"He Can't Hang Out With Them!"

An Examination of the Characteristics of Relationally Aggressive Boys' and Girls' Social Networks

by

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Abstract

A growing body of literature has examined the role of relational aggression in the lives of children, however very little research has explored the social networks of relationally aggressive children, particular those of boys. In the present study, 499 students (247 boys, 252 girls) from three Ottawa-area public schools were examined to determine whether the characteristics of friendships (number, and quality) and cliques (centrality, size, and density) could be used to predict their relationally aggressive behaviour. Additionally, the study explored whether the same sex differences that have been found between children's social networks in the general population hold for highly relationally aggressive boys and girls. Teacher-reported relationally aggressive behaviour (CSBS-T; Crick, 1996) was compared with both the friendships (number, and quality) and cliques (centrality, size, and density) of boys and girls. Comparisons between highly relationally aggressive boys' and girls' social networks revealed that they were more similar, both in terms of their friendships and cliques, than those of their peers. Overall, results indicated that the friendships and cliques of children were significant predictors of children's relationally aggressive behaviour (accounting for 7% of variance in relational aggression) however, they were much better predictors of girls' (9%) rather than boys' (2%) behaviour. The findings of the study suggested that it would be valuable to conceptualize boys and girls as distinct populations when exploring the association between relational aggression and their social networks.

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Table of Contents

"He Can't Hang Out With Them!" An Examination of the Characteristics of Relationally Aggressive Children's Social Networks

Overview

The idea for the present study originated while conducting an unrelated investigation into adolescent boys' and girls' experiences with relational aggression (exclusion, gossip, and rumours) within their friendships (Trant, 2009). When discussing the ways in which their friends dealt with conflict, it was uncanny how both boys and girls reported using relational aggression almost exclusively in these situations - a form of aggression perpetrated through social exclusion, gossip, or rumours, and most often associated with conflict between girls. In addition to the similar ways in which boys and girls dealt with conflict, it was also apparent that the participants had high functioning friendships and close social cliques. An examination of the literature revealed that while there was a growing body of research that addressed the antecedents of girls' use of relational aggression (Crothers, Field, & Kolbert, 2005; James & Owens, 2005; Owens, Shute, & Slee, 2000a) there was no such work being conducted with boys. Although it was beyond the scope of that study, the findings led to the question: "Could the characteristics of boys' and girls' friendships and cliques be related to their use of relational aggression?"

The present study was designed to determine whether the characteristics of children's friendships (number, and quality), and their cliques (centrality, size, and density) could be used to predict relationally aggressive behaviour, and whether the predictive value of these characteristics was similar or different for boys and girls. An additional goal of the study was to determine whether the same differences that have been

identified between boys and girls in the general population are found between highly relationally aggressive boys and girls.

Peer interaction is one of the most important influences on the social development of children because of the role it plays in norm creation and the development of social rules (Bigelow, Tesson, & Lewko, 1996; Gifford-Smith, Dodge, Dishion, & McCord, 2005). It is through peer interaction that children learn how to navigate and behave in their social world. Many studies have looked individually at each of the three different levels at which children engage socially: friendships, cliques, and the greater peer network (Ennett & Bauman, 2000). Friendships refer to reciprocal dyadic relationships of affection (Oswald, Clark, & Kelly, 2004); cliques are defined as small subsets of the larger peer group with members who affiliate as a unit on a regular basis but who may not necessarily be friends (Cairns, Cairns, Neckerman, Gest, & Gariépy, 1988; Rodkin, & Ahn, 2009); and the peer network that is comprised of all peers in a given context such as a classroom, school, or neighbourhood (Cairns et al., 1988). Although these three domains of interaction are nested within each other, each represents a separate sphere of interaction for children.

Each of these levels of interaction have been found to provide the social connections necessary for relational aggression to be used, and it has been theorized that the effectiveness of the behaviours increases as intimacy between individuals increases (Neal, 2007). Although all three have been examined separately, they have not yet been explored together in a single study. It is for these reasons that both close social interactions in the form of dyadic friendships as well as looser interactions in the form of social cliques were examined concurrently in the present study.

In addition to the social networks of children, in order to meaningfully interpret the results of the present study it was important to understand both boys' and girls' use of relational aggression. The literature review to follow begins with an explanation of relational aggression, including what is known about the differences and similarities in how boys and girls use the behaviour. An examination of the relationship between relational aggression and children's social network structures follows. The section focuses on the differences between boys' and girls' social network structures, highlighting how the networks of relationally aggressive boys and girls may differ from their peers. An overview of the methodologies for mapping children's' social networks then concludes the review. Before examining the characteristics of boys' and girls' friendships and cliques, it is important to first consider the construct of relational aggression.

Relational Aggression

Definition of relational aggression. In order to start a meaningful conversation about the structure of relationally aggressive children's social relationships, it is important to have an understanding of relational aggression. Relational aggression has been defined as "harming others through the purposeful manipulation and damage of peer relationships" (Crick & Grotpeter, 1995, p. 711). Relationally aggressive behaviours include intentional actions such as excluding individuals from the group (Crick & Grotpeter, 1995; Pronk & Zimmer-Gembeck, 2010); spreading rumours about an individual (Crothers, Field, & Kolbert, 2005; James & Owens, 2005; Pronk & Zimmer-Gembeck, 2010); spreading malicious gossip about an individual (James & Owens, 2005;

Pronk & Zimmer-Gembeck, 2010); and social intimidation (Crick & Grotpeter, 1995; Pronk & Zimmer-Gembeck, 2010).

Researchers have found that children use relational aggression to either manipulate group processes (James & Owens, 2005; Owens et al., 2000a), or to stave off boredom by creating excitement (Owens et al., 2000a; Pronk & Zimmer-Gembeck, 2010), although it should be noted that most of these studies have not examined boys. Some children choose to use relationally aggressive strategies rather than pro-social means because it can be a more effective way of controlling group membership. Relational aggression enables the perpetrator to quickly shift the power structures within their social network by manipulating the in-group into either viewing the targeted individual more negatively, or siding with the perpetrator when conflicts arise. While pro-social strategies work by encouraging others to see the manipulator in a more favourable way, relational aggression works by mobilizing friends or other clique members to view the targeted individual more negatively.

The mobilization of clique members against the target is often done covertly so that it is difficult to identify the perpetrator. For this reason, relational aggression is uniquely suited for use against members of one's in-group such as friends or members of one's social clique (Archer & Coyne, 2005; Crick & Nelson, 2002; Delveaux & Daniels, 2000; Pronk & Zimmer-Gembeck, 2010). Additionally, because of the covert nature of the behaviours, relational aggression is also widely used in contexts where physical aggression is discouraged (e.g., school environments) (Vaillancourt et al., 2010). Although bystanders (individuals not directly involved in the conflict) are often aware that something malicious is occurring (Owens, Shute, & Slee, 2000b), because of the

subtle and ambiguous nature of many of the behaviours (Raskauskas & Stoltz, 2004; Simmons, 2002), it is often difficult to prove that there was intent to harm (Archer & Coyne 2005; Crothers et al., 2005; Green et al., 1996; Owens, Shute, & Slee, 2000a; Xie, Cairns, & Cairns, 2002).

The term relational aggression has sometimes been used interchangeably with two similar constructs: social aggression (targeting the self-esteem and/or social status of an individual; Galen & Underwood, 1997); and indirect aggression (the perpetrator's identity is masked; Lagerspetz, Björkqvist, & Peltonen, 1988). While there is considerable overlap in both the conceptualization and operationalization of relational aggression, social aggression, and indirect aggression - they have been accepted as distinct constructs by researchers in the field (Archer & Coyne, 2005; Björkqvist, 2001). The decision was made to assess the construct of relational aggression rather than social or indirect aggression in the present study because of its close association with social networks. Any link between subtle aggressive behaviours and the social networks of children would more likely be found when examining relational aggression rather than the other two related constructs.

Currently, although there has been widespread research on the relative prevalence of boys' and girls' use of relational aggression (Archer 2004; Card et al., 2008), researchers know far less about the deeper roles (goals, causes, motivations, and impact) of relational aggression in the lives of boys than in girls. Some of the reasons why studies of relational aggression focus on girls can be found in the origins of the field. Compared to boys, girls engage in very little physical aggression, especially past the age of five (Lee, Baillargeon, Vermunt, Wu, & Tremblay, 2007). Until the mid 1990's

research on aggression was focused almost exclusively on physical manifestations of the behaviour (Björkqvist, Lagerspetz, & Kaukiainen, 1992; Crick & Grotpeter, 1995), and so researchers concluded that compared to boys, girls were not aggressive (Crick & Grotpeter, 1995). During the early and mid 1990's however, researchers began to identify relational forms of aggression (Björkqvist et al., 1992; Crick & Grotpeter, 1995). Relational aggression was found to be much more common than physical aggression in samples of girls, and so because of the relative salience of relational aggression in the interactions of girls (Archer, 2004), relational aggression became associated with girls (Chesney-Lind, Morash, & Irwin, 2007; Pronk & Zimmer-Gembeck, 2010; Raskauskas & Stoltz, 2004; Underwood, Galen & Paquette, 2001). The perceptions of adolescents and adults continue to reflect early heuristic assumptions that relational aggression is a 'girl thing' (Chesney-Lind et al., 2007; Pronk & Zimmer-Gembeck, 2010), and perhaps in an effort to shift this paradigm, relational aggression research has been preoccupied with demonstrating the relative frequency in the use of relational aggression by girls and boys.

Although recently researchers have begun to address the dynamics of relational aggression more deeply by examining the role of relational aggression in the friendships and social cliques of children and adolescents (Crothers et al., 2005, James & Owens, 2005; Owens et al., 2000b; Reynolds & Repetti, 2010; Spence, 2003), so far all of this work has focused exclusively on girls, leaving a glaring gap in our knowledge of relationally aggressive boys.

Importance of relational aggression. Both perpetrators and victims of relational aggression have been found to be at higher risk of psychosocial maladjustment than their

peers (Prinstein et al., 2001). Additionally, because relational aggression is perpetrated through children's social relationships, it not only turns them into avenues for harm (Crick & Nelson, 2002; Daniels, Quigley, Menard, & Spence, 2010), but also damages these very important sources of support that children would usually rely on when coping with victimization (Simmons, 2002). Relational aggression is not only harmful, but it is also a widely used behaviour (Card et al., 2008). Researchers have found that in addition to it being a common strategy for manipulating relationships (Crick & Grotpeter, 1995), the behaviour increases throughout childhood (Archer & Coyne, 2005; Lee et al., 2007). The use of relational aggression should be of great concern to both researchers and anyone involved in raising children in our communities. Nowhere is this more apparent than when examining the harm this form of behaviour can incur.

Harm. Relational aggression interferes with the healthy social development of children and adolescents. Relational aggression is hurtful both directly by damaging the self-esteem and social status of the victim (Card et al., 2008; Crick, 1995; Goldstein & Tisak, 2004; James & Owens, 2005; Owens, Slee, & Shute, 2000; Waasdrop, Bagdi, & Bradshaw, 2010), and indirectly by sabotaging their social relationships with both friends and clique members, isolating the victim from their friends and leading to feelings of worthlessness (Adler & Adler, 1995; Besag, 2006). Relational victimization for boys and girls of all ages has been associated with psychosocial maladjustment (Card, Stucky, Sawalani, & Little, 2008) in the form of both internalizing problems such as depression, anxiety, and damage to self-esteem and self-concept (Crick, Casas, & Ku, 1999; Crick & Nelson, 2002; Owens et al., 2000; Prinstein et al., 2001; Reynolds & Repetti, 2010; Williams, Fredland, Han, Campbell, & Kub, 2009), and externalizing problems including

lashing out, substance abuse, and delinquent behaviour (Owens et al., 2000; Prinstein et al., 2001, Sullivan, Farrell, & Kiliewer, 2006).

Prevalence. It is troubling that such a harmful behaviour is also widely used and experienced by children and adolescents, however no comprehensive review of the prevalence literature has yet been published. In fact, there are very few studies that indicate overall the overall prevalence of the behaviours within their samples at all (Geiger, Zimmer-Gembeck, & Crick, 2004), and instead the focus is on the potential differences in the prevalence of boys' and girls' relational aggression (Archer, 2004; Card et al., 2008; Crick & Grotpeter, 1995). Individual studies vary in terms of their methodology for measuring the prevalence of relational aggression. In their study of 5769 Australian students, Hemphill et al. (2010) surveyed students about their relational aggression perpetration over the past year. The authors found that over 90% of children and adolescents in their sample self-reported that they had perpetrated relational aggression at least once in the past year, however only about 10% of these participants engaged in more frequent use of the behaviours. The largest published study on the overall prevalence of relationally aggressive behaviours found that Canadian children more commonly reported relational aggression. Vaillancourt et al. (2010) examined the prevalence of relationally aggressive behaviours in a cross-sectional study of 16,799 Ontario students' bullying experiences that included both repeated relational victimization and perpetration (exclusion, gossip, rumours, made to look foolish, and preventing others from associating with the targeted child). The authors found that found that 37% of students from grades four to twelve had been relationally victimized at some point within the previous three months, and that 29% had perpetrated acts of relational

aggression within the same period. These behaviours were found to be much more common than both physical victimization (31.4%), and physical perpetration (19.4%). Both studies indicate that relational aggression is a widespread problem for children and adolescents.

Summary. Relational aggression is a particularly important for both researchers and practitioners to address because of the harm it causes to children, and because of the high prevalence of the behaviours. Given the high prevalence of these behaviours as well as the serious impact such behaviours have, a frequently asked question in the field today is "Does the use of relational aggression differ for boys and girls?"

Gender differences. Unfortunately, rather than exploring the broader question of 'Does the use of relational aggression differs for boys and girls", the majority of research that has addressed "Do boys and girls engage in relational aggression to the same extent?" (Crick & Grotpeter, 1995; Tomada & Schneider, 1997). As a result, although the field has developed a solid base of knowledge on the relative prevalence of the behaviours, very little is known about other possible gender similarities and differences such as whether the roots, motivations, dynamics, and impact of the behaviours differ for boys and girls. Although the present study is an examination of potential similarities and differences in the value of using boys' and girls' social networks to predict their relationally aggressive behaviour, this section focuses mainly on the relative prevalence of the behaviours because the influence of gender upon other aspects of relational aggression have not yet been addressed.

In terms of the relative prevalence of the behaviours, although early research indicated that girls were more likely to engage in relationally aggressive behaviour than

boys (Crick & Grotpeter, 1995), a general consensus has been emerging in the field indicating that there are no meaningful gender differences in the prevalence of relational aggression (Archer, 2004; Card et al., 2008).

Prevalence. The literature that has examined the association between relational aggression and gender has focused mainly on the prevalence of these behaviours. An extensive body of literature on the frequency of relational aggression has suggested that it is commonly used by both boys and girls (Card et al., 2008; Vaillancourt et al., 2010). Although researchers have often found statistically significant gender differences in the prevalence of relational aggression, no overall trend has been identified. Some researchers have found girls to be more relationally aggressive (Crick & Grotpeter, 1995; Kistner et al., 2010; Österman et al., 1998; Owens & MacMullin, 1995; Zimmer-Gembeck, Geiger, & Crick, 2005), while others have found boys to be more relationally aggressive (Peets & Kikas, 2006; Tomada & Schneider, 1997), and other studies have found no gender differences at all in the prevalence of the behaviours (Karriker-Jaffe et al., 2008; Salmivalli & Kaukiainen, 2004). In a seminal meta-analysis of 148 studies on the relationship between gender and the prevalence of relationally aggressive behaviours, Card et al. (2008) concluded that while there was a statistically significant gender difference in the prevalence of the perpetration of relational aggression, the effect size of that difference was too small ($d = -.06$) to be represent a practical difference, meaning that the statistical difference was too small to be useful in terms of either theoretically or for practical applications such as intervention programs. In addition the authors noted that there are no practically significant age, ethnicity, or country effects on the association between gender and the perpetration of relational aggression.

