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Measuring Relational Aggression in Middle Childhood in a Multi-Informant Multi-Method Study

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Abstract Relational aggression includes behaviors intended to damage the social status and relationships of others. Recent work has demonstrated problematic outcomes for both aggressors and victims. These behaviors have been associated with psychopathology, including early borderline personality pathology. Despite the importance in better understanding these behaviors, numerous questions remain regarding the validity of different informants and methods for assessing relational aggression. In a community-based sample of 330 families evenly split by child gender (50.3% female), relational aggression data was assessed via multiple informants (mother, father, and self) and multiple methods (questionnaire and interview). The results suggest that mothers and fathers show higher agreement for girls' relational aggression than for boys' and that the presence of gender differences depends on the method of measurement. In addition, both mothers and fathers reports of relational aggression uniquely predicted internalizing behaviors, externalizing behaviors, and social problems, with fathers' reports emerging as a particularly robust predictor. Relational aggression scores accounted for a greater amount of predicted variance in externalizing behaviors than in the other two domains. Results are discussed in the context of the utility of multiple informants and the conceptualization of relational aggression in a broader externalizing psychopathology framework.

Keywords Relational aggression · Indirect aggression · Borderline personality traits · Multiple informants · Externalizing behaviors · Social problems

Research on aggressive behavior in children and adolescents increasingly has turned to investigation of specific types of aggression in order to better parse this heterogeneous domain of behavior (e.g., Little et al. 2003; for review see Dodge et al. 2006). Relational aggression, a construct which is related to social and indirect aggression, is one subtype of aggressive behavior that has formed the basis for a growing area of research over the last several decades (Archer and Coyne 2005; Crick and Zahn-Waxler 2003). Relational aggression refers to behaviors intended to damage the social status or interpersonal relations of another and encompasses behaviors such as threats of friendship withdrawal, malicious gossiping and social exclusion (Crick and Grotpeter 1995). The issue of gender was initially central to the topic of relational aggression as it was developed out of concerns that historical conceptualizations of physical aggression did not encompass aggressive behaviors that may be more typical of females (e.g., Björkqvist 2001; Crick 1996). Despite this original conceptualization, evidence for the presence of mean-level gender differences in relational aggression has been equivocal (Archer and Coyne 2005) and the type and source of measurement has been raised as one possibility for different findings across studies (Card et al. 2008).

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Thus, in the present study, we take a closer look at gender differences in informants and targets across different methods of measuring relational aggression. First, we turn to the topic of relational aggression and personality pathology, in line with the current special section.

Relational Aggression and Personality Pathology

Relational aggression is not currently captured in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association 2000) as a form of psychopathology. There is presently debate over whether relational aggression should be considered "typical" or "atypical" behavior (Keenan et al. 2008; Tackett et al. 2009b). Multiple studies have now shown maladaptive effects of relational aggression, however, for both victims of these behaviors (Crick et al. 2001; Prinstein et al. 2001; Sullivan et al. 2006) and perpetrators (Card et al. 2008; Crick 1996; Crick et al. 2001; Ostrov 2008; Storch et al. 2004). In addition, multiple studies have shown that relationally aggressive behaviors covary highly with other forms of externalizing behaviors (Baker et al. 2007; Card et al. 2008; Lahey et al. 2004; Loeber et al. 2009; Zalecki and Hinshaw 2004). Other research has found that relational aggression shows higher associations with internalizing problems than do other forms of aggressive behaviors (Card et al. 2008), suggesting that it may be related to multiple psychopathology outcomes in children and adolescents (Crick, Ostrov, and Werner 2006).

