2000; Cairns et al. 1995), research on elementary school students using diverse network methodologies (e.g., self-reported reciprocated best friend ratings and social cognitive mapping) and samples (e.g., American and Finnish children) has confirmed that girls' networks are significantly smaller than boys' networks (e.g., Benenson 1990; Lagerspetz et al. 1988; Salmivalli et al. 1997). Furthermore, it appears that girls and boys are actively involved in shaping the size of their networks. In a longitudinal social network study using an American elementary school sample, dyads of girls were more likely to display triadic network patterns that signaled exclusivity toward a third party. In contrast, dyads of boys were more likely to display triadic network patterns that signaled a positive response to a third party. Specifically, over time, girls were more likely to shift from a triadic relationship to an exclusive dyad whereas boys were more likely to expand their networks to include a third party (Eder and Hallinan 1978). Interestingly, sex differences in network size may only be applicable to middle childhood. Studies of adolescents' networks have been unable to replicate these

findings (Ellis and Zarbatany 2007; Ennett and Bauman 1996; Pellegrini 1994; Urberg et al. 1995).

In addition to network size, researchers have identified other sex differences in childhood and adolescent peer networks. Sixth to twelfth grade females were more likely than their male counterparts to be clique members, and to report friends that had the same crowd status (e.g., prep, jock, etc.) and same network position (e.g., clique member, liaison, etc.) as themselves (Urberg et al. 1995). Adolescent girls were also more likely to retain their position as clique members than adolescent boys over the course of a school year (Degirmencioglu et al. 1998). These findings suggest that girls are more homophilous and "more integrated into school social networks than males" (Urberg et al. 1995; p. 545).

The Effects of "Female" Network Features on the Ratio of Relational to Physical/Verbal Aggression

The literature provides evidence that girls interact in smaller networks than boys in elementary school samples. Furthermore, girls are more likely to belong to cliques and have more homophilous peer groups than boys. These features of girls' networks are likely to affect the ratio of relational to physical/verbal forms of aggression by increasing levels of intimacy and increasing the ease of social exclusion.

Members of small peer groups have more opportunities to have in-depth interpersonal interactions and exchange personal information than members of large peer groups. Additionally, the tightly knit nature of cliques provides opportunities for members to confide in one another. Finally, networks with individuals in similar positions and crowds encourage close relationships and disclosure, while networks with individuals in diverse positions and crowds inhibit or disrupt intimacy (Urberg 1995). Intimacy is a key attribute in peer relationships that facilitates relationally aggressive acts. Indeed, relationally aggressive girls were more likely to report friend intimacy in their dyadic friendships than non-relationally aggressive girls (Grotpeter and Crick 1996). Taken together, these findings suggest that network features common among girls are likely to lead to increased levels of intimacy, and improved facilitation of relationally aggressive behaviors.

In addition to promoting increased intimacy, researchers have proposed that network features common among girls make certain relationally aggressive activities, such as social exclusion, easier to carry out and more potent (Lagerspetz et al. 1988; Owens and MacMullin 1995). It is more straightforward to successfully enact socially exclusive behavior in small networks. For example, in dyadic or triadic relationships, one or two individuals can choose to exclude another individual without having to convince several other people to also engage in the exclusion. Clique membership also aids socially exclusive activities. If an aggressor is a clique member with relational ties to other members, he/she has a greater likelihood of convincing those individuals to exclude the target. Finally, crowd status homophily can be linked to social exclusion. Specifically, it may be easier for an aggressor to garner support for excluding an individual when members of a peer group are from a similar crowd.

Implications for Intervention

The past literature has suggested that relational aggression is the dominant form of aggression in girls' behavioral repertoires, prompting some researchers to target their

interventions specifically to the female population (e.g., Cappella and Weinstein 2006). The reframing above, however, suggests that this dominance is not an intrinsic feature of being female, but instead a result of girls' peer network features that enhance the opportunities for and effectiveness of relationally aggressive strategies. Thus, it is less important to target relational aggression interventions on the basis of sex, and more important to design interventions that impact the network features theorized to facilitate relationally aggressive behaviors. For example, as argued above, the small networks characteristic of elementary school girls make it easier for children to spread secrets and rumors or exclude a peer. Therefore, researchers interested in reducing relationally aggressive behaviors should consider creating interventions targeted at increasing the size of children's peer networks. By intervening on this mediating network feature, researchers will diminish the opportunities provided by peer structures for children to engage in relationally aggressive behaviors.