Although researchers have often found statically significant gender differences in the prevalence of relationally aggressive behaviour, these differences have not been found to represent practically significant differences. The conflicting findings of individual studies may instead be due to the way in which the construct of relational aggression has been measured.

Measurement. The small inconstancies found in the literature may be attributed to the ways in which researchers have measured relational aggression. Two meta-analyses (Archer, 2004; Card et al., 2008) have been conducted in the field to determine the extent of the gender differences that have been found, and why conflicting findings are commonly found. The results of both studies indicate that statistically significant differences may be attributed to the types of measures that researchers have used to assess relationally aggressive behaviour.

In a meta-analysis of 253 studies, Archer (2004) found that when studies used teacher-reports of children's relational aggression, girls were generally identified as being more relationally aggressive than boys (d = -.13), however the effect size of the differences was small (Cohen, 1992), and the gender differences in the prevalence of relational aggression identified by studies that have used either peer-nominations (d = -.01) or self-reports (d = .03) represent extremely small differences (Cohen, 1992). The findings of the more recent meta-analysis of 148 studies (Card et al., 2008) replicated the results, however, the authors (Card et al., 2008) found even smaller differences between the three methodologies in terms of the gender differences in the prevalence of relational aggression: teacher-reports (d = -.07), peer-nominations (d = -.02), and self-reports (d = .03), all of which showed very small gender differences.

Each methodology has both advantages and disadvantages, and the selection of the appropriate tool depends upon the particular context in which the data is collected.

Self-reports. Self-reports enable researchers to assess the individual's perceptions of their own experiences and are not limited to just the playground or the school. Because we know ourselves best, self-reports are an effective method for assessing internal thoughts and feelings, which are often undetectable or unknown to observers (Chandra & Loosemore, 2004).

Because self-reports are uniquely able to accurately assess one's own perceptions, this form of data collection is invaluable for the assessment of friendship quality, a qualitative construct. Self-reports are however less effective than some other forms of measurement to objectively measure relationally aggressive behaviour in children. This is because perceptions and thoughts do not necessarily translate into behaviour (Sutton, 1998).

Relying upon self-reports alone to assess behaviour can be problematic because they are susceptible to bias in the way that individuals interpret their experiences (Giles & Heyman, 2005; Schwarz, 1999). Bagwell and Coie (2003) found that aggressive children under-reported their use of relational aggression when compared to the reports of trained observers, suggesting a disconnect between their perceptions of their behaviour and their actual behaviour. With this in mind, in their meta-analysis, Card et al. (2008) found that regardless of their level of aggression, boys rated themselves as more relationally aggressive than did girls. As a result, studies using self-reports to assess the use of relational aggression may be more likely to find significant gender differences.

For these reasons, relationally aggressive children may not be able to accurately report on their own behaviour, and so observer ratings may be more accurate.

Peer-nominations. Peer-nominations are a form of observer ratings, and are conducted by requesting that participants nominate a number of peers who are relationally aggressive in their classroom. They are unique in that they enable researchers to corroborate the reports of multiple peer-informants to obtain a theoretically unbiased report of a participant's aggressive behaviour. There are no significant informant effects on sex differences for peer-nominations of relational aggression (Card et al., 2008). Unfortunately the organizations charged with caring for children are often concerned that asking children to identify aggressive peers may have a negative effect on the social environment, making it increasingly difficult to conduct such studies within schools (Spence, 2003; Young et al., 2006).

Teacher-reports. Teacher-reports have been frequently used to identify relationally aggressive participants in school samples, and have been found to correlate well with other observers such as peer-reporters (Nelson, Robinson, & Hart, 2005; Rubin, Moller, & Emptage, 1987).

Teachers represent well-informed observers able to identify the actual behaviour of the children. As discussed previously, relational aggression can be difficult for an outside observer to identify. However, because of the amount of time teachers spend with their students, they are able to develop a deeper understanding of the histories of the children in their classrooms and the social dynamics of the peer group they monitor (Mayeux, Underwood, & Risser, 2007). Informed observers such as teachers are better able to accurately interpret ambiguous behaviours (Lipinski & Nelson, 1974), making

them invaluable informants of children's relational aggression. Additionally, although teachers may not be present to observe every incident of social aggression that occurs between their students, they are the main point of contact for children reporting relational aggression (Unnever & Cornell, 2004). This means that although the teacher may not observe every incident, they are made aware of many more incidents than they witness.

Finally, from a practical standpoint, the use of teacher-reports circumvents some of the problems associated with using other well-informed observers such as peers. Some school boards have voiced concerns that asking students themselves to identify aggressive peers may have a negative effect on the social environment, however these concerns have not yet been substantiated in the literature (Bell-Dolan, Foster, & Sikora, 1989; Mayeux et al., 2007). Despite the lack of support for such concerns in the literature, it has become increasingly difficult to conduct such studies within schools (Spence, 2003; Young et al., 2006). Using teacher-reports of students' relationally aggressive behaviour has been less controversial. Teachers monitor and report on the social behaviour of their students as a part of their duties, so there are no additional effects of utilizing teacher-reports of student behaviour. The biases associated with self-reports of behaviour were circumvented in the present study by using the classroom teachers to report on the participants' relationally aggressive behaviour.

Summary. Although conflicting results have often been found in the relative prevalence of relational aggression of boys and girls, meta-analyses (Card et al., 2008) have indicated that there are no meaningful gender differences in the prevalence of relational aggression. Additionally, when researchers use different informants for assessing children's relationally aggressive behaviour, although significant differences

are sometimes found, they too are practically inconsequential (Archer, 2004; Card et al., 2008).

Summary of relational aggression. In the previous section, a definition of relational aggression was presented including how, why, and where children engage in the behaviour. The importance of addressing relational aggression was established, and the similarities and differences between relationally aggressive boys and girls were discussed. Currently, the literature suggests that there are no gender differences in the prevalence of relationally aggressive behaviour.

Most of the research on relational aggression has been concerned with examining the harmfulness and prevalence of the behaviours. There has been a growing body of literature addressing antecedents of relational aggression, as well as the dynamics and roles of the behaviours in the lives of children, but so far this work has focussed almost exclusively on girls (Crothers et al., 2005, James & Owens, 2005; Owens, Shute, & Slee, 2000b; Reynolds & Repetti, 2010; Simmons, 2002; Spence, 2003).

The majority of research that has examined gender differences and similarities has focussed on the relative prevalence of the behaviours in the lives of boys and girls, however only a few studies (Lansford et al., 2009; Murray-Close et al., 2007; Pronk & Zimmer-Gembeck, 2010) have been conducted on other potential gender differences or similarities between relationally aggressive boys and girls. The present study is a step to move beyond focusing on the prevalence of the behaviours. The study was designed to determine the role that the friendships and cliques of children play in their relationally aggressive behaviour, and how similar or different these ecologies of relationally aggressive boys and girls are. Before exploring how relational aggression and social

networks may interact, we must first have a firm understanding of children's friendships and cliques.

Social Networks

The social networks that children belong to play an important role in the presence or absence of relational aggression (Neal, 2007), however the nature of this relationship has not been deeply explored. Although there are many aspects of the role that social networks play in the relationally aggressive behaviour of children, researchers have found that the behaviours are most often perpetrated against members within the same friendship or clique (Delveaux & Daniels, 2000). Although researchers believe that a connection exists between relational aggression and social networks (Besag, 2006; Neal, 2007; Xie et al., 2002), it is not known whether relationally aggressive behaviour varies as a function of the particular characteristics of children's friendships and cliques. In order to be able to meaningfully interpret the results of the present study, both the gender differences of children's social networks, and the role that relational aggression plays in the structures of boys' and girls' social networks must first be explored. The following section begins with a review of the friendships of children and their relationally aggressive peers, and evolves into a presentation of the associations between relational aggression and the more complex social world of cliques.

Friendships. When examining the social networks of children, it is best to begin with the smallest social network of all; the dyadic friendship. Friendships themselves are frequently a context in which relational aggression thrives (Crick & Nelson, 2002). Friendships refer to dyadic relationships that involve mutual understanding and closeness (Oswald, Clark, & Kelly, 2004). Additionally, it is believed that both individuals in the

friendship are invested in the relationship and generally wish to maintain it (Adler & Adler, 1998). When researchers measure friendships though, they are not always identified as reciprocal.

While a child may have multiple friendships, some of those relationships are more important to them than others. Common measures used to identify friendships often limit the number of individuals that children can nominate as friends (Parker & Asher, 1993). When asked to nominate three best friends, most children are able to rank their best friends (Parker & Asher, 1993; Spence, 2002), however those friends may not reciprocate the nominations either because they are less important to them than other friendships they have, or they do not consider the other child to be their friend. These unidirectional friendships may be equally important, though different from reciprocal friendships, because only one of the children may treat the other as a friend. The present study examined both the structural and qualitative aspects of friendship. These include the number of friends that children have (both reciprocated and unidirectional), the number of reciprocal friendship, and the quality of their best friendship. The following section presents a description of each of these aspects of friendship.

Number of friendships. Researchers have found that boys have more friends in their peer group than do girls (Yamasaki & Nishida, 2009). This finding has traditionally been interpreted as an indication that the social cliques of boys are looser and less intimate than those of girls (Brown, Way, & Duff, 1999). However, this inference may not be entirely accurate because although girls have been found to be more intimate and exclusive with their close friends (Brown et al., 1999; Keenan & Shaw, 1997; Maccoby, 2002; Yamasaki & Nishida, 2009), they have little investment in their relationships with

clique members who are not in their best friendships (Baines & Blatchford, 2009; Eder, 1985). Taken with the additional results by Baines and Blatchford (2009) that girls were also more likely to interact with non-clique members than boys, the findings suggest that though boys have many friendships within their cliques, girls may have good friends throughout the social network. The dyadic and triadic friendships, regardless of who they are with may be much more important to girls than their friendships with fellow clique members. This is contrasted with boys who tend to not have such high levels of intimacy or exclusivity with any of their clique members (Baines & Blatchford, 2006; Eder & Hallinan, 1978), however are connected as friends to most members of their group (Baines & Blatchford, 2006; Eder & Hallinan, 1978). Although boys and girls may then have an equal number of friends, the friends of girls are spread out across the peer network, while those of boys tend to be focussed within their cliques. The distribution of their friendships enables boys' interactions to be manifested through group activities, as Martin and Fabes (2001) found, because their friends are familiar with each other. This is contrasted with the interactions of girls' who's friends may not know each other well, enabling them to interact in smaller groups that are more focussed on communication than recreational activities. There may be more similarities than differences in the number of friends that boys and girls in the general population have, but how about relationally aggressive boys and girls?

Number of friendships and relational aggression. Surprisingly, very little is known about the number of friends that relationally aggressive children have, and no research has yet been published on the value of using a child's number of friendships to predict relationally aggressive behaviour. Researchers have found that relationally

aggressive children (both boys and girls) have a larger number of friends than their non-aggressive peers (Yamasaki & Nishida, 2009), however the reasons for this remain unknown. One possibility is that the more friendships one has, the more opportunities there are to use relational aggression. However, if a child has fewer friendships, those relationships are each more meaningful than if they had many different friendships, so using relational aggression rather than more overtly aggressive strategies may be more advantageous. Because relational aggression is manifested through functioning social relationships of children, more information may be gained from evaluating the quality of their relationships rather than simply the number.

Friendship quality. Many researchers have found that rather than the total number of friendships a child has, it is more important that children simply have one good friend (Bukowski & Sippola, 2005; Ladd, 1999). For this reason, it is equally important to examine not only the number, but also the quality of the friendships that children have. Studies indicate that friendship quality is comprised of two main components: positive friendship characteristics (including such things as intimacy between friends, sharing, and recreation), and friendship conflict (Berndt, 1996; Kiesner, Nicotra, & Notari, 2005; Rose & Archer, 1999). Children who have higher levels of positive friendship quality and lower levels of friendship conflict have been found to report better adjustment, whereas those with higher levels of conflict and lower levels of positive qualities are at higher risk of maladjustment and aggressive behaviour (Cillessen, Lu Jiang, West, & Laszkowski, 2005; Ladd, 1999).

Researchers who have explored potential gender differences in friendship quality have found that although the friendships of boys and girls are similar in terms of the

overall positive quality and conflict, they do differ qualitatively. In their study of 881 students in grades three through five, Parker and Asher (1993) used the Friendship Quality Questionnaire, a measure of friendship quality that includes 12 subscales, to determine if there were qualitative differences between boys' and girls' friendships. The authors found that although boys and girls reported similar amounts conflict and engagement in recreational activities in their friendships, boys reported significantly less intimacy, caring and validation, assistance, and had more difficulty resolving conflict than girls. The results of Parker and Asher (1993) suggest that although friendship quality is comprised of two main components, it is helpful to construct more detailed measures in order to better understand how the friendships of boys and girls compare. However, do these differences also appear when relationally aggressive children are examined?

Friendship quality and relational aggression. There has been some research on the association between children's friendship quality and relationally aggressive behaviour (Bagwell & Coie, 2003; Cillessen et al., 2005; Soenens, Vansteenkiste, Goossens, Duriez, & Niemiec, 2007; Yamasaki & Nishida, 2009). Overall, relationally aggressive children have more conflict, and fewer positive interactions within their friendships than their peers (Bagwell & Coie, 2003; Cillessen et al., 2005; Soenens et al., 2007). However, when deeper examinations into the quality of their friendships have been conducted, a more complex picture has emerged.

Overall, relationally aggressive children have been found to have fewer positive interactions within their friendships than their peers, however when studies have examined specific components of positive friendship quality, they are found to have what

appears as an over-inflated perception of positive friendship qualities. Yamasaki and Nishida (2009) found that relationally aggressive children in grades four through six reported higher levels of mutual understanding, self-disclosure, and similarity of taste within their friendships than did their peers. The skewed perceptions some relationally aggressive children have of their friendships have been more clearly identified when comparing self- and peer-ratings of behavior. Bagwell and Coie (2003) found that relationally aggressive boys did not perceive their friendships as being of lesser quality than did their non-aggressive peers, however outside observers noted that aggressive boys had more problematic friendships (more conflict and less positive interaction) than their non-aggressive peers.

The association between positive friendship qualities and relational aggression has been found to vary as a function of gender (Murray-Close et al., 2007). The differences can be attributed to differences in the intimacy of boys' and girls' friendships. Intimacy in particular has been found to be associated with relationally aggressive behaviour, however only for girls (Murray-Close et al., 2007). For girls, the main catalyst for relational aggression is a perceived threat to their relationships by an interloper (Grotpeter & Crick, 1996; James & Owens, 2005; Lagerspetz et al., 1988; Murray-Close et al., 2007). Friendships characterized by high levels of intimacy are very important to the girls, and it is believed that in order to protect those relationships girls use relationally aggressive strategies (Crick & Nelson, 2002). Indeed Simmons (2002), over the course of interviewing girls, found that relationally aggressive girls alternated between kindness and compassion with their friends and meanness and cruelty.