The interpersonal aspects of relational aggression position it as a particularly good candidate for an early manifestation of personality pathology, which is often associated with substantial interpersonal problems. One recent investigation of a new dimensional model of personality pathology in childhood and adolescence found that all higher-order domains (emotional dysregulation, antagonism, pathological introversion, and compulsivity) showed robust connects to Social Problems as measured by the Child Behavior Checklist (Tackett and De Clercq 2009). This supports the centrality for social functioning in early personality pathology. Comorbidity patterns for early Cluster B personality characteristics (particularly antisocial and borderline traits) mirror those found for relational aggression, with connections to both externalizing and internalizing problems (Tackett et al. 2009a). Cluster B personality pathology has shown stronger links to internalizing problems for girls than for boys (Crawford et al. 2001). Further, antisocial and borderline personality disorders show patterns of gender differentiation that map on to proposed gender differentiation for physical and relational aggression (Beauchaine et al. 2009). Thus, these personality disorders show potential links to relational aggression that must be better understood.

In particular, borderline personality disorder is associated with both aggression and severe relational difficulties. Early borderline personality features have been associated with relational aggression even after controlling for depression and physical aggression in middle childhood (Crick et al. 2005). Unique associations between relational aggression and borderline symptoms have also been found in late adolescence (Ostrov and Houston 2008; Werner and Crick 1999). Relational aggression has additionally been connected to antisocial and callous-unemotional personality traits across a range of ages (Marsee and Frick 2007; Miller and Lynam 2003; Ostrov and Houston 2008; Werner and Crick 1999), consistent with the links between borderline and antisocial personality disorders found across development (Beauchaine et al. 2009). It is not yet clear whether pathological levels of relational aggression represent a risk factor for later personality disorder or a component of personality disorder that emerges in early life. Regardless, improved measurement and assessment of the construct will facilitate future research focused on elucidating these relationships.

Measurement and Assessment of Relational Aggression

Research on relational aggression in children and adolescents has frequently relied on multiple informants. Teacher and peer reports/nominations have been the most common method of measurement, largely based on the idea that these informants have access to the most accurate information about a child's relational aggression with peers (Archer and Coyne 2005). Parent and self reports, in particular, have been used less often and are often cited as less valid sources for relationally aggressive behavior (Archer and Coyne 2005; Tackett et al. 2009b). However, recent evidence has provided support for test-retest reliability, inter-informant reliability, and predictive validity for both parent and youth reports of relational aggression (Keenan et al. 2008). A recent study of adolescents in Canada supports the internal consistency of a self report measure of relational aggression (Leadbeater et al. 2006) and studies of adolescents in Germany (Little et al. 2003) and the US further support the predictive validity of self reports of relational aggression (Fite et al. 2008). In addition, one recent study found that the shared information between mother and self-report of relational aggression was substantially influenced by both additive genetic and shared environmental influences (or factors that exert common influence on siblings raised together; Tackett et al. 2009b). Further, the child's self-report contained substantial non-overlapping information that was not provided by the parent, and this additional variance was also influenced by

systematic etiologic factors including additive genetic and shared environmental influences. Although this does not speak to potential utility of this overlapping and nonoverlapping information between parent and self, it does demonstrate that both are influenced by systematic causes.

Correlations between informants for relational aggression are often quite low (Juliano et al. 2006; McNeilly-Choque et al. 1996), although numerous studies have found evidence for small to moderate correlations among informants as well. Specifically, moderate correlations ranging from 0.40–0.54 have been found for teacher-parent agreement (Ostrov and Bishop 2008), teacher-observational agreement (Crick et al. 2006a; Ostrov and Keating 2004), mother-father agreement (Casas et al. 2006), and teacher-peer agreement (Crick et al. 1997). Some of these patterns of agreement were only in the moderate range for girls, however (Crick et al. 1997; Crick et al. 2006a). Smaller but still significant correlations have also been found for teacher-teacher agreement (Bonica et al. 2003), teacher-peer agreement (Putallaz et al. 2007), and parent-self agreement (Tackett et al. 2009b) although again, in some cases this agreement was stronger for girls (Tackett et al. 2009b).