Age and Relational Aggression Revisited from a Social Networks Perspective

Overview

Age represents another common predictor in studies of relational aggression. Currently, most of the available literature is cross-sectional, and suggests that the levels of relational aggression displayed increase with age, peaking in early adolescence. Figure 2 presents the main arguments of this section. I begin by discussing the extant theory and research demonstrating an association between the developmental period of early adolescence and increases in relational aggression (as illustrated by the dotted line in the figure). Next, I examine features of early adolescents' social networks including limited availability of
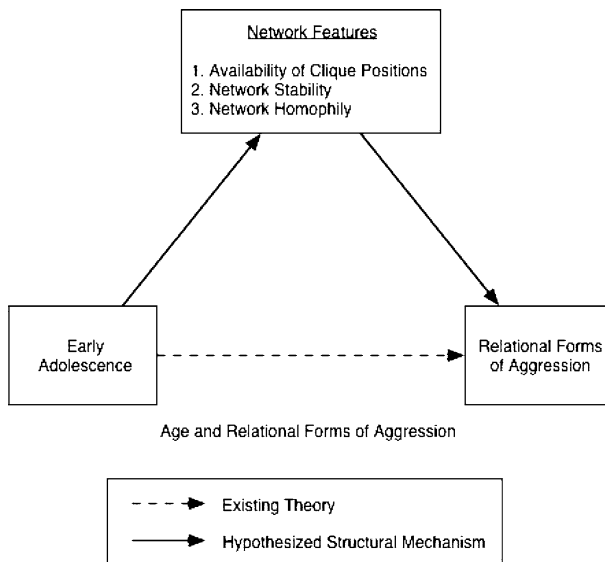

Fig. 2 Proposed influence of social network features on the relationship between age and relational aggression

clique member positions, decreased network stability, and changes in network homophily and discuss how these features serve as mediating mechanisms linking early adolescence to increased relational aggression. I end this section by discussing the implications of these arguments for interventions designed to prevent and decrease relational aggression.

Existing Theory and Empirical Evidence Linking Age Directly to Relational Aggression

Bjorkqvist et al. (1992a) theorized that because relational aggression requires the manipulation of social relationships, children who engage in these behaviors must be able to understand the feelings and motivations of others, and make inferences based on others' social behavior (Kaukiainen et al. 1999). Theories of cognitive development suggest that young children do not have the cognitive capacity to engage in these forms of social intelligence (Piaget and Inhelder 1969). Thus, as children grow older and develop increased social intelligence, their levels of relational aggression are likely to increase and their levels of physical aggression are likely to decrease.

  With only a few exceptions (Craig 1998; Osterman et al. 1998), research studies utilizing a cross-sectional design have yielded consistent support for the developmental theory outlined by Bjorkqvist et al. (1992a). A series of studies found that reports of relational aggression in children's interpersonal conflicts increased from first grade to seventh grade while reports of physical aggression decreased (Xie et al. 2002a; Xie et al. 2003). Other studies indicated that the relationship between age and relational aggression is moderated by sex (Cairns et al. 1989; Owens and MacMullin 1995; Peets and Kikas 2006). Finally, several additional cross-sectional studies that examined a wider age range demonstrated a curvilinear relationship where relational aggression peaked in early adolescence before declining in later adolescence (Bjorkqvist et al. 1992a; Landau et al. 2002; Tiet et al. 2001). To date, only a handful of longitudinal studies have examined the effects of development on relational aggression, and while they have yielded only limited support for Bjorkqvist et al.'s (1992a) theory, they have involved limited age ranges and/or problematic methodologies (e.g., maternal report) (Cillessen and Mayeux 2004; Vaillancourt et al. 2003).

Network Features of Early Adolescents

Although developmental peaks in relational aggression can be explained, in part, by an increase in cognitive skills among older children (see Bjorkqvist et al. 1992b), relational aggression "depends heavily on maturation and the development of a strong social network" (Archer and Coyne 2005, p. 222). Indeed, it is likely that changes in network features affect the display of relational aggression across developmental periods. Here, attention is given to network features in early adolescence, as there is evidence that relationally aggressive behavior diversifies and potentially peaks during this developmental period (Bjorkqvist et al. 1992a; Landau et al. 2002; Tiet et al. 2001).

  The salience of peer groups is particularly high among early adolescents when compared to children and older adolescents. For example, there is evidence that ratings of the importance of cliques increase between the sixth and eighth grade (Crockett et al. 1984). Research on perceptions of crowd affiliation among middle school and high school students has also confirmed the significance of peer groups to early adolescents. Unlike cliques, which are defined based on interactions between peers, crowds are reputation-based groups of peers

with similar attitudes and hobbies (e.g., jocks, druggies, preppies) (Brown 1989). Ratings of the importance of crowd affiliation declined steadily from early to late adolescence. Further, younger adolescents were more likely to cite reputation and friendship as positive reasons for crowd affiliation than older adolescents (Brown et al. 1986).