The role that intimacy plays in children's relationally aggressive behaviour may be profound. Whereas positive friendship quality may predict pro-social behavior for boys, because of high levels of intimacy, it predicts relationally aggressive behaviour for girls (Grotpeter & Crick, 1996; Murray-Close et al., 2007). The overall message has been that positive friendship quality does not necessarily indicate that a child is less likely to engage in relationally aggressive behaviour, especially when examining girls.

When researchers have examined the association between relational aggression and friendship conflict a clearer connection has emerged. Although quantitative research has found that the association between friendship conflict and relational aggression only in boys (Cillessen et al., 2005), qualitative studies have consistently found that both relationally aggressive girls (Crothers et al., 2005; Owens et al., 2000a; Trant, 2009) and boys (Trant, 2009) report frequent friendship conflict. Unfortunately, due to the qualitative nature of the studies, it is unclear whether they have significantly more conflict within their friendships than their peers.

The literature indicates that relationally aggressive boys may have equally positive friendships as their peers, but have more friendship conflict. Relationally aggressive girls however may have more positive friendships than their peers due to their higher levels of intimacy however may or may not have higher levels of conflict than their peers.

Summary. The structures of ones' social relationships are what determine the effectiveness of relational aggression as a manipulation tool. Because relational aggression is perpetrated through children's social relationships, the perpetrators of the behaviour must have existing friendships in order for the behaviours to be effective. It is

in the differences in the number, and particularly in the quality, of children's friendships that gender differences may be found. For this reason, it is imperative that these relationships be examined, however friendships are but one context in which children interact. Equally important is the complex web of relationships that children have with peers in the larger social network. The peers that children regularly affiliate with gather in groups called cliques (Cairns et al., 1988). The following section explores what is known about the association between relational aggression and children's cliques.

Cliques. In addition to friendships, cliques play an important role in the manifestation of relational aggression for both boys and girls. These social groups are defined as subsets of a larger peer group such as a classroom (Hallinan & Smith, 1989) or neighbourhood (Boivin, Vitaro, & Poulin, 2005). Although the members of a clique affiliate with one another as a unit on a regular basis, not all individuals within the clique are necessarily friends with all of the other members (Cairns et al., 1988). The decision was made to examine children's cliques in the present study because of their role in establishing social norms (Casas et al., 2006; Lewin, Lippitt, & White; 1939; Suomi, 2005), particularly those governing the use of aggressive behaviour (Clarke-McLean, 1996; Garandeau, Ahn, & Rodkin, 2011; Huttunen & Salmivalli, 1996; Martin & Fabes, 2001; Salmivalli, Huttunen, & Lagerspetz, 1997; Salmivalli & Voetenen, 2004; Witvliet, Olthof, Hoeksma, Goosens, Smits, & Koot, 2010), including relational aggression (Coyne, Archer, & Eslea, 2004; Lansford et al., 2009; Velasquez, Santo, Saldarriaga, Lopez, & Bukowski, 2010). One of the aims of the present study was to determine if particular characteristics of children's cliques could be used to predict children's relationally aggressive behaviour. There are several characteristics of cliques that were

of interest in the present study: centrality, which refers to both individual centrality (i.e. how well connected the individual is within their clique) as well as clique centrality, (i.e. how salient the clique as a whole is within the peer network). In addition to centrality, the size (i.e. the number of members within the clique); and the density (i.e. whether the clique is a loose association of members, or whether it is a more cohesive, well-connected group) of children's cliques were also examined.

Centrality. Hierarchy is a reality within peer networks, where few groups are organized so that all members have the same amount of social status (Chiao, 2010). Instead, peer networks generally resemble more of a web pattern (Cairns et al., 1985; Spence, 2002; Trant, 2009), with some members and groups being more central and dominant within the network, while those on the periphery are less influential (Cillessen & Mayeux, 2004; Wall & Pickert, 1981). In order to properly assess the influence of centrality on children's use of relational aggression, two different types of centrality (individual and clique) were examined.

Individual's Centrality. A central individual is described as a key or salient person within their social clique (Cairns, Perrin, & Cairns, 1985). This often means that they are well connected to other clique members. The more central a member is, the more they come to define the clique they are in, because they are the most recognizable presence in the clique to both members and outsiders (Cairns et al., 1985).

Boys and girls in middle school tend to associate predominately with same-gender peers (Cairns et al., 1985; Xie et al., 2002), thus the largest majority of cliques at this age are same-sex. Boys and girls have parallel networks, with an equal distribution of central and peripheral members (Cairns et al., 1985), meaning that there are always some

members who are central, and some members who are peripheral. There are however some differences in the determinates of children's centrality within their clique including status attributes (see Adler, Kless, & Adler, 1992), as well as their relationally aggressive behaviour (Lansford et al., 2009; Xie et al., 2002).

It comes as no surprise that for both boys and girls, the more central a child is within their clique, the more influential they are reported to be. In her study of 403 Greek children in fourth to sixth grade, Andreou (2006) found that for both boys and girls, central clique members tended to be more popular and to have more friends than their non-central peers. In addition to popularity, children with higher centrality within their cliques have been found to be significantly less likely to be rejected, neglected, or controversial than those of moderate or peripheral centrality (Lease & Axelrod, 2001). Unfortunately, there has yet to be any work examining the direction of a potential causal relationship between an individual's centrality and their relational aggression, so it is unclear whether their centrality within the clique leads to their behaviour or vice-versa. The centrality of individuals within their cliques was assessed in the present study to determine whether there were differences in the predictive value of individual centrality in determining boys' and girls' use of relational aggression.

Individual's Centrality and Relational Aggression. Previous research has found associations between an individuals' centrality and their use of relational aggression (Eder, 1985; Xie et al., 2002). Although boys and girls overall have been found to be equally distributed within their cliques (Cairns et al., 1985), relationally aggressive individuals have been found to be significantly more likely to be central rather than peripheral clique members (Xie et al., 2002). Central members are more likely to be

relationally aggressive than peripheral members because they value being in positions of control (Delveaux & Daniels, 2000), and thus are motivated to gain power within their cliques. However, the association between relational aggression and an individual's centrality has been found to vary as a function of gender. In their study of 324 grade seven students, Lansford et al. (2009) found that the relationship between centrality and relational aggression varied as a function of gender. For girls, if the most central members of a clique were relationally aggressive, the peripheral members of the clique were significantly more likely to also be relationally aggressive. This was not found to be the case for boys, where there was no significant relationship association between central and peripheral members' relational aggression (Lansford et al., 2009).

The association between an individual's centrality and relational aggression may be further complicated by the instability within the cliques containing multiple relationally aggressive members. In their study of relational aggression in adolescence, Pronk and Zimmer-Gembeck (2010) found that while clique membership generally remained the same, the centrality of members within relationally aggressive cliques was often in flux. Research suggests that the social-cliques of girls are less stable than those of boys (Baines & Blatchford, 2009; Pronk & Zimmer-Gembeck, 2010), though some researchers investigating the phenomenon have found no gender differences (Cairns et al., 1995). The fluidity of members within cliques has been most often identified in the cliques containing multiple relationally aggressive children, however the centrality of the relationally aggressive members themselves rarely changed (Pronk & Zimmer-Gembeck, 2010). Instead, the centrality of middle and peripheral members has been found to shift

as the relationally aggressive central members of cliques manipulate the power of various members within the clique in order to maintain their own status.

Previous studies (Huttunen & Salmivalli, 1996; Salmivalli & Kaukiainen, 2004) have indicated that clique members' use of relational aggression has been significantly more homogenous within the cliques of girls than boys, however Lansford et al.'s (2009) study of the moderating role of gender in the association between relational aggression and an individual's centrality provides a more detailed picture of relationship between within-clique centrality and relational aggression. Their findings suggest that an individual's centrality within the clique is a significant predictor of relational aggression for girls but not for boys. Centrality however is not limited to the members within cliques. As with the social hierarchy found within children's cliques, so too is there a hierarchy of the cliques themselves in the greater social network. The following section details what is known both about the centrality of children's cliques as well as how relationally aggressive children are distributed within them.

Clique Centrality. In addition to the centrality of the individual within their clique, the centrality of the cliques in which children are situated were also of interest in the present study. Researchers have repeatedly (Adler & Adler, 1998; Eder, 1985) found clear hierarchies in the clique structure within a given peer network, whether it was defined as a grade or a single classroom within a school. Although clique hierarchies can exist in any peer group, the most commonly studied ones have been within the school context (Cairns et al., 1985; Cairns et al., 1988; Huttunen & Salmivalli, 1996).

As with the centrality of individuals within their cliques, boys and girls tend to have parallel clique hierarchies, meaning that there is usually a central girls' clique as

well as a central boys' clique within each class for children in the late elementary school grades (Cairns et al., 1985; Cairns et al., 1988; Huttunen & Salmivalli, 1996). However, whereas the classroom social network contains only two or three cliques of boys, girls have been found to organize themselves into smaller, more numerous cliques (Cairns et al., 1985; Huttunen & Salmivalli, 1996), and this difference in the structures of boys' and girls' clique hierarchies may play a role in the competition (Eder, 1985) and behaviours used by the children (Owens et al., 2000a).

Although there has been limited research conducted on the clique centrality of children, those studies that have been conducted suggest that being a member of a central clique has similarly beneficial effects to those of being a central member within a clique including being popular, higher social preference, and having friends (Lease & Axelrod, 2001). Although these correlates are not the be-all and end-all of healthy social relationships, they are positive attributes of social health. With this in mind, some of these characteristics have been found to correlate with the use of relational aggression.

Clique Centrality and Relational Aggression. As with the centrality of individuals within their cliques, researchers have found that children's relational aggression is associated with the centrality of their cliques within the larger social network. Overall, studies have indicated that relationally aggressive children are more likely to be found in central cliques, within the peer network (Ellis & Zarbatany, 2007; Xie et al., 2002), however significant gender differences have been identified. Although relationally aggressive children in general are more likely to be members of central cliques than their non-aggressive peers, researchers have found that relationally aggressive girls are significantly more likely to be found in central cliques than relationally aggressive boys

(Ellis & Zarbatany, 2007; Lansford et al., 2009). The gender differences in the clique centrality of relationally aggressive children can be explained by boys' and girls' perceptions of the gender normativity of the behaviour.

A growing body of literature has indicated that children who use non-gender-normative forms of aggression are more likely to be rejected by their peers (Carbone-Lopez, Esbensen, & Brick, 2010; Crick & Grotpeter, 1995; Velasquez et al., 2010). Both boys and girls have been found to perceive relational aggression as something that girls engage in (Pronk & Zimmer-Gembeck, 2010; Velasquez et al., 2010). Because boys do not perceive relational aggression as a normative behaviour for boys, they are less tolerant of relational aggression within their same-sex interactions than are girls. While girls who use the behaviours are able to gain or maintain their status in central cliques, such is not the case for boys. For this reason, boys may be less likely to be found in central cliques than girls. In their study of 526 early adolescents, Ellis and Zarbatany (2007) found that both boys and girls in central cliques tried out relationally aggressive behaviours, however girls in those cliques were significantly more likely to continue using relationally aggressive strategies than the boys. The theory then is that relational aggression is a more advantageous behavior for girls than boys in central cliques, due to the social norms within highly central cliques (Lansford et al., 2009; Velasquez et al., 2010).

Summary. The literature review on the position of relationally aggressive boys and girls within their cliques suggests that relationally aggressive girls may be more likely than relationally aggressive boys to be central within their cliques, as well as be members of more central cliques in the peer network. However, children's centrality is

but one structural aspect of their cliques. The clique hierarchies of boys and girls are reliant upon the number, and thus the size of the cliques within the network. In order to better understand the role cliques play in children's relational aggression, it is necessary to determine the role that their size plays.

Size. In order to use relational aggression effectively, a child must be connected socially to their peer group. In the general population there are clear gender differences in terms of the size of children's cliques. In a longitudinal study of gender differences in children's playground social networks, Baines and Blatchford (2009) found that over time boys move into larger social cliques, assimilating most boys within a small peer ecology such as a classroom, while girls' cliques become increasingly smaller and proliferate. While this general trend continues throughout childhood, within a given classroom environment, a smaller second clique of boys is often found with a membership of around four boys (Baines & Blatchford, 2009). Although some studies find no differences between the clique sizes of boys and girls (Kwon, Lease, & Hoffman, 2011), the difference in the size of boys' and girls' social cliques has been fairly consistent across age groups, from middle childhood (Baines & Blatchford, 2009), into late childhood (Huttenen & Salmivalli, 1996; Lagerspetz et al., 1988; Yamasaki & Nishida, 2009), and adolescence (Lansford et al., 2009). It is difficult to conclude how clique size interacts with relational aggression without examining the reasons for the differences in the size of boys' and girls' cliques as well.

Clique size and relational aggression. The association between clique size and relational aggression has not been previously studied. Although little is known about the role the size of children's cliques play in their relationally aggressive behaviour, there is

indication that it is somewhat related. Relational aggression requires that the victim have functioning social relationships in order to inflict harm. Without relationships, there is no avenue for the behaviours to function. Based on this, it stands to reason that children who are social isolates are less likely to be the targets of relational victimization because they lack the social structures to facilitate victimization. Additionally, Neal (2007) proposes that socially isolated individuals are equally unable to perpetrate relational aggression for the very same reasons. This suggests that relationally aggressive children must have some form of clique to be effective in their behaviours, however it is unknown whether relationally aggressive children belong to larger or smaller social cliques.

Neal (2007) reviewed the literature on relational aggression and social networks and concluded that smaller cliques provide an environment in which relational aggression is most effective because of the increased investment in the social relationships with fellow members of smaller cliques. In larger cliques, it is more difficult to maintain the high levels of interaction with each member, and thus the cohesion or density of the clique begins to decrease (House & Miner, 1969). Larger cliques create an environment in which relational aggression is less effective because children have less investment in each of their social connections with other members than in a smaller clique. It is likely then that relationally aggressive children are members of smaller cliques, though are not isolates, however there has yet to be a published study addressing this question. The theory Neal (2007) puts forward has not yet been empirically tested, and relies heavily on the assumption that girls are much more relationally aggressive than boys, a finding that has not been strongly supported in the literature.

In the present study the relationship between clique size and use of relational aggression was explored for both boys and girls. Previous work has suggested that smaller cliques may be more conducive to the use of relational aggression than larger groups, however this relationship has not been well studied. Relational aggression relies on social connections more so than the presence of a social group, as being a member of a clique only means that one affiliates with others, not that they are invested in their relationships with clique members. The density of children's cliques may actually provide more information on the influence of clique structures than the size of the clique itself.

Density. A clique refers to a group in which the members affiliate together (Cairns et al., 1985). Although the members of a clique congregate and work as a collective, the organizational structures within cliques can vary (Trant, 2009), meaning that not all members of a clique have a close relationship with every other member within their clique. To the contrary, as cliques grow in size, it becomes more difficult for clique members to develop and maintain social relationships with all other members (House & Miner, 1969). Because relational aggression is perpetrated through existing social relationships, it is helpful to examine the role of clique density in boys' and girls' relational aggression.