Nonoverlapping information among informants for childhood psychopathology can potentially be a measurement strength, however, to the extent that different sources are providing incremental valid information (Kraemer et al. 2003). For example, one study found that observational reports of relational aggression added significant predictive variance for deception/lying above and beyond teacher reports of relational aggression (Ostrov et al. 2008). Thus, it is particularly important to understand the utility offered by different informants and methods as well as potential biases that may limit validity of reports from a given source (Coyne et al. 2008). The equivocal results regarding gender differences point to a specific need for better understanding the differences between informants and methods for measuring relational aggression exhibited by boys and girls. For example, a recent meta-analysis found that gender differences in relational aggression favored girls via some informant reports (teachers and parents), favored boys via self report, and showed no gender differences via other sources (peer reports and observations; Card et al. 2008).

There are a number of factors that may influence the validity of various informants. Gender of the informant is one such possibility. For example, one study found that late adolescent males were more incorrect in their evaluation of relationally aggressive acts displayed by young children than were their female peers (Ostrov et al. 2005). Some informants may hold specific beliefs about normative gender patterns for the measured construct which could influence findings for or against gender differences. For example, mothers of fifth grade girls found relational aggression to be less appropriate than mothers of fifth grade boys, although this was not significant across all ages in the study (Werner and Grant 2008). This study also demonstrated potential implications of such informant cognitive schemas, such that mothers who viewed relational aggression as less appropriate manifested higher disapproval of these behaviors which accounted for greater peer acceptance. However, this pathway held only for girls, suggesting that informant cognitions may be gender-specific and could result in differential outcomes for girls and boys. In the present study, the ability to differentially examine gender of the informant and gender of the target may help elucidate these concerns.

In addition, most research utilizing parental informants has primarily relied on mother report (e.g., Brown et al. 2007; MacBrayer et al. 2003; Ostrov and Bishop 2008; Sandstrom 2007; Werner et al. 2006). However, some notable exceptions exist in the developmental and clinical literature (e.g., Casas et al. 2006; Hart et al. 1998; Nelson et al. 2008) and these studies have indicated differential effects based on the gender of the caregiver. For example, inconsistent parenting practices among fathers and mothers may influence the development of aggressive behavior (Nelson et al. 2006). That is, Chinese fathers who engaged in more psychological control (i.e., love withdrawal, guilt induction) relative to their spouses, had girls who were more relationally aggressive (Nelson et al. 2006).

Given the additional resources required in both research and clinical settings to collect information from multiple sources, it is important to determine whether distinct informants add incremental predictive power for constructs of interest. In other words, is there any utility in collecting father reports if mother reports are already available? Similar questions exist for method of data collection. Interviews are often considered the ideal assessment method in clinical settings, while questionnaires are more frequently used in research settings. Interviews typically utilize greater resources than questionnaires. Are interviews providing better information than questionnaires? To what extent do these popular methods converge? In sum, research on relational aggression must proceed with a better understanding of the utility of different informants and methods to increase interpretation of results and ability to compare findings across studies.

The Present Study

The present study had three primary objectives. First, we aimed to examine evidence for gender differences across method (questionnaire versus interview), informant (parent versus self), gender of target (boy versus girl) and gender of informant (boy versus girl, father versus mother). This will allow us to more closely look at potential gender differ-

ences and gender biases by informant. Associations among methods and informants were also compared for boys and girls. Second, to examine the potential utility of informant and method, we examined the concurrent validity for predictions of internalizing, externalizing, and social problems from all informants and methods of relational aggression. Third, we examined evidence for gender interactions in the connections between relational aggression measures and the three behavioral criteria domains.

Method

Participants

Participants in this study are a part of a larger research project examining the development of personality and behavioral outcomes in a large metropolitan area in Ontario, Canada. Participating families (N=330) were evenly split by gender (n=164 males, n=166 females) of the target child. Participation by a second caregiver was added several months after the study began, resulting in more mothers (n=303) than fathers (n=219) providing information about their child for the measures used in the present study. Target children were 118.77 months (9.9 years) on average (SD=9.08 months). Ethnic background of the child was reported by the caregiver as White (n=235, 71.3%), Multiracial (n=45, 13.6%), Asian (n=32, 9.7%), Black (n=10, 3.0%), Hispanic/Other (n=4, 1.2%) and not reported (n=4, 1.2%).