In addition to developmental differences in perceptions of social groups, several studies have documented age-related variation in friendship and network features. In particular, these studies have found effects of age on friendship and network stability (Cairns et al. 1995; Degirmencioglu et al. 1998), and network position (Shrum and Cheek 1987). Research suggests that friendships and peer groups become less fluid with age. Cairns et al. (1995) addressed the stability of nominated friendships over a relatively short duration of time (i.e., three weeks) among fourth and seventh grade students. They found that the probability of naming the same friend twice over a three-week period was significantly higher among the seventh grade students than the fourth grade students. Taking their study of relationship stability a step farther, Degirmencioglu et al. (1998) examined the stability of best friendships, close friendships, and network position in sixth, eighth, and tenth graders in two school systems over the period of a school year. In both school systems, they found that the stability of close friendships increased with age. Additionally, in one school system, they demonstrated that with age, best friendship stability increased while network position stability declined.

Shrum and Cheek (1987) adopted another approach to the examination of age-related changes in network position by exploring developmental differences in the percentages of network positions in third through twelfth grade students. The results suggest that early adolescence marks the beginning of a "degrouping process", during which the percentage of clique members steadily declines and the percentage of liaisons increases sharply. These trends continue throughout middle and high school.

The Effects of "Early Adolescent" Network Features on Relational Aggression

Taken together, Degirmencioglu et al. (1998) and Shrum and Cheek (1987) paint an interesting picture of instability in peer networks during early adolescence. Although peer networks are more stable in early adolescence than in childhood (Cairns et al. 1995), they are still much more fluid than those during late adolescence (Degirmencioglu et al. 1998). This uncertainty combined with a decreasing percentage of clique members during has interesting implications for the study of relational aggression, especially considering findings that young adolescents view clique membership and crowd affiliation as particularly important (Brown et al. 1986; Crockett et al. 1984). As Shrum and Cheek (1987) stated:

> The social structure may become less stable, relatively more permeable, and heterogeneous at the same time that concern with group membership is reaching its height. That is, cliques may become more important because membership becomes a scarce resource or because the most popular students are seen as members, while the actual proportion of students who are clique members declines. (p. 219)

As a "scarce resource," clique membership rewards members with increased social status. The high value that early adolescents place on clique membership and the limited number of clique member positions available sets up a competitive environment for early adolescents. Relational aggression presents a viable and powerful vehicle that early adolescents may use to vie for clique membership. For example, ethnographic accounts of

preadolescent cliques indicate that members of cliques use relationally aggressive behaviors such as social exclusion as a means of protecting and ensuring the continuation of their coveted social status (e.g., Adler and Adler 1995). In addition, nonmembers and members of cliques alike may use relational aggression in an attempt to deliver harm to a peer's social status. Providing additional evidence that relational aggression can be used to help maintain or even boost social standing, research found that relational aggression predicted higher levels of perceived popularity, with the effect increasing from the fifth to the ninth grade (Cillessen and Mayeux 2004).

Homophily, Early Adolescence, and Relational Aggression

From middle childhood to early adolescence, race homophily increases (Shrum et al. 1988; Hallinan and Smith 1989), and sex homophily declines (Cairns et al. 1995; Hallinan and Smith 1989; Pellegrini 1994; Shrum et al. 1988). As discussed earlier, network homophily may increase levels of intimacy, leading to higher levels of relational aggression. This theory explains why increased race homophily during early adolescence might lead to higher levels of relational aggression, but does not explain why relational aggression intensifies during early adolescence despite decreasing sex homophily. Perhaps sex heterogeneous social networks create new opportunities for relational aggression (e.g., romantic relationships) that offset possible declines in the intimacy of peer groups. Also, social norms prohibit boys from using physical forms of aggression against girls. Thus, as sex homophily declines, boys who wish to aggress against girls in their network may make more use of relationally aggressive acts. Indeed, research has demonstrated that older boys exhibit increased levels of relational aggression against female targets (Russell and Owens 1999).

Implications for Intervention

Early adolescence is commonly associated with a shift to secondary school environments that disrupt social relationships by having students change classrooms throughout the day (Shrum and Cheek 1987). These changes in school structure may result in increased network instability and decreased group membership, which in turn, may lead to increased levels of relational aggression designed to protect and maintain social status. Therefore, interventions that target the school structures to which early adolescents are exposed, may also hold promise for reducing relational aggression. The School Transitional Environment Project (STEP) provides a good example of how an intervention can produce changes in school structure that influence peer social networks (Felner et al. 2001). Felner and colleagues designed STEP to diminish the mismatch between early adolescents' developmental state and secondary school environments by modifying school and classroom practices to increase affiliation among peers. For example, STEP students were grouped into teams that had all of their academic classes together and the school environment was restructured so that all STEP classrooms were in close proximity. STEP's environmental changes may reduce relational aggression by curtailing the flux in social networks associated with early adolescence. However, the program may also increase relational aggression by increasing intimacy among early adolescent peer groups. Future intervention research should experimentally test the effects of program like STEP on relational aggression to determine how programs targeting early adolescent peer networks affect relationally aggressive behaviors.