Density refers to how interconnected the members within a group are (Green et al., 1996). A highly dense social clique is characterized by many social relationships between all members of the clique, whereas a non-dense social clique is characterized by few friendship connections between individual members of the clique.

The literature on the gender differences of clique structures suggests that in general, boys have more dense social cliques than girls do. The social cliques of girls tend to be an amalgam of multiple dyadic or triadic friendships with no central core (Baines & Blatchford, 2009; Eder, 1985). In contrast, the social cliques of boys tend to be hierarchically structured with a core group of members and a periphery made up made up of individuals with connections to core members (Adler & Adler, 1998; Baines & Blatchford).

Density and relational aggression. There has been but a single study (Green et al., 1996) that has examined the association between relational aggression and clique density, however it was conducted using a sample of 148 undergraduate students, not children. In their study, the authors found that denser social cliques were more susceptible to relational aggression. Members of higher density cliques in their study were reported to use significantly more relationally aggressive behaviour than cliques that were compartmentalized (multiple, though unconnected friendships within the same clique). Fascinatingly, these findings did not vary as a function of gender, however it must be remembered that this study was conducted with adults rather than children.

Summary. A review of the literature on the relationship between the clique structures of children and their use of relational aggression has revealed two main findings. The first is that while boys and girls share many similarities with regards to their centrality, clique size, and clique density, their relationship between relational aggression and these characteristics has sometimes been found to be very different. The second is that there has been very little study of the relationship of relational aggression and children's clique structures. Although gender differences in boys' and girls' clique

size has been widely studied by developmentalists (Brown & Klute, 2008), there has yet to be a published study examining possible similarities or differences in the size of relationally aggressive children's social cliques. Both the limited study of the relationship between clique characteristics and relational aggression, and the promising findings of previous research suggest that the present study represents an important contribution to the field of social development.

The Identification of Social Cliques

One of the greatest challenges with research on social cliques has been identifying the members of particular cliques with a sample. Peer-reports provide a valid way to identify children's social networks, as they are able to determine directly who interacts with whom (Cairns et al., 1988), and also have the advantage of not being limited by short observation periods. In addition, peer informants act as observers, and their reports can be amalgamated in order to establish a theoretically objective map of the social relationships within the peer network.

One of the most popular methodologies for identifying peer associations within a social network has been the Social Cognitive Mapping procedure (SCM) (Cairns, et al., 1988). SCM enables researchers to identify main social cliques within a peer network of any size by using peer-reports of peer affiliation. This is a widely used method for identifying social affiliations within children's social networks (Kindermann, 1993), and has been especially popular in studies of relational forms of aggression (Huttunen & Salmivalli, 1996; Lansford et al., 2009; Witvliet et al., 2010). Studies using SCM have been used to identify with whom children who bully affiliate (Huttunen & Salmivalli),

popularity and likeability of bullies (Witvliet et al., 2010), and problem behaviours including violent offences and substance abuse (Lansford et al., 2009).

Other methods for the identification of social cliques within a sample besides SCM have been used by researchers such as the Simulation Investigation for Empirical Network Analyses (SIENA) system, however for the purposes of the present study, SCM was deemed the most appropriate system to use as it provides a complete static picture of the social network at a specific time, whereas SIENA models the evolution of networks rather than the current state of the network (Snijders, Steglich, & Schweinberger, 2007; Steglich, Snijders, & West, 2006). For these reasons, SCM has been chosen to identify the social cliques in the present study.

Conclusions

Thus far, relational aggression research that has examined potential gender differences has focused primarily on the relative frequency of the behaviours in the experiences of boys and girls. While there has more recently been an effort to better understand the role of relational aggression in the social development of children and adolescents, this body of work has focused exclusively on girls. The review of relational aggression and children's social networks indicates that researchers know very little about the role the friendships and cliques play in children's relational aggression, and what gender similarities and differences may exist.

Although there have been no published studies that have addressed the potential differences in the structures of relationally aggressive boys' and girls' social cliques and friendship, previous research that has examined structural differences between normative boys and girls' social relationships has indicated significant differences. Therefore the

present study aims to bridge the gap between these two bodies of literature by exploring the association between relational aggression and the structures of boys and girls social relationships.

The Present Study

The present study was an exploration of the predictive value of the characteristics of boys' and girls' friendships (number of friends, number of reciprocal friends, and the friendship quality of their best friendship) and cliques (individual's centrality, clique centrality, size, and density). Although the association between relational aggression and many of the friendships and clique characteristics that have been presented are not well understood, the review of the literature has suggested some hypotheses for the present study. The following section is a presentation of the hypothesized findings, beginning with the relationship between relational aggression and boys' and girls' friendships and concluding with the association between relational aggression and boys' and girls' cliques.

Previous work has suggested that the friendship characteristics of relationally aggressive children may be significantly different (Bagwell & Coie, 2003; Cillessen et al., 2005; Crothers et al., 2005; Owens et al., 2000a; Soenens et al., 2007; Yamasaki & Nishida, 2009), and that the relationship may vary as a function of gender (Cillessen et al., 2005; Murray-Close et al., 2007). It was expected that the findings of the present study would replicate those of other researchers in the field.

In the present study it was hypothesized that relationally aggressive girls and boys would have more friendships than their same-gender, non-aggressive peers due to both previous work has indicated such a gender difference (Yamasaki & Nishida, 2009), and

because relationally aggressive behaviours can only be manifested through functioning social connections (Neal, 2007). With regards to friendship quality, it was expected that in line with previous research, the positive friendship qualities of relationally aggressive children would be significantly lower than those of their non-aggressive peers, and they would have more friendship conflict with their best friend than non-aggressive children (Bagwell & Coie, 2003; Cillessen et al., 2005; Soenens et al., 2007). It was also hypothesized that the association between friendship quality and relational aggression would vary as a function of gender. Based on the findings of previous researchers (Cillessen et al., 2005; Murray-Close et al., 2007), it was expected that the relationally aggressive girls in the study would have higher perceptions of their positive friendship qualities than relationally aggressive boys, and that the friendships of relationally aggressive boys would be characterized by more conflict than those of relationally aggressive girls.

In addition to friendship characteristics, the present study also explored the characteristics of relationally aggressive boys' and girls' cliques. Previous work has indicated that the cliques of relationally aggressive children are significantly different from those of their non-aggressive peers (Ellis & Zarbatany, 2007; Green et al., 1996; Xie et al., 2002), and that the relationship between clique characteristics and relational aggression may vary as a function of gender (Ellis & Zarbatany, 2007; Lansford et al., 2009).

Based on the findings of previous research on the centrality of relationally aggressive children, it was hypothesized that relationally aggressive children would be more likely to be central, than peripheral, members within their cliques (Xie et al., 2002),

however this relationship would be significantly stronger for relationally aggressive girls than relationally aggressive boys (Lansford et al., 2009). With regards to the centrality of their cliques, previous work has suggested that relationally aggressive children are more likely to be members of central cliques than their non-aggressive peers (Ellis & Zarbatany, 2007; Xie et al., 2002), however this association too would be stronger for relationally aggressive girls than relationally aggressive boys (Ellis & Zarbatany, 2007; Lansford et al., 2009). Although there has been no research on the association between clique size and relational aggression, the single study of clique density (Green et al., 1996) and the literature review by Neal (2007) suggested that relationally aggressive children would most likely be found in cliques of small to moderate size, and that the cliques of relationally aggressive children would be significantly more dense than their non-aggressive peers.

Method

Participants

The present study used an archival dataset (hereafter referred to as the "network dataset") collected by the Healthy Relationships Lab at Carleton University. Six hundred and forty-six children from grades four, five, and six from 26 classrooms in three Ottawa region elementary schools participated. The network dataset was comprised of 499 children (247 boys, 252 girls) aged nine to twelve (mean age 10.47, *SD* = .93) who received parental consent. In addition to these children, all 26 classroom teachers were approached and consented to participate. Classroom parental consent rates ranged from 28% to 91% with an average of 75%. There were no identifiers of the children in the dataset, ensuring the anonymity of all participants.

The Network Dataset

When the decision to undertake this study was made, the first step was to determine whether it was necessary to collect new data or whether such data already existed. The network dataset was chosen for the present study for several reasons. The network dataset was found to contain all of the variables required to answer the proposed research questions. In addition, although it contained data on both boys and girls, the boy data had never been examined.

The network dataset provided a unique opportunity to examine the relationship between boys' and girls' relational aggression and their social cliques. It contained the behavioural profiles of both boys and girls, who their friends were, the quality of those friendships, their clique affiliation, size, and organizational structure. The network

dataset thus provided a unique opportunity to examine the interaction between relationally aggressive behaviour and the social cliques of boys and girls.

Measures

Children's Social Behavior Scale - Teacher Form (CSBS-T) (Crick, 1996).

The CSBS-T is a behavioural assessment tool designed to survey teachers on the behaviour of their own classroom students. The measure consists of 15 items divided into three subscales (pro-social behaviour, physical aggression, and relational aggression), each consisting of five items. Each item is a statement (e.g. "This child tries to get others to dislike certain peers by telling lies about the peer to others"), and each statement was rated by the classroom teacher on a five-point Likert scale from "never true" to "almost always true" (for a full list of items, see Appendix B).

The CSBS-T has been widely used in the field as a tool for assessing children's behaviour in the school environment (Bowie, 2009; Crick & Grotpeter, 1995; Crick 1996; Crick, et al., 1999; Kawabata & Crick, 2008; Ohan & Johnston, 2007; Rys & Bear, 1997; Tomada & Schneider, 1997). The items themselves are straightforward statements and have demonstrated face validity. The scale has been found to be moderately, to highly correlated with the Children's Social Behaviour Scale – Peer Form (Crick, 1996) (the peer iteration of the measure for relational aggression) $r = .57$ for boys, and $r = .63$ for girls, physical aggression $r = .69$ for boys, and $r = .74$ for girls, and pro-social behaviour $r = .40$ for boys, and $r = .48$ for girls (Crick 1996), suggesting that the CSBS-T is a valid measure of all three behaviours. The internal reliability of the subscales has been found to be consistently high with Cronbach's alphas ranging from .94 (Crick, 1996) to .95 (Rys & Bear, 1997) for relational aggression, and .94 and .93 for physical aggression and

pro-social behaviour respectively (Crick, 1996). The CSBS-T has also been found to have a high level of test-retest reliability over a short-term one month period on both relational aggression (r = .86 for boys, r = .80 for girls) and physical aggression (r = .93 for boys, r = .81 for girls), as well as over a six-month period for both relational aggression (r = .56 for boys, r = .68 for girls) and physical aggression (r = .78 for boys, r = .68 for girls) (Crick, 1996).

Social Cognitive Map Procedure (SCM) (Cairns et al., 1985)

Social cliques, and participants' individual centrality and clique centrality were identified using SCM. Every student participant in the study was given a survey and asked to identify which students within his or her grade "hung around together". This was done by having each participant list the names of all their peers that they knew affiliated in particular groups. Students could make as few or as many groups as necessary. In addition, participants were asked to identify any peers who did not affiliate within any specific clique (isolates) in a separate section at the bottom of the survey (See Appendix C).

The peer reports from all participants were then entered electronically to construct a person by respondent matrix of all participants. Then, using the Network Software program (Cairns, Gariépy, Kindermann, & Leung, 1998), the raw SCM data was compiled to create a co-occurrence matrix in which the report of each participant was compared to that of every other participant in order to identify joint clique membership. Each child's profile was then correlated with every other child within the cluster. Cluster membership was determined by using a $r \geq .40$ cut-off score, which has been shown to be a valid and robust tool for determining social network affiliation (Cairns et al., 1998).

The resulting data was then outputted as a computer generated social map for each respondent.

The centrality of each participant within their social clique, and their clique centrality were determined by the frequency of their nomination. Individual centrality was obtained by examining the number of times an individual was nominated, and the clique centrality for each participant was determined as high, median, or low using a methodology developed by Cairns et al. (1985). The individual centrality and clique centrality of each participant was determined in the following way: upper 30% rank nomination = nuclear, lowest 30% rank nomination = peripheral, and the middle 40% rank nomination = secondary status.

High levels of agreement between independent peers in the social networks has been reported in the literature, with correlations around $r = .51, p < .001$ (Gest, Farmer, Cairns, & Xie, 2003). Cairns et al. (1985) found that peers' nominations of clique membership were in 96% agreement. Nominations for peer clique affiliation were also found to be relatively stable over a three to twelve week period ($r = .70$ to $.90$), and a similar stability was found after a year ($r = .70$) although the membership of cliques was reported to change moderately over the same time period.

SCM is particularly well suited for use in the school context due to the relatively low number of respondents required to acquire a reliable picture of the social network (between 10 and 20). SCM has been found to create cliques which overlap significantly with those derived from best friendship nominations, suggesting a high level of construct validity (Cairns et al., 1995). Another advantage of SCM is that it enables the entire peer group to report on an individual's membership rather than friends only.

Friendship Nomination Measure (Parker & Asher, 1993).

The Friendship Nomination Measure is a peer report measure of within-grade best friendships at school. Each participant was asked to nominate up to three best friends from their class in order of rank (see Appendix D). Children were determined to have a reciprocal friendship if a participant they selected on their list also identified them in return (Parker & Asher, 1993). In addition, participants were asked to indicate three peers they "liked to spend time with from their class" and three peers they least like to spend time with from their class. The nominations were then compiled to develop a nomination matrix. The measure has been widely used in research on friendships (Bowker, Rubin, Burgess, Booth-LaForce & Rose-Krasnor, 2006; Grotpeter & Crick, 1996; Nangle, Erdley, Newman, Mason & Carpenter, 2003; Schwartz, Dodge, Pettit, Bates & The Conduct Problems Prevention Research Group, 2000).

For the purposes of the present study, both reciprocated and non-reciprocated friendships were of interest in order to determine both the number of within-clique friendship connections (reciprocated friendships), as well as the density of the cliques (all friendship nominations divided by the number of members).

Friendship Quality Questionnaire (FQQ) (Parker & Asher, 1993).

The FQQ is a 40-item self-report measure of the perceived quality of the participant's best friendship. It contains six subscales including validation and caring, help and guidance, intimate exchange, conflict and betrayal, conflict resolution, and companionship and recreation. The FQQ has been widely used by researchers of friendships in childhood (Aikins, Bierman, & Parker, 2005; Rose, Carlson, & Waller, 2007; Rubin, Dwyer, Kim & Burgess, 2004), and has been found to have a relatively high

level of validity. The subscales have been found to be moderately to highly inter-correlated (.16 to .75) (Parker & Asher) and have been found to be positively related, with the exception of conflict and betrayal. The inter-correlations have suggested that although the subscales measure different facets of friendship, they all measure the same construct. The FQQ has been found to have a satisfactory internal consistency with individual items' Cronbach's alphas ranging from .56 to .88 (Parker & Asher) and overall Cronbach's alphas from .95 to .96 (Kingery & Erdley, 2007). In the network dataset, the Friendship Quality Measure (Grotpeter & Crick, 1996), a modified version of the FQQ had been administered to the children (see Appendix E). The FQM is almost identical to the FQQ, however it includes six additional subscales. In the present study only the original FQQ items were analyzed because the factor structure of the FQQ was not found to hold in earlier research with this sample.