Measures

Children's Social Behavior Scale (CSBS) The CSBS is a 13-item questionnaire developed to assess physical aggression, relational aggression, and prosocial behavior. The CSBS was initially developed to utilize peer and teacher report (Crick and Grotpeter 1995) and was later adapted to be used for parent report (Casas et al. 2006; Ostrov and Bishop 2008). The relational aggression subscale includes 5 items rated on a 7-point likert scale (from 1 = "never true" to 7 = "almost always true"). An example item from the CSBS is "When angry at another kid, s/he tries to get other children to stop hanging around with or stop liking the kid." Previously reported reliability for parent report was a Cronbach's alpha of 0.67 (Ostrov and Bishop 2008). Internal consistency in the current sample was somewhat higher for mothers (α=0.76) and fathers (α=0.78). The CSBS was completed by two caregivers. Given the focus of the present investigation on role and gender of informants, we restricted data to mothers (n=303) and fathers (n=219) only and did not include data from other second caregivers (i.e., grandparents, second mother or father, stepparent).

Social Relations Questionnaire (SRQ) The SRQ is a 7-item structured interview that assesses relationally aggressive behaviors via both parent and self-report (Lahey et al. 2004). The SRQ measures behaviors on a 4-point scale (from 1 = "not at all" to 4 = "very much"). An example item from the SRQ is "Has your child ever spread rumors about someone s/he didn't like to make others not like that person, too?" Previous research has found that the 7 items make up a unitary factor across parent and self reports (Tackett et al. 2009b). Previously reported internal consistency for mother's report was Cronbach's alpha of 0.66 and for youth report was Cronbach's alpha of 0.62 (Tackett et al. 2009b). Internal consistency in the current sample was somewhat lower for mothers (α=0.58) and children (α=0.57). The SRQ was added in later stages of data collection. In addition, given the gender-specific aims of the study, only SRQ reports from mother (n=261) were used. A small number of fathers also participated in the lab visit as primary caregiver (n=35) and this data was excluded from these analyses. Finally, youth self-report on the SRQ was also obtained (N=288). The youth self-report contained the same 7 items in self-report format. Four of the SRQ items are roughly analogous to items on the CSBS. Additional items on the SRQ ask about writing critical notes about other children, making prank telephone calls to children the target child does not like, and teasing other children in a mean way.

Child Behavior Checklist (CBCL) The CBCL is a 118-item questionnaire that assesses parent's reports of their child's behavioral and emotional problems (Achenbach and Rescorla 2001). The CBCL measures eight lower-order problem domains and two higher-order problem domains: internalizing and externalizing behaviors. One of the lower-order problem domains is the social problems scale, which is not accounted for in the higher-order internalizing and externalizing behaviors scales. Extensive data on the validity and reliability have been collected on the CBCL. In the present sample, internal consistencies were calculated for internalizing problems (α=0.83), externalizing problems (α=0.88), and social problems (α=0.66). Both caregivers completed the CBCL. The CBCL was added to the study at the same time as the SRQ, later in data collection. This resulted in CBCL data from mothers (n=275) and fathers (n=208).

Procedure

Participating families were recruited using a database maintained at the University of Toronto for families interested in research and through flyers posted in the community. Once recruited, families were mailed a set of

questionnaires for two caregivers to complete prior to coming into the lab. One primary caregiver and the child then visited the lab and participated in structured interviews. Caregivers completed additional questionnaires during the visit and the child participated in a series of behavioral tasks which are not part of the current study. Interviews were conducted by trained research assistants who had gone through a 4-month training protocol prior to interviewing participants. Informed consent was obtained from the parent and informed assent using an approved script was obtained from the child. Families were compensated $30 Canadian for the complete 2.5 h lab visit and children were given two small toys.