Future Directions for Research

Despite the conceptual links between social network features, demographic variables and relational aggression described above, few researchers have hypothesized and tested models of relational aggression that include social network features. Future research should empirically confirm the theories outlined in this paper regarding the mediating effects of networks on relational aggression in children and adolescents. In addition to this confirmatory research, future work should explore issues regarding victimization, cognitions, and measurement.

Social network features may be relevant to studies of relational victimization. For example, children who are liaisons may have a buffer against relational victimization because they are loosely connected to multiple, unrelated cliques. If one clique decides to exclude a liaison, he/she can take social refuge with another clique. Future studies should tease apart the effects of actor position and other network features on relational victimization.

One common variable in the literature, cognitions, deserves attention in future studies (e.g., Crick 1995; Crick et al. 1996, 2002; Werner and Nixon 2005; Leff et al. 2003). In addition to displaying homophily on demographic characteristics, individuals also display value homophily in attitudes and cognitions (Lazarsfeld and Merton 1954). For example, children who share the same clique report similar levels of intrinsic value of school (Ryan 2001). Future research should consider whether value homophily extends to cognitions about relational aggression.

Finally, researchers in childhood and adolescence have generally used self-reported friendships (e.g., Urberg et al. 1995; Ennett and Bauman 1996), or social cognitive mapping techniques (e.g., Cairns et al. 1989, 1995) to collect network data. Network measures utilizing self-reported friendships are prone to inaccuracies, and are often difficult to collect in school-based settings because they require almost full participation of students in a network system to yield accurate results (Bernard et al. 1984; Cairns and Cairns 1994). Network measures using social cognitive mapping avoid problems with missing data, but by emphasizing group identification they miss the more nuanced relational ties that occur within each peer subgroup and underestimate the number of individuals in liaison positions (Wellman 1988). Future research should consider the use of Krackhardt's (1987) cognitive social structures. This technique is more robust against informant inaccuracies and missing data than self-reported network data, and provides more nuanced information about relational ties between individual actors than social cognitive mapping techniques (see Neal 2007).

Future Directions for Intervention

Although research on the connection between relational aggression and demographic variables, such as sex and age, can help program developers narrow the targeted recipients of prevention and intervention programs, demographic variables cannot be manipulated or changed by prevention or intervention efforts. In addition, interventions focused on changing cognitions or social skills may influence particular individuals' likelihood to commit relationally aggressive acts. However, they do not change the social contexts that enable and encourage these behaviors to occur. This paper has argued that social networks affect relationally aggressive behaviors, and therefore offer a viable point of intervention. In contrast to fixed demographic variables, it is possible for researchers to change social

network features by manipulating the social environment. Furthermore, unlike changes to individual cognitions or social skills, changes to social networks directly limit individuals' social opportunities to engage in relationally aggressive behaviors. Prevention and intervention programs concentrated on environmental changes to classrooms, schools, and other important venues for children and adolescents may be particularly effective in changing features of social networks. For example, there is evidence that school and classroom practices shape children's friendship choices by influencing proximity and exposure to similar or dissimilar peers (Epstein 1989).

Conclusions

Research on relational aggression in children and adolescents have focused a modest set of individual-level variables. Relationally aggressive behaviors, however, are inherently social, and thus require access to peer relationships as well as a sophisticated understanding of how to manipulate them. Therefore, findings from studies of relational aggression that addressed two frequently examined variables—sex and age—were reframed within the context of a social networks perspective. This paper demonstrates that social network features can inform the complex relationships between the demographic variables, sex and age, and relational aggression. Consistent with literature that suggests that relational aggression may be more dominant among girls than boys, girls display network features (e.g., small network size, clique membership, and homophily) that may facilitate relationally aggressive behaviors. Likewise, during early adolescence, social network features undergo drastic changes. The increased salience of clique membership combined with the decline of available cliques and the increase of liaisons during this period may provide a ripe environment for relationally aggressive acts. Adopting a structuralist perspective offers insight into how peer social networks influence the connections between individual-level variables and relationally aggressive behavior, and provides researchers with new ideas for how to effectively reduce relational aggression.

As researchers move from studies that directly examine the effects of individual-level variables to models that incorporate the role of social networks, they stand to gain a better understanding of the etiology, process, and prevention of relational aggression. That is, they will come to recognize more explicitly that engagement in relationally aggressive behaviors depends not only on *who* the child is, but also on *where* he or she is located in the peer social network.

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