Procedure

Parental consent forms (see Appendix A) were sent home in April 2001, and those children who returned their forms with consent approval were included in the study. Data collection occurred from April to June 2001 to ensure that all participants in the study were very familiar with the social dynamics within the classrooms, and that their teachers were well aware of the behavioural profiles of their students. Participants were then presented with the Friendship Nomination Measure, FQQ, and the SCM measure. Data collection occurred one classroom at a time during a 40-minute period. At the beginning of each data collection period, research assistants reminded the participants of the confidentiality of their response on the measures. In order to ensure that all participants were equally able to understand the materials, the research assistants read

each item of each measure out loud and the participants followed along indicating their answers on their own questionnaires. At least two researchers were present in each classroom during data collection; one researcher would read the items aloud while the other researcher circulated within the classroom to assist any children who had questions or required help. Once all the measures had been completed, participating children were debriefed by the researchers (see Appendix F), and given a parental debrief letter (Appendix G) to take home to their parents.

An incentive to return consent forms was used in efforts to boost participation in order to effectively interpret the SCM. To this end a pizza party was offered to the classroom with the highest return rate regardless of whether or not the students consented to participate. Additionally, the teachers in the study who completed the CSBS-T were each given a $20 gift card to a local bookstore to compensate them for their time.

Before re-examining the data for the present study, the Department of Psychology's Ethics Chair was contacted to determine whether further ethical permission was required to analyze the data in a new way. Through personal communication, the ethics chair responded that this was not necessary.

Results

To begin, the psychometric properties of the measures that were used in the present study to assess the behaviour and the quality of children's friendships were examined. Following these, correlational analyses were carried out to determine the association between the relational aggression and both the friendship and clique characteristics of children. Three correlations were conducted, one of the overall sample, and then two separate correlations one each for boys and girls. Friendship and clique characteristics that were significantly correlated with relational aggression, or suggested a trend, were then included in subsequent regression analyses, whereas those that were not correlated with relational aggression were dropped from the regressions.

Three stepwise regressions were conducted to determine whether friendship and clique characteristics could be used to predict relational aggression: 1. in the sample as a whole; 2. for boys; and 3. for girls. Subsequently, two t-tests were conducted to determine whether there was a significant difference in the levels of boys' and girls' relationally aggressive behaviour when the entire sample was examined, and when whether there was a significant difference when only highly relationally aggressive children were examined. Finally, two MANOVAs were conducted in order to determine whether participants' behavioural classification (highly relationally aggressive, non-aggressive) and gender interacted to significantly influence their friendship and/or clique characteristics.

Psychometric Properties of the Measures

Preliminary analyses were conducted to determine the integrity of the CSBS-T and the FQQ, the two main measures used in the present study. An evaluation of the

psychometric properties of both the CSBS-T and the FQQ were conducted using principal component analyses, a form of exploratory factor analysis. These were followed by analyses of the internal consistency of each subscale of the two measures (CSBS-T and FQQ) to determine the reliability of the subscales. The results were then compared to previous studies that have utilized the same measures to determine whether they were acceptable.

Children's Social Behavior Scale – Teacher Form (CSBS-T). A principal component analysis with a varimax rotation and cut-off of 0.4 was used to assess the internal consistency of the CSBS-T. The main reason a principal component analysis rather than confirmatory factor analysis was conducted on the CSBS-T despite it being a widely used measure in the field for the use of a principal component analysis was that the variability found in the overall prevalence of relational aggression in different studies of the construct suggested that the samples may represent different populations. In such cases, principal component analysis has been suggested by researchers (Field, 2009).

As predicted, three distinct factors emerged, which together accounted for 80.95% of the variance in the data set: relational aggression (37.1 % of the variance, Eigenvalue = 5.6), physical aggression (23% of the variance, Eigenvalue = 3.4), and pro-social behaviour (21% of the variance, Eigenvalue = 3.1).

The factor loadings (see Table 1) confirmed the theoretical assumptions for all the items with the exception of one (item 12. "This child tries to dominate or bully peers."), which was found to load equally on both the relational (.58) and physical aggression (.57) scales. Because of the ambiguity of this particular item, the decision was made to omit it from further analyses.

Table 1

CSBS-T Principal Component Analysis

Item	Relational Aggression	Physical Aggression	Pro-social Behaviour
2. "When this child is mad at a peer, he or she gets even by excluding the peer from his or her clique or play group."	**.86**	.25	-.14
7. "When angry at a peer, this child tries to get other children to stop playing with the peer or to stop liking the peer."	**.86**	.25	-.13
15. "This child tries to exclude certain peers from peer group activities."	**.84**	.25	-.21
11. "When mad at a peer, this child ignores the peer or stops talking to the peer."	**.82**	.05	-.13
13. "This child threatens to stop being a peer's friend in order to hurt the peer or to get what he or she wants from the peer."	**.82**	.19	-.18
5. "This child spreads rumours or gossips about some peers."	**.80**	.28	-.23
10. "This child tries to get others to dislike certain peers by	**.80**	.25	-.26

telling lies about the peers to others."			
6. "This child initiates or gets into physical fights with peers."	.23	**.90**	-.22
9. "This child threatens to hit or to beat up other children."	.25	**.87**	-.21
3. "This child hits, shoves, or pushes peers."	.28	**.85**	-.25
4. "This child tries to cheer up peers when they are sad or upset about something."	-.06	-.18	**.90**
1. "This child says supportive things to peers."	-.23	-.17	**.88**
8. "This child is helpful to peers."	-.23	-.21	**.88**
14. "This child is kind to peers."	-.35	-.27	**.79**
Items Omitted from Further Analyses			
12. "This child tries to dominate or bully peers."	.58	.57	-.27

Note: Bold indicates item included in subscale

The factor loadings of the CSBS-T in the present study were high for all three factors: relational aggression (.80 to .86), physical aggression (.85 to .90), and pro-social behaviour (.79 to .90). These loadings were found to be comparable to those of Crick (1996; relational aggression (.63 to .83), physical aggression (.76 to .80), and pro-social behaviour (.73 to .89).

The internal consistencies of each of the three subscales were then examined. Cronbach's alphas for each subscale were found to be acceptable (relational aggression α = .95, physical aggression α = .93, pro-social behaviour α = .93), and were comparable to those found by previous researchers Crick (1996; α = .94, .94, and .93), and Rys and Bear (1997; α = .95, .94, and .93). An examination of possible gender differences revealed that the Cronbach's alpha statistics were comparable for boys and girls in the present study (relational aggression: boys α = .94, girls α = .92, physical aggression: boys α = .93, girls α = .90, pro-social behaviour: boys α = .94, girls α = .92).

Friendship Quality Questionnaire (FQQ). A principal component analysis using a varimax rotation and a cut-off of 0.4 was conducted on the FQQ scale in order to determine whether the nine subscales hypothesized by Parker and Asher (1993) - validation and caring, subject conflict, friend conflict, compassion and recreation, help and guidance, subject intimacy, friend intimacy, and conflict resolution - would emerge using the data in the present study. Interestingly, although the FQQ has been frequently used in the field (Simpkins & Parke, 2001; Simpkins, Parke, Flyr, & Wild, 2006), rarely do the nine distinct components emerge when the scale undergoes factor analysis (see Kiesner, Nicotra, & Notari, 2005; Rose & Asher, 1999;).

The decision to conduct a principal component analysis in the current study was made because other researchers have identified a high degree of statistical overlap between some of the FQQ subscales (Kiesner et al., 2005; Rose & Asher, 1999). Principal component analysis is designed to extract statistically distinct components of strongly correlated items when a measure contains subscales that are highly correlated with each other (Suhr, 2005). The principal component analysis enabled the extraction of statistically distinct components from the collection of subscales developed from a theoretical perspective. The analysis resulted in the identification of four theoretically and statistically distinct subscales that were used in subsequent analyses (see Table 2.). These four subscales were labelled positive activity, positive communication, conflict, and conflict resolution to reflect the types of items that loaded within each subscale.

It was not surprising when the nine hypothesized FQQ subscales failed to emerge, as researchers are rarely able to replicate them through factor analyses. Instead, researchers tend to find that items load on only two components: positive friendship, and conflict (Kiesner et al., 2005), believed by some to be the most important components of friendship interactions (Berndt, 1996). Studies that have treated all of the FQQ subscales as distinct and have included them in their analyses often do not report any factor analyses at all (Simpkins & Parke, 2001; Simpkins et al., 2006).

Overall, the four factors extracted from the FQQ accounted for 53.6% of the variance. The first factor, positive communication (subscale containing items pertaining to positive support and advice between friends) accounted for 20.4% of the variance (Eigenvalue = 5.3); the second factor, conflict (subscale containing items describing adverse behaviours between friends) accounted for 13.4% of the variance (Eigenvalue =

Table 2

FQQ Principal Component Analysis

FQQ Item	Positive Comm.	Conflict	Positive Activity	Conflict Resolution
37. "My friend can tell me about his/her problems."	**.70**	-.10	.10	.23
21. "My friend can talk with me about the things that make him/her sad."	**.79**	-.05	.14	.13
33. "I can talk with my friend about the things that make me sad."	**.79**	-.05	.11	.17
7. "My friend can tell me his/her secrets."	**.76**	-.07	.14	.06
4. "I can tell my friend about my problems."	**.74**	-.03	.16	.10
18. "I can tell my friend my secrets."	**.71**	-.09	.13	.20
8. "My friend makes me feel important and special."	**.59**	-.28	.36	.06
22. "My friend tells me I am good at things."	**.50**	-.30	.43	.05
1. "My friend gives me advice with figuring things out."	**.49**	-.17	.37	-.01
9. "I get mad at my friend a lot."	-.09	**.72**	-.19	-.10
28. "My friend gets annoyed with me a lot."	-.11	**.71**	.05	-.09

14. "My friend gets mad at me a lot."	-.05	**.71**	-.13	-.19
38. "My friend annoys me a lot."	-.08	**.68**	-.07	-.14
23. "I disagree with my friend a lot."	-.06	**.67**	-.03	.04
42. "My friend disagrees with me a lot."	-.14	**.62**	-.19	-.13
27. "My friend plays with me at recess."	.01	-.03	**.67**	-.03
43. "My friend picks me as a partner for things."	.18	-.05	**.64**	.29
30. "My friend does special favours for me."	.43	-.16	**.46**	.16
13. "My friend does fun things with me."	.35	-.16	**.55**	.09
15. "My friend shares things (Like books or Nintendo games) with me."	.33	-.09	**.50**	.20
39. "My friend says he/she's sorry if he/she hurt my feelings."	.36	-.29	**.41**	.19
3. "It is easy to make up quickly with my friend if we have a fight."	.20	-.12	.17	**.73**
17. "It is easy to get over arguments with my friend."	.15	-.25	.11	**.75**
35. "It is easy to talk with my friend about how to get over being mad at each other."	.43	-.23	.18	**.52**

Note: Bolded indicates item included in subscale

3.5); the third factor, positive activity (included items such as playing together or doing nice things for each other) accounted for 12.4% of the total variance (Eigenvalue = 3.2); and the fourth factor emerged as the intact conflict resolution subscale from the FQQ, and accounted for 7.4% of the variance (Eigenvalue = 1.9).

The factor loadings of individual items in the FQQ on the four subscales were high to moderate: positive communication (.79 to .49); conflict (.72 to .62); positive activity (.67 to .41); and conflict resolution (.75 to .52).

The internal consistency for each of the four subscales was also examined to determine their integrity. The Cronbach's alphas for each of the subscales were found to be acceptable (positive communication = .90; conflict = .80; positive activity = .74; and conflict resolution = .69). All subsequent analyses have been based on the four-factor iteration of the FQQ described here.

Correlation Analysis

Due to the large number of variables that were examined in the study, it was important to pare down the number of variables that were to be included in some of the more complex analyses. Had all variables been included they would have unnecessarily reduced the power of some of the statistical tests (Field, 2009). In order to achieve this goal, a pair-wise correlation matrix (Table 3) was created to better understand the relationship between relational aggression and the different characteristics of children's friendships and cliques.

When the entire sample was examined, relational aggression was significantly correlated with clique centrality ($r = .21, p < .01$), positive communication ($r = .09, p < .05$), and conflict ($r = .11, p = .02$). However, when boys' and girls' correlations were examined separately, although overall very similar, some differences emerged. Clique centrality was more highly correlated

Table 3

Correlation Between Relational Aggression and Friendship and Clique Characteristics

	Overall	Boys	Girls
# of Reciprocal Friends	-.06 (N = 496)	-.07 (N = 247)	-.08 (N = 249)
# of Friends	-.03 (N = 496)	.01 (N = 247)	-.09 (N = 249)
Friendship Positive Communication	.09* (N= 465)	-.03 (N = 232)	.19** (N = 233)
Friendship Positive Activity	.05 (N = 469)	.01 (N = 234)	.07 (N = 235)
Friendship Conflict	.11* (N = 474)	.13* (N = 237)	.09 (N = 237)
Friendship Conflict Resolution	.01 (N = 466)	-.02 (N = 231)	.02 (N = 235)
Individual's Centrality	.04 (N = 468)	-.01 (N = 231)	.06 (N = 237)
Clique Centrality	.21** (N = 468)	.16* (N = 231)	.24** (N = 237)
Clique Size	-.01 (N = 468)	.01 (N = 231)	-.01 (N = 237)
Clique Density	.04 (N = 468)	.07 (N = 231)	.01 (N = 237)

Two-tailed significance (* = $p < .05$, ** = $p < .01$)

with relational aggression for girls ($r = .24, p < .01$) than for boys ($r = .16, p = .02$), as was positive communication (girls, $r = .19, p < .01$; boys, $r = -.03, p =$ n.s.). Conversely, conflict was significantly correlated with relational aggression for boys ($r = .13, p = .04$), but not girls ($r = .09$, $p =$ n.s.). It should be noted that many of the correlations between the friendship and clique characteristics of children and their relational aggression were found to be relatively small, however the aim of the study was to explore the similarities and differences between boys and girls rather than look at the overall value of the predictors.

Predictive Value of Friendship and Clique Characteristics for Relational Aggression

In order to examine value of friendship and clique characteristics in the prediction of boys' and girls' relationally aggressive behaviour, several regressions were conducted. A stepwise regression including all participants in the sample was conducted to determine whether overall, friendship and clique characteristics could predict participants' relationally aggressive behaviour.

Data cleaning. Before conducting the regression analyses, the data was screened and cleaned. The dataset contained missing data for 59 of the 499 participants. A missing data analysis was conducted to determine if there was a pattern to the way in which the data was missing. The Missing Completely At Random (MCAR) test was significant ($\chi 2(37) = 69.14, p < .01$). Once the cases missing data were excluded, 440 participants (88%) remained (see Table 4 for summary).

The decision was made to not engage in imputation thereby replacing the missing data because such a process would cause problems in achieving the aims of the study. An examination of Table 4 reveals that the overwhelming majority of missing data was found in the measures of centrality and friendship quality. Participants who were classified as isolates ($N =$

Table 4

Summary of Missing Data

Variable	Cases (N)	Missing Cases (N)	Percentage of Cases Missing (%)
Gender	499	0	0
Individual's Centrality	471	28	5.6
Clique Centrality	471	28	5.6
FQQ Positive Comm.	468	31	6.2
FQQ Positive Act.	472	27	5.4
FQQ Conflict	477	22	4.4
Relational Aggression	496	3	0.6
Total	440	59	12

Note: Friendship Quality Questionnaire (FQQ)

14) rarely had data for individual or clique centrality, and so it would be misleading to replace their missing scores. The majority of participants that were missing data on their friendship quality (FQQ) were also missing friendship nomination data ($N = 22$). For these reasons, the decision was made to remove these participants from the regression analyses because their inclusion did not aid the study.

Preliminary Assumptions. All assumptions were met, and the sample size was deemed acceptable for the number of variables in the model (Green, 1991).

The normality of the variables was found to be within acceptable limits when Z-score plots were examined. Although the two statistical tests of normality - Kolmogorov-Smirnov and Shapiro-Wilk - were violated ($p < .05$ for all variables - gender, individual's centrality, clique centrality, positive communication, positive activity, and conflict), Field (2009) has indicated that this is not unusual when using a large sample size, and suggests an visual examination of Z-score plots of the variables instead. Upon examination of the Z-score plots, although most predictor variables were normally distributed, there were some exceptions. The distribution of relational aggression scores was positively skewed (.74, $SE = .11$), indicating a high proportion of low scores. This has been a common finding in studies or relational aggression, as aggression scores are distributed in the population such that the distribution is skewed with fewer people showing high scores than would be expected in a normal distribution (Bosworth, Espelage, & Simon, 1999; Estrem, 2005; Manning & Wood, 1998; Tomada & Schneider, 1997).

Three of the four FQQ subscales were found to have significantly skewed distributions as well. The conflict scale was positively skewed (statistic = .83, $SE = .12$), indicating that low levels of conflict within their best friendship was much more commonly reported by participants than high conflict. Conversely, both of the FQQ positive scales were negatively skewed

(positive communication: statistic = -.91, *SE* = .11; positive activity, statistic = -.88, *SE* = .11). The negative skew on these two scales indicated that the majority of participants in the sample reported high levels of positive friendship quality. The skewed distributions found for these three subscales were not unusual. As with the skewed distribution of scores for relational aggression, the distribution of scores for conflict, positive communication, and positive activity reflected the truncated normal distributions often found for these constructs. The distributions were skewed with the majority of scores indicating low conflict, and higher positive friendship qualities (Hartup, 1996). It was important to consider that these scores represent legitimate experiences of real children, and negating them would essentially invalidate their experiences. Although transforming the data may increase the fit of a regression model, it is difficult to meaningfully interpret the individual contributions of predictors when they are transformed (Field, 2009). Additionally, the individual contributions of particular friendship and clique characteristics were of interest. The present study was an examination of a variety of potential predictors and was intended as a preliminary exploration into whether the relationship between such predictors and relational aggression varies as a function of gender. However, the intention was to identify particular individual predictors that should be included in future studies rather than an attempt to account for all possible predictors of relational aggression. To this end, it was more important in the present study to retain an accurate measure of the predictive quality of particular characteristics rather than all of them combined. Because of the aims of the present study and the problems associated with interpreting the contributions of particular predictors when using transformed data, the decision was made to conduct further analyses with the original, non-transformed data.

Variable Selection. Only those variables that were significantly correlated with relational aggression - or approached significance - were included in the regression. The inclusion of variables not correlated with relational aggression would decrease the overall power of the regression, making it difficult to identify meaningful relationships while contributing little to the overall model (Field, 2009).

The clique level predictor variables clique size, and clique density were both removed from the regression because of low correlations with the relational aggression (r = -.01, p = n.s.; and r = .04, p = n.s). Three friendship level predictor variables (number of friends, number of reciprocal friends, and conflict resolution) were removed for the same reasons (r = -.04, p = n.s.; r = -.06, p = n.s.; and r = .01, p = n.s.). The remaining variables (gender, individual's centrality, clique centrality, positive communication, positive activity, and conflict) were included in the regression.

Regression of the overall sample. To determine the predictive value of friendship and clique characteristics on participants' teacher-reported relationally aggressive behaviour, a regression was conducted using the entire sample.

Procedure. A stepwise regression was conducted using the enter method with relational aggression as the criterion variable. Gender was inserted alone in the first step as is the custom in the field (Crick, Ostrov, & Werner, 2006; Werner & Crick, 1999), followed by the friendship level variables (positive communication, positive activity, and friendship conflict) in the second step, clique level variables in the third step (individual's centrality, clique centrality), and the interactions of gender with both friendship and clique characteristics in the fourth step. Four steps were used in order to meaningfully separate the theoretically different collections of predictors, and allowed for the change in variance accounted for to be observed at each step.

Results. The model was found to be robust with the predictor variables being unbiased (VIF = 1.01 to 1.88) and independent (tolerance = .91 to .99). The overall model was found to be significant ($F(11, 428) = 4.16, p < .01$), indicating that the regression model was able to represent the data more accurately than would the means of the variables. The model accounted for 7.3% of the variance (*Adjusted* $R^2 = .07$) in relational aggression.

The individual contributions of the predictor variables are represented by their standardized betas (β). Conflict ($\beta = .16$, $t(498) = 2.23, p = .03$) and clique centrality ($\beta = .15$, $t(498) = 2.14, p = .03$) were found to be significant predictors of relational aggression for the sample as a whole. Gender, positive activity, and individual's centrality were not found to be significant predictors of relational aggression for the sample as a whole. Although no main effect of gender was found, a significant interaction was found between positive communication and gender $\beta = .88$, $t(498) = .2.49, p = .01$).

When friendship and clique characteristics were used to predict relational aggression for the sample as a whole, the model accounted for only a fraction of the variance in relationally aggressive behaviour. In order to address that question, a decision was made to analyze the predictive value of the friendships and cliques separately for boys and girls.

Boys' and girls' regressions. The significant interaction that was found between gender and positive communication indicated the predictive value of the characteristics of children's friendships and cliques varied as a function of gender. Unfortunately the regression analysis of the overall sample was insufficient to determine whether the variance accounted for by the overall model was differed for boys and girls. Researchers who have been interested in the gender differences in the value of groups of variables in the prediction of relational aggression (Vaillancourt & Hymel, 2006), or who have found significant interactions between gender and

individual predictors (Larsen, van Strien, Eisinga, & Engels, 2006), have further examined the role of gender by conducting separate regressions for boys and girls. Thus, to effectively address the potential gender difference in value of friendship and clique characteristics in predicting boys' and girls' relational aggression, a decision was made to run the two additional separate stepwise regressions, one for boys, and one for girls.

Procedure. A regression was conducted using the enter method with relational aggression as the criterion variable. Friendship level variables were inserted in the first step (positive communication, positive activity, and conflict), and clique level predictors were inserted in the second step (individual's centrality, and clique centrality). Both models were found to be robust. Reliability indicators suggested that the variables were both unbiased (VIF = 1.01 to 1.69) and independent (tolerance = .59 to .98).

Boys' regression results. Results indicated that friendship and clique characteristics were almost irrelevant for predicting boys' relationally aggressive behaviour. The overall model was not significant ($F(5, 241) = 2.02$, p = n.s.), and accounted for only 2% of the variance (*Adjusted R square* = .02) in relational aggression. However, conflict ($\beta = .14$, $t(246) = 2.01$, $p < .05$) and clique centrality ($\beta = .144$, $t(246) = .2.26$, $p = .02$) were found to be significant individual predictors of relational aggression. All other predictors (positive communication, positive activity, and individual's centrality) were not significant.

Girls' regression results. The results indicated that friendship and clique characteristics were much better predictors of girls' relationally aggressive behaviour than boys'. The regression examining the predictive value of these characteristics for girls found that overall, the friendship and clique characteristics were significant predictors of relational aggression ($F(5, 246) = 6.36$, $p < .01$), indicating that the regression model was able to represent the data more

accurately than the means of the variables. The model accounted for a modest 9.6% of the variance (*Adjusted R square* = .10) in relational aggression. Of the friendship variables, both positive communication ($\beta = .26$, $t(251) = 3.16$, $p < .01$) and conflict ($\beta = .19$, $t(251) = 2.66$, $p < .01$) were significant predictors of relational aggression for girls. Additionally, clique centrality was also a significant predictor of relationally aggressive behaviour for girls ($\beta = .23$, $t(251) = 3.84$, $p < .01$). Positive activity, and individual's centrality were not significant predictors.

Summary of regression analyses. The results of the three regressions indicated that overall, friendship and clique characteristics account for only 7% of the variance in children's relationally aggressive behaviour. However, the results of these three analyses strongly indicated that there was a gender difference in the value of children's friendship and clique characteristics for the prediction of relational aggression.

Gender Similarities and Differences

In addition to exploring whether friendship and clique characteristics would predict children's relational aggression, the present study also aimed to determine if highly relationally aggressive boys and girls differed from each other in terms of their friendship and clique characteristics. The following analyses were conducted using both the complete archival dataset, consisting of 499 participants (252 girls and 247 boys), as well as a subset of participants who had been classified as highly relationally aggressive, consisting of 47 children (31 girls and 16 boys).

Behavioural classification has been used in the literature as a way of identifying particularly relationally aggressive participants (Crick, 1995; Schwartz, 2000; Thunfors & Cornell, 2008). The highly relationally aggressive sample identified in the study was comprised of children who scored above 0.5 *SD* on relational aggression and below the mean on physical

aggression, a criteria often used in the literature (Crick, 1995; Lease, Kennedy, & Axelrod, 2002; Schwartz, 2000; Thunfors & Cornell, 2008; Zakriski & Coie, 1996). The reason for ensuring that the participants in this category do not use high levels of physical aggression was made because children who are both highly relationally and physically aggressive represent a distinct group of children (Crick & Grotpeter, 1995; Tomada & Schneider, 1997). Using these criteria, 16 highly relationally aggressive boys ($M = 2.98$, $SD = 0.32$, criterion cut-off for relational aggression = 2.56), and 31 highly relationally aggressive girls ($M = 3.46$, $SD = 0.63$, criterion cut-off mean for relational aggression = 2.78) (all scores out of a maximum of 5 and minimum of 1) were identified.

Relational aggression. When the gender differences in the average usage of relational aggression were examined for the total sample, no significant differences were found $t(494) = -1.49$, p = n.s. ($d = 0.07$) between girls ($M = 2.22$, $SE = .07$) and boys ($M = 2.08$, $SE = .06$). Thus there was neither a significant nor a practical difference in the level of relationally aggressive behaviour of boys and girls as reported by their teachers when the entire sample was examined. However, when only those children classified as highly relationally aggressive were examined, the highly relationally aggressive girls ($M = 3.46$, $SE = .11$) were rated by their teachers as significantly more relationally aggressive than the highly relationally aggressive boys ($M = 2.98$, $SE = .08$); $t(45) = 3.44$, $p < .01$, indicating a strong effect ($d = 0.46$).

Extreme Groups Analysis

The final aim of the present study was to explore how similar or different relationally aggressive children were from their non-aggressive peers. This was achieved by conducting two separate 2 x 2 MANOVAs (one of friendship characteristics, and one of clique characteristics).

These analyses compared the means of relationally aggressive boys' and girls' friendships and cliques with those of their non-aggressive peers.

The decision was made to conduct two separate MANOVAs rather than a single analysis for theoretical reasons. Because of the nature of the MANOVA analyses, it was important to only include independent variables in the analyses if there was a theoretical justification (Field, 2009). Because friendships and cliques represent two distinct theoretical contexts of interaction, it was important to run them in two separate MANOVAs in order to be able to meaningfully interpret the results when examining the differences between the four extreme groups.

The following analyses were conducted using a subsample of 308 participants who had been identified as either highly relationally aggressive, or non-aggressive. As with the earlier analyses, the highly relationally aggressive sample was comprised of the children (16 boys, and 31 girls) who scored above 0.5 *SD* on relational aggression and below the mean on physical aggression. Additionally, a group of non-aggressive children was identified. This group was comprised of participants whose reported relational and physically aggressive behaviour was lower than the mean of the sample. Using these criteria, 122 boys ($M = 1.28$, $SD = 0.32$, criterion cut-off for relational aggression = 2.1, criterion cut-off for physical aggression = 1.38), and 139 girls ($M = 1.40$, $SD = 0.40$, criterion cut-off for relational aggression = 2.22, criterion cut-off for physical aggression = .91) (all scores out of a maximum of 5 and minimum of 1) were identified.

It should be noted that substantially more children were classified as non-aggressive compared to highly relationally aggressive. Had the criteria been less stringent, more even groups may have been established, however those other groups would not have represented such a behaviourally distinct group of children, making it difficult to interpret the results of the

analysis in a meaningful way. To compensate for the differences in the group sizes, Hochberg's GT2 test was used as the test of significance, which was designed specifically to deal with uneven group sizes (Dunnett, 1980).

MANOVA for friendship characteristics. A MANOVA was conducted examining six characteristics of participants' friendships as dependent variables, and behavioural classification and gender as the independent variables. The friendship characteristics included the number of friends, number of reciprocal friends, positive communication, positive activity, conflict, and conflict resolution. The significant differences in the friendship characteristics of the groups were followed up with multiple comparisons in order to identify specific differences.

Assumptions. The homogeneity assumption was met for the multivariate test (*Box's M* = 90.13, $F(63, 8964) = 1.30$, p = n.s.), and the homogeneity assumption was met for all univariate analyses (Levene's test p = n.s.), with the exception of positive communication ($p < .01$). This indicated that the error variance of the positive communication variable was not equal across all groups. This violation was further investigated using Hartley's F_{max} test, however the variance of positive communication still violated the assumption. The decision was made to retain the variable in the model because it represented a difference that has been identified by other researchers (Lopez, Olaizola, Ferrer, & Ochoa, 2006). In order to address the violation, the procedure suggested by Tabachnick and Fidell (1983) to decrease α from .05 to .025 was used.

Analysis. The multivariate analysis found a main effect of gender ($F(6, 281) = 6.70$, $p < .01$) indicating that overall, boys and girls had significantly different friendship characteristics. However no overall main effect of behavioural classification was found ($F(6, 281) = .31$, p = n.s.), indicating that there were no significant differences between highly relationally aggressive children and non-aggressive children. No significant interaction between gender and behavioural

classification was identified either ($F(6, 281) = 1.70, p =$ n.s.). Follow-up univariate analyses found that girls had significantly more reciprocal friends than boys ($F(1, 286) = 6.37, p = .01$). Girls were also found to engage in significantly more positive communication with their best friend than did boys ($F(1, 286) = 15.30, p < .01$). No significant univariate interactions between gender and friendship characteristics were found.

MANOVA for clique characteristics. A MANOVA was conducted examining four characteristics of participants' cliques as dependent variables, and behavioural classification and gender as the independent variables. The clique characteristics included individuals' centrality, clique centrality, clique size, and clique density. The significant differences in the clique characteristics of the groups were followed up with multiple comparisons in order to identify specific differences.

Assumptions. The assumption of homogeneity was met for the multivariate test (*Box's* $M = 41.09, F(30, 10095) = 1.29, p =$ n.s.), thus Pillai's Trace was used to assess significance in the following analysis (Field, 2009). Additionally, the assumption of homogeneity was met for all univariate analyses (Levene's test $p =$ n.s.).

Analysis. The multivariate analysis found no main effect of gender on clique characteristics overall ($F(4, 284) = 2.16, p =$ n.s.), however a main effect for behavioural classification on clique characteristics overall was found ($F(4, 284) = 3.64, p < .01$). No significant overall interaction between gender and behavioural classification was identified ($F(4, 284) = .20, p =$ n.s.). Univariate analyses found that girls had significantly denser cliques than boys ($F(1, 287) = 5.86, p = .02$), and that relationally aggressive boys and girls were significantly more likely to belong to a central clique than their non-aggressive peers ($F(1, 287) = 11.98, p < .01$).

Discussion

Overview

The primary goal of the study was to determine if there were differences between the friendships and cliques of relationally aggressive boys and girls, and their non-aggressive peers. This study has been the first to examine the value of specific clique (individual's centrality, clique centrality, clique size, and clique density) and friendship characteristics (number of friends, number of reciprocal friends, and aspects of friendship quality including: positive communication; positive activity; friendship conflict; and conflict resolution) for predicting children's relationally aggressive behaviour. In addition, although the literature examining the antecedents of girls' relational aggression has grown dramatically over the past ten years, studies of this nature that include boys are very new. This study has been one of very few that has explored potential gender differences and similarities beyond the relative prevalence of the behaviours and should be used as a basis for future research in this area.

Two very important findings emerged from the present study. This study represents the first time a research project has identified the seemingly different value of the friendships and cliques in the prediction of relational aggression for girls and boys. That said, it was striking that boys and girls shared so many non-significant predictors of their friendships and cliques in the prediction of relational aggression. Thus, although gender differences were identified, it is important to keep in mind that boys and girls share much more in common than has sometimes been suggested.

Friendships. It was hypothesized that relationally aggressive girls and boys would have more friends than their non-aggressive peers because of Neal's (2007) theory that the more social connections children have, the more opportunities children would have to use relationally

aggressive behaviour. The findings of the present study however did not support this initial hypothesis. Both the number of friends that children had, and the number of reciprocal friends children had were not found to be significantly related to the relationally aggressive behaviour of either boys or girls in the present study. The correlational analysis suggested that there may have been a weak gender difference trend in the number of friends overall of relationally aggressive children. Although relational aggression and number of friends were not correlated at all for boys, there was a trend suggesting that girls who were relationally aggressive had fewer friends than their peers. There has been very little study of the relationship between the number of friends children have and their relationally aggressive behaviour. The limited work that has been published on the number of friends that relationally aggressive children have has been based on the assumption that greater numbers of social connections may facilitate more relational aggression (Neal, 2007). It would appear as though the number of friends that children had was not as important a factor in the manifestation of relationally aggressive behaviour as the quality of those friendships. However, the null finding that number of friends was not significantly associated with relational aggression was similar for both boys and girls.

Based on the findings of previous researchers who have examined the association between relational aggression and friendship quality (Bagwell & Coie, 2003; Cillessen et al., 2005; Rose, Swenson, & Carlson, 2004; Soenens et al., 2007; Spence, 2002), it was hypothesized in the present study that relationally aggressive children would have more conflict within their best friendships than their non-aggressive peers. The results of the study supported this hypothesis, finding that children who reported higher levels of conflict within their best friendships were more likely than their peers to engage in relationally aggressive behaviour. The reasons why relationally aggressive children have more conflict within their best friendships are

not well understood, however quantitative work (Delveaux & Daniels, 2000) and qualitative studies that have interviewed relationally aggressive children (Owens et al, 2000a; Trant, 2009) or children victimized through relational aggression (Owens et al., 2000a; Simmons, 2002) have suggested that relationally aggressive children's desire for control often leads to conflict within their social relationships. There has been indication that children who choose to use relationally aggressive means to assert their will are very concerned with monopolizing the decisions made within their friendships or clique (Trant, 2009), and when a friend expresses a dissenting opinion, it often precipitates a conflict in which anger is involved (Owens et al., 2000; Simmons, 2002; Trant, 2009). When a child is angry (Björkqvist et al., 1992; Crick & Grotpeter, 1995) and has a high desire for control (Delveaux & Daniels, 2000), that child may be more likely to resort to relationally aggressive rather than pro-social strategies in order to resolve the conflict (Owens et al., 2000; Simmons, 2002; Trant, 2009).

In addition to friendship conflict, it was hypothesized that, in line with previous research (Cillessen et al., 2005; Murray-Close et al., 2007), relationally aggressive girls would have higher reported positive friendship qualities than both relationally aggressive boys and their non-aggressive peers. As predicted, positive communication predicted girls' but not boys' relational aggression. In the present study, positive communication included ratings of intimacy, an aspect of friendship that has long been associated with relationally aggressive behaviour for girls (Crick & Nelson, 2002; James & Owens, 2005; Simmons, 2002; Yamasaki & Nishida, 2009). Because of the things friends reveal to each other when they are close, more intimacy has been thought to provide aggressive friends with 'social ammunition' that can be used to harm the target.

There has been some work conducted on the association between relational aggression and both conflict and pro-social attributes (Delveaux & Daniels, 2000; Rose et al., 2004). Girls

whose friendships are characterized by both high levels of conflict and high levels of pro-social qualities are what are termed 'bi-strategic' (Hawley, 2003). These are girls who appear nice to outsiders and highly pro-social but engage in high levels of relational aggression as well (Hawley, Little, & Card, 2007), and there is also evidence to suggest that their friendships are less stable than those of their peers (Parker & Seal, 1996).

Although it was predicted that all aspects of positive friendship quality would be associated with relationally aggressive behaviour for girls but not boys, positive activities with a best friend (including playing together and sharing) were not significantly related to relationally aggressive behaviour for either boys or girls. There has been no published research that has explored the connection between positive activities and relational aggression, so at this time it is only possible to speculate the reason for the insignificant finding. Perhaps although relationally aggressive girls appear to be pro-social individuals, they prefer to collect information that can be used against others rather than actually showing that they care about their friend through their actions. Relationally aggressive girls may then "talk a big game", but be no more helpful than their non-aggressive peers to their friends. There is some support for this theory, as qualitative researchers (Simmons, 2002; Trant, 2009) have found that relationally aggressive boys and girls often make promises to their friends that they rarely keep. Often these promises are used by the relationally aggressive child as a way to string along and maintain that friends' loyalty, but avoid having to invest anything themselves into the relationship (Simmons, 2002).

The final friendship quality component in the present study, conflict resolution, was not found to be a significant predictor of relational aggression for either boys or girls. Conflict resolution has not been reported as a significant predictor of relationally aggressive behaviour in previous studies that have used the FQQ (Grotpeter & Crick, 1996). It was included in the

analyses in the present study however, as previous work (Trant, 2009) has suggested gender differences in the conflict resolution strategies of boys and girls. Trant (2009) interviewed children and adolescents about relationally aggressive conflicts that occurred within their friendships, and whether and how these conflicts were resolved. In that study, boys often reported that they did not actively resolve the conflicts but tended to let them be forgotten, whereas girls were more likely to use active resolution strategies such as talking it, apologizing and forgiving the perpetrator to deal with the incidents within their friendships. The results however indicated that conflict resolution had little to do with children's relationally aggressive behaviour.

The findings of the present study did not support many of the hypotheses of the present study, however the inaccurate hypotheses were the result of so little work having been conducted in the area. Some of the unsupported hypotheses may also be attributed to the lack of power in the extreme groups analyses, as so few relationally aggressive children were identified.

Although not significant, a trend was identified in the number of friendships relationally aggressive children had. The direction of the trend suggested that for girls, relational aggression might have been associated with having fewer friends than for boys. In terms of friendship quality, conflict was found to significantly predict relational aggression for children and positive communication uniquely predicted relational aggression for girls. The results of the value of friendship characteristics in the prediction of relational aggression clearly indicate that both boys' and girls' level of friendship conflict, and girls' positive communication can be used as indicators of relational aggression. With this in mind, although the reasons for the predictive value of these indicators has been speculated upon, future research must be conducted to test the

theories and findings developed from the limited qualitative work (Owens et al., 2000a; Simmons, 2002; Trant, 2009), most of which has been conducted exclusively with girls.

Cliques. In addition to the friendships of relationally aggressive children, the present study also explored the value of children's cliques in the prediction of their relationally aggressive behaviour. It was hypothesized that relationally aggressive boys and girls would be significantly more likely to be central members within their cliques than their less aggressive peers because of their desire for control (Delveaux & Daniels, 2000), and their dominant behaviour (Owens et al., 2000a). The findings of the present study did not support this hypothesis however, indicating that there was no significant association between participants' within-clique centrality and their relationally aggressive behaviour. Previous research on the association between within-clique centrality and relational aggression has been limited. Members of the same clique have often been found to engage in similar levels of aggressive behaviour as their clique members (Huttunen & Salmivalli, 1996; Salmivalli & Kaukiainen, 2004), however Lansford et al. (2009) found that in terms of relational aggression, this phenomenon was only found within the central cliques of girls, but not boys. The connection between an individual's centrality and relational aggression is likely moderated by the social norms within particular cliques. In the present study, relationally aggressive individuals seemed to be clustered within particular central cliques rather than distributed equally within the peer network, however, an interesting trend was identified in the correlational analyses. The correlational analyses (see Table 3) suggested that for girls in the study, relationally aggressive behaviour may have been correlated with higher individual centrality, however for boys this was not the case. However, the null finding was not without meaning.

Although previous studies have found individuals' within-clique centrality to be a significant predictor of relational aggression (Lansford et al., 2009; Xie et al., 2002), no significant association between within-clique centrality and relational aggression was identified in the present study. A possible reason for the null finding may be that the acceptability of relational aggression within the clique may vary from clique to clique. Researchers have found that different group norms are established within different social cliques (Casas et al., 2006; Henrich, Kuperminc, Sack, Blatt, & Leadbeater 2000; Lewin et al., 1939; Suomi, 2005), and thus children's attitudes about the acceptability of relationally aggressive behaviour likely differ from clique to clique. In cliques that tolerate or embrace relationally aggressive behaviours, children who use relational aggression would have the opportunity to gain favour within their clique and become a central member, however in cliques that do not tolerate relational aggression, those children would be either removed from the group, or be pushed to the periphery. In the present study all of the cliques were included in the same analysis, and group attitudes towards the behaviour were not controlled for. The failure to identify individuals' centrality as a significant predictor for relational aggression may then be attributed to the inability to control for the group attitudes, and thus the centrality of relationally aggressive children in different cliques. Future research should consider examining not only the centrality of the individuals within their cliques, but also the clique's attitudes towards the use of relational aggression in order to better understand the relationship.

In the present study, it was hypothesized that relationally aggressive children would be members of more central cliques than their non-aggressive peers, and that this relationship would be stronger for relationally aggressive girls than boys. The findings of the study confirmed the hypothesis, indicating that not only were relationally aggressive children more likely to be

members of central cliques than their non-aggressive peers, but that the relationship was equally strong for both boys and girls. Children who belonged to more central cliques were more likely to be reported as relationally aggressive by their classroom teachers than their peers in peripheral cliques. There was no significant gender difference found for the predictive value of clique centrality, however the correlations suggested that the association between clique centrality and relational aggression might have been slightly stronger for girls than for boys.

The results indicated that clique centrality could be used to predict children's relational aggression replicated the findings of previous studies. A number of previous studies have found that relationally aggressive individuals were more central (Ellis & Zarbatany, 2007; Xie et al., 2002), and higher in status than their non-relationally aggressive peers (Andreou, 2006; Cillessen & Mayeux, 2004; Cillessen & Rose, 2005; Crothers et al., 2005; Hoffman, 2009; Parkhurst & Hopmeyer, 1998). Additionally, members of central cliques have been found to be more popular than their peers in peripheral cliques (Cairns et al., 1985; Huttunen & Salmivalli, 1996). In the future, it would be interesting to examine the relationship between relational aggression, clique centrality, and clique stability. Relationally aggressive members of central cliques have been found in the literature to have less stable hierarchies within their cliques (Pronk & Zimmer-Gembeck, 2010), meaning that member of high status cliques often compete for power within their groups. However, studies on the stability of cliques that are both relationally aggressive and central, have found that this phenomenon is more common in the cliques of highly central girls than boys (Baines & Blatchford, 2009; Eder, 1985; Pronk & Zimmer-Gembeck, 2010). Future explorations of this dataset may consider examining these relationships.

In addition to centrality, clique size and clique density were also examined in the present study. Although it was hypothesized that relationally aggressive children would be members of

small to moderate sized cliques, the results of the present study found no significant association between clique size and relational aggression for either boys or girls. This was the first study to have explored whether children's clique size could be used as a predictor of relationally aggressive behaviour. The results of the present study did not support Neal's (2007) theory that smaller, rather than larger, cliques would encourage the use of relational aggression. Although the present study failed to identify an association between clique size and relational aggression, this has been an area in which research is seriously lacking, and even negative results add to the understanding of the role of relational aggression in children's cliques. As with size, clique density was also found to be unrelated to the teacher-reported relationally aggressive behaviour of boys and girls. Density had been explored in a single previously published study of relational aggression (see Green et al., 1996). That study had examined the association between relational aggression and clique density in a sample of 148 undergraduate students, and found that higher clique density was related to increased use of relational aggression within those cliques, however the same association for children was not supported by the findings of the present study.

Summary. The results of the present study indicated that the friendships and cliques of children may be used to predict the relational aggression of children, however these characteristics may be more valuable in the prediction of the behaviour of girls than of boys. The variance accounted for by the regression models, though limited, does indicate that by simply examining particular structures of children's friendships and cliques, researchers can partially predict their engagement in relational aggression. Although the variance accounted for by the models was found to be modest, the study's results indicate that there are structural predictors for children's behaviour. Additionally, a handful of specific predictors including friendship conflict and clique centrality were found to be more instrumental than other

characteristics of children's relationships, and that positive communication within children's best friendships may be a unique predictor for girls' relationally aggressive behaviour.

Lessons Learned

Over the course of this study, there have been a few lessons learned. The most important was that it is difficult to create an extreme groups design with sufficient numbers of relationally aggressive boys and girls when using a random sample of children from schools. Although relational aggression is a common behaviour for children in elementary school to try on, very few children were identified in the dataset who used relational aggression as their predominate social strategy. In the present study an effort was made to compare highly relationally aggressive children with their peers. Although some of the analyses held, the extreme difference between the number of children identified as relationally aggressive (16 boys, 31 girls) and those as non-aggressive (122 boys, 139 girls), created a situation in which it was difficult to identify significant interactions between relationally aggressive behaviour and gender. The difficulty in establishing reasonably comparable groups indicates that extreme groups designs may be less effective ways of conducting research of this nature do to the lack of power in the design. It should be noted that a main effect of behavioural classification was found for clique centrality, so this design was able to identify large differences. However, future research should consider revising the extreme groups design.

The dataset used in the present study had been collected in 2001, and for this reason, some may consider the data out-dated. There is however no evidence suggesting that the rates of relational aggression have varied over the past ten years (Card et al., 2008). Additionally, there has also been very little change in the way that boys and girls organize themselves in groups, and very little differences between the social networks of classrooms ten years ago and those today.

It remains unknown whether the association between relational aggression and children's friendship and clique characteristics has changed over the past ten years as so little research has previously examined this relationship.

Another interesting development over the course of conducting the project was the realization that there were issues with the discriminant validity of the FQQ's hypothesized subscales. This did not pose any serious problems however, as the four factors created from the principle component analysis yielded more robust subscales that also retained their theoretical basis. Rather than this being a drawback, it would be advisable to continue using these four new subscales in the future rather than the nine proposed by Parker and Asher (1993).

The use of teacher ratings of children's behaviour was found to be an effective and relatively objective measure of relational aggression. The results of the present study did not indicate any significant gender bias in the identification of relationally aggressive behaviour. Although teacher-reports rely on a single well-informed observer for the behavioural ratings of their entire class, the results of the comparison of boys and girls' relational aggression indicated that this was not a problem in the present study.

The most interesting findings of the present study emerged from the separate regressions that were run for boys and girls. Although these analyses revealed both the overall value of the social network characteristics, and the value of particular predictors for boys' and girls' relational aggression, by treating boys and girls as separate populations it was impossible to directly compare them. Despite this limitation of the analysis, it enabled the overall variance that the characteristics of children's friendship and cliques accounted for to be identified. The results of this study were intended to be a first step for research into the gender similarities and differences in the antecedents of relational aggression.

Implications for Interventions and Future Directions

The study revealed that the friendships and cliques of girls are implicated in their relationally aggressive behaviour, however this was not the case for boys. Current intervention programs that address relational aggression have been developed predominately on the assumption that friendships and cliques of relationally aggressive children play an equal role in their behaviour. Although the findings of the present study found that relationally aggressive children have very similar friendships and cliques, the role of these relationships in their use of relational aggression differs substantially. The results of the present study indicate that although it may be advantageous to focus interventions for girls on their social relationships, such programs would have little impact on the relationally aggressive behaviour of boys.

The next step in this course of research would be to determine why the social networks of girls and boys play differing roles in their use of relational aggression, and what other antecedents there are for boys. Although much is known about the dynamics of relational aggression and the role it plays in the lives of girls, there has been only one published study (see Pronk & Zimmer-Gembeck, 2010) that has attempted to understand the meaning of relational aggression for boys. In addition, very little is still known about the basic structures of relationally aggressive children's social relationships. This is the first study that has attempted to examine the relationship between relational aggression and such things as the size of those children's cliques. It may also be interesting to include peer attitudes towards relational aggression, and other significant predictors of regression such as jealousy (Delveaux & Daniels, 2000) in future studies of relational aggression. This brings us to the final suggestion for future directions.

The research of relational aggression has become increasingly consumed with examining ever smaller pieces of the puzzle, however what is needed is a return to the big picture to determine how best to amalgamate multiple predictors into an effective tool that can be used to identify at-risk children. Additionally, as researchers and practitioners we must begin to explore not only the individual and ecological factors that allow relational aggression to flourish, but also factors that are incompatible with these behaviours in order to reduce the prevalence of the behaviour.

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Appendix A

Parental Consent Letter and Consent Form

Dear Parents/Guardians,

As you know, recently there have been several instances in Canadian schools where serious bullying and aggression have led to tragic consequences. As individuals concerned about children and youth, we find ourselves in the position of not really understanding how social relationships at school and in class develop and how such tragic consequences may occur. We are writing to ask your help by allowing your child to participate in a study that will increase our understanding of how children use aggression within their friendships and how the peer group may support or condone such behaviours. We are interested not only in the more obvious form of bullying and aggression, such as hitting and name calling, but also in more subtle but equally hurtful acts such as exclusion form the group or threatening to reveal to others' personal information.

This study will take place at the school your child attends during the month of May 2001. Teachers will be asked to complete a rating scale of children's social behaviour (e.g. this child is kind to peers; this child tries to dominate or bully peers). Children will be asked to complete a questionnaire identifying who their friends are, and who they like to play with. They will answer questions that examine the quality of the friendship of the person who they spend the most time with at school (e.g. my friend plays with me at recess; my friend tells secrets to other kids when he/she is mad at me). Finally, the children will be asked to list all the groups of children in their grade who associate with one another. The administration of these questionnaires will take at the most forty-0five minutes of the children's class time. Scheduling of the administration of these questionnaires will be at the teacher's convenience to minimize interference with daily class routine.

This project has been approved by the Carleton University Ethics Committee, the Ottawa-Carleton District School Board, and the principal of your child's school. Study results will be reported in ways that ensure complete confidentiality and anonymity of individual participants, and will be reviewed only by the researchers. No school will be identified by name and results will not appear in any school records. For interested parents, general group results of the study will be made available once the data has been analysed.

Participation in this study is completely voluntary and your child may choose to not answer any question as well as to withdraw at any time. Additionally, only students with written permission will be allowed to participate. Children will be encouraged to discuss any concerns with either their parents or teacher in addition to being provided an opportunity to talk with the school guidance counsellor or vice-principal. We will provide parents and teachers with a list of external resources and books that deal with bullying and aggression. Furthermore, should parents or teachers desire additional support or information an in-service session or material will be offered upon their request. We would be grateful for your cooperation. However, whether or not you wish to have your child participate in this study, please complete the attached form and have your child return it by next week as we wish to be sure that you received this request. If

you have any questions, please feel free to contact us at the number listed below. Should you have further concerns with regard to the ethics, please feel free to contact Dr. Monique Sénéchal, Chair, Department of Psychology Ethics Committee, 520-2600, ext. 1155). If you have other concerns please contact Kim Matheson, Chair, Psychology Department, 520-2600, ext. 2648. Thank you for your assistance.

Sincerely,

Linda Spence, M. A.
Ph.D. Candidate
Psychology Dept.
Carleton University
(723-2669)

Tina Daniels, Ph.D.
Assistant Professor
Psychology Dept.
Carleton University
(520-2600, ext. 2686)

CONSENT FORM

The information collected for this project is confidential and protected under the Municipal Freedom of Information and Protection of Privacy Act, 1989

I have read and understand the request for my son/daughter to participate in the study of the dynamics of children's peer relationships. I have discussed it with my son/daughter and:

_____ I give permission for my child to participate.

_____ I do not give permission for my child to participate.

Date: _____

Name of Child: _____ Age: _____
(Please Print)

Name of Parent or Guardian:

_____
(Please Print)

Signature of Parent/ Guardian: _____

Please have you child return the signed consent form to school by next week. Thank you.

Appendix B

Ratings of Children's Social Behavior Scale – Teacher Form
(Crick, 1996)

Subscales

Pro-social behaviour	1,4,8,14
Physical aggression	3, 6, 9, 12
Relational aggression	2, 5, 7, 10, 11, 13, 15

Ratings of Children's Social Behaviour- Teacher Form

Child's Name Child's Sex: Male or Female?

Teacher's Name _____ Grade _____

	Never				Almost true always true
1. This child says supportive things to peers.	1	2	3	4	5
2. When this child is mad at a peer, he or she gets even by excluding the peer from his or her clique or play group.	1	2	3	4	5
3. This child hits, shoves or pushes peers.	1	2	3	4	5
4. This child tries to cheer up peers when they are sad or upset about something.	1	2	3	4	5
5. This child spreads rumors or gossips about some peers.	1	2	3	4	5
6. This child initiates or gets into physical fights with peers.	1	2	3	4	5
7. When angry at a peer, this child tries to get other children to stop playing with the peer or to stop liking the peer.	1	2	3	4	5
8. This child is helpful to peers.	1	2	3	4	5
9. This child threatens to hit or to beat up other children.	1	2	3	4	5
10. This child tries to get others to dislike certain peers by telling lies about the peers to others.	1	2	3	4	5
11. When mad at a peer, this child ignores the peer or stops talking to the peer.	1	2	3	4	5
12. This child tries to dominate or bully peers.	1	2	3	4	5
13. This child threatens to stop being a peer's friend in order to hurt the peer or to get what he or she wants from the peer.	1	2	3	4	5
14. This child is kind to peers.	1	2	3	4	5
15. This child tries to exclude certain peers from peer group activities.	1	2	3	4	5

Appendix C

Social Cognitive Map Procedure

We would like to know more about who hangs around with each other in your grade. On

your next two sheets of paper, please write down the names of all the people from your class or grade who hang around together. Some kids may hang out with more than one group. If so, put their names down in all groups they hang around with. You should write kids' first names only, unless there are two kids with the same first name, then you should also write the first initial of the kid's last name.

Make sure that you include yourself in any of the groups that you hang around with.

(Note: Children are provided with enough lines to write down 8 groups. They don't have to complete the 8 groups if they can only think of 3 or 4. If they have more than 8 groups, have them tum the paper over and continue listing groups of kids on the back.)

Write down the names of all the people from your class or grade who hang around together. Some kids may hang out with more than one group. If so, put their names down in all groups they hang around with. You should write kids' first names only, unless there are two kids with the same first name, then you should also write the first initial of the kid's last name.

Make sure that you include yourself in any of the groups that you hang around with.

Group A	Group B
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Group C	Group D
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
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Group E

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Group F

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Group G

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Group H

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_____

Are there any people in your class or grade who don't hang around with a particular group? Please list their names below.

_____ _____
_____ _____

Appendix D

Friendship Nomination Measure (Parker & Asher, 1993)

Friendships

We would like to know who your close friends are. Please write down the first and last names of your best friends **in your grade** (at this school):

First Best Friend: _____ _____
First name Last name

Second Best Friend: _____ _____
First name Last name

Next Best Friend: _____ _____
First name Last name

1. List up to three kids who you especially like to spend time with **from your class.**

   _____ _____ _____

2. List up to three kids who you least like to spend time with **from your class.**

   _____ _____ _____

Appendix E

Item Assignments for the Friendship Qualities Questionnaire

Subscales	Items
Validation and Caring	8, 22, 39
Conflict I (Subject Conflict)	9, 23, 38
Conflict II (Friend Conflict)	14, 28, 42
Compassion and Recreation	13, 27, 43
Help and Guidance	1, 15, 30
Intimate Exchange I (Subject Intimacy)	4, 18, 33
Intimate Exchange II (Friend Intimacy)	7, 21, 37
Conflict Resolution	3, 17, 35

Instructions to Students for Friendship Quality Questionnaire

Now I am going to read you some sentences about friendships and have you answer these questions about your friendship with this person. It is important that you answer these questions about the way your friendship is now and not how you want it to be.

Some of the sentences might be always true for your friendship while other sentences might not at all be true for your friendship. All you have to do is after I read the sentence put an "X" in the box that tells how true each sentence is about your friendship. There are no right or wrong answers, just answer each sentence honestly.

We will not tell anyone about what you have said, not your friend, your teacher, or the school. If you want to, you can discuss your answers with your parents.

THINGS I DO WITH MY FRIEND

We would like to ask you some questions about your friend that you spend the most time with so that we can find out what your friendship is like. First, write down the **first name and last initial of the friend in your grade at your school** that you spend the most time with.

The friend that I spend the most time with is _____.

Please put an "X" in the box that tells how true each sentence is about your friendship.

Example

A. I like to play soccer with my friend.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

B. My friend and I both like to clean our rooms.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

1. My friend gives me advice with figuring things out.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

3. It is easy to make up quickly with my friend if we have a fight.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

4. I can tell my friend about my problems.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

7. My friend can tell me his/her secrets.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

8. My friend makes me feel important and special.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

9. I get mad at my friend a lot.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

13. My friend does fun things with me.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

14. My friend gets mad at me a lot.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

15. My friend shares things (like books or Nintendo games) with me.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

17. It is easy to get over arguments with my friend.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

18. I can tell my friend my secrets.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

21. My friend can talk with me about the things that make him/her sad.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

22. My friend tells me I am good at things.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

23. I disagree with my friend a lot.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

27. My friend plays with me at recess.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

28. My friend gets annoyed with me a lot.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

30. My friend does special favours for me.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

33. I can talk with my friend about the things that make me sad.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

35. It is easy to talk with my friend about how to get over being mad at each other.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

37. My friend can tell me about his/her problems.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

38. My friend annoys me a lot.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

39. My friend says he/she's sorry if he/she hurt my feelings.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

42. My friend disagrees with me a lot.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

43. My friend picks me as a partner for things.

Not At All True	Hardly Ever True	Sometimes True	Almost Always True	Always True

Appendix F

Oral Debriefing for Children

I would like to thank you very much for helping us today. We know that some children get along really well, but that sometimes kids argue or are mean to other kids. What we are trying to find out is which children spend time together and how they get along with their close friends and other friends in their grade. If we can find out, then maybe we can find a way to help kids to get along better and be nicer to each other. The answers that you have given us will help us to do this. So, we want to thank you very much for sharing your thoughts and feelings with us today. The ideas that you have shared will be used to help other children in the future. I would like to remind you that we will not tell anyone about what you have said about them. Likewise, we are asking you to not discuss your responses with other children.

Filling out these surveys may have raised some concerns. Do you have any questions or is there anything anyone would like to talk about? (If children raise their hands, then add the caution that they are not to mention anyone's name). If you would like to talk about something we have discussed today you can talk either to your parents or your teacher. They have also been given a list of other people who may be helpful in answering some of your questions or concerns. Also, if you would like to talk to the school guidance counsellor in private, you can fill out one of these forms (show form) that will be left on your teacher's desk (or other place agreed upon by the teacher). Just return it to your teacher within the next couple of days and then arrangements will be made.

Self-Referral Form:

I would like to talk to the school guidance counsellor about some of the things we were asked questions about.

Name: _____

Appendix G

Debriefing Letter for Parents

Dear Parents/Guardians,

We would like to take this opportunity to thank you for permitting your child to participate in this study of children's social networks. While a good deal is known about the positive aspects of children's friendships, little is known about the organization of and support provided by friends and how conflict is handled within the social network.

We anticipate that the information gained from this study will provide researchers with a better understanding of preadolescents' friendships, and affiliations within the larger social networks (e.g., how friends support one another, how conflict is minimize).

All of the individual children's responses will be kept confidential but, if you have any further questions about this study, please feel free to contact us at the numbers listed below. There was an opportunity at the end of the session for children to ask any questions. Children have also been provided with the opportunity to discuss any specific concerns with the school guidance counsellor. Furthermore, they have been encouraged to discuss any concerns with their parents and/or teacher. Attached you will find a list of external resources that deal with bullying and aggression. Should parents or teachers desire additional support or information an in-service session or material will be offered upon request. Should you have any further concerns regarding the ethics, you may contact Dr. Monique Sénéchal (Chair, Department of Psychology Ethics Committee, 613-520-2600, ext. 1155) or Dr. Kim Matheson (Chair of the Department of Psychology, 613-520-2600, ext. 2648).

Thank you once again for your participation.

Sincerely,

Linda Spence, M.A.
Ph.D. Candidate
Psychology Dept.
Carleton University

Tina Daniels, Ph.D.
Assistant Professor
Psychology Dept.
Carleton University
520-2600, ext. 2686

Appendix H

Cronbach's Alphas of FQQ (Parker & Asher, 1993) Subscales

The table below presents the Cronbach's alphas for the 9 subscales in the present study. The Cronbach's alphas as reported by Grotpeter and Crick (1996) are also included for comparison

Subscale	Cronbach's alpha
Validation and Caring	
Present Study	.73
(Grotpeter & Crick, 1996)	(.70)
Conflict I	
Present Study	.65
(Grotpeter & Crick, 1996)	(.87 Conflict Combined)
Conflict II	
Present Study	.66
(Grotpeter & Crick, 1996)	(.87 Conflict Combined)
Compassion and Recreation	
Present Study	.58
(Grotpeter & Crick, 1996)	(.68)
Help and Guidance	
Present Study	.62
(Grotpeter & Crick, 1996)	(.68)
Intimate Exchange I	
Present Study	.80
(Grotpeter & Crick, 1996)	(.81)
Intimate Exchange II	
Present Study	.83
(Grotpeter & Crick, 1996)	(.81)
Conflict Resolution	
Present Study	.69
(Grotpeter & Crick, 1996)	(.68)