Results

Mean-Level Differences

Significant gender differences were found for both parent informants on the CSBS scores for relational aggression. Specifically, mothers rated girls (M=8.32, SD=2.94) as higher than boys (M=7.58, SD=2.41) on the CSBS, $t(301)$=-2.41, p=.02, d=.28. Fathers also rated girls (M=9.65, SD=3.29) as higher than boys (M=8.52, SD=2.83) on the CSBS, $t(217)$=-2.74, p=.01, d=.37. No gender differences were found on the SRQ for either informant. Specifically, mothers did not rate girls (M=8.42, SD=1.49) as significantly different from boys (M=8.21, SD=1.47), $t(259)$=-1.14, p=.26, d=.14. In terms of self-report, girls (M=9.03, SD=1.90) did not rate their levels of relational aggression as different from boys (M=9.17, SD=1.98), $t(286)$=.64, p=.52, d=.08. For the remaining analyses, missing data was estimated using the maximum-likelihood based EM algorithm in SPSS.

Relationships Among Measures

Intercorrelations among relational aggression subscales across informants and methods reveal patterns of convergence and divergence for girls and boys (see Table 1). Mother's report correlated highly across interview and questionnaire methods for both boys (r=.73, p<.01) and girls (r=.74, p<.01). Mothers' and fathers' reports within method (i.e., CSBS–Mom with CSBS–Dad) were correlated more highly for girls (r=.54, p<.01) than for boys (r=.34, p<.01), Z=2.24, p<.05. This difference was not statistically significant across methods (i.e., CSBS–Dad with SRQ–Mom) comparing interparent agreement for girls (r=.51, p<.01) and for boys (r=.36, p<.01), Z=1.75, p=.08. Patterns of association for each parent's report (i.e., mom versus dad) with the youth's self-report are not significantly different across gender (CSBS-Mom/SRQ-Y: Z=1.08, p>.05; CSBS-Dad/SRQ-Y: Z=1.21, p>.05; SRQ-Mom/SRQ-Y: Z=.23, p>.05) or within gender (CSBS-Mom/SRQ-Y versus CSBS-Dad/SRQ-Y; girls: Hotelling's t=1.00(163), p>.05; boys: Hotelling's t=.71(161), p>.05). Overall, agreement across informant and method is significant at p<.01 with the exception of the youth self-report and mother's questionnaire for boys (r=.17, p<.05).

Table 1 Intercorrelations between relational aggression subscales across informants and methods

Subscale	1	2	3	4
Boys (n=164)				
1. CSBS–Mom	–	0.34**	0.73**	0.17*
2. CSBS–Dad		–	0.36**	0.23**
3. SRQ–Mom			–	0.32**
4. SRQ–Self				–
Girls (n=166)				
1. CSBS–Mom	–	0.54**	0.74**	0.29**
2. CSBS–Dad		–	0.51**	0.36**
3. SRQ–Mom			–	0.29**
4. SRQ–Self				–

The Children's Social Behavior Scale (CSBS) is adapted from Crick and Grotpeter (1995); The Social Relations Questionnaire (SRQ) is from Lahey et al. (2004). Correlations among scales are presented separately for boys and girls

All correlations are significant at *p<.05 or **p<.01

Prediction of Internalizing, Externalizing, and Social Problems

To investigate the predictive power of relational aggression by various informants and methods for internalizing, externalizing, and social problems, sum scores were computed based on the raw scores from the CBCL for each parent for these domains. The combined internalizing, externalizing, and social problems variables were entered as dependent variables in ordinary least squares regressions. To address the potential influence of gender and interactions by gender and specific measures, all independent variables were centered. Gender was recoded to -1 (boys) and 1 (girls). All measures of relational aggression (CSBS-Mom, CSBS-Dad, SRQ-P, and SRQ-Y) were mean-centered and interaction terms for each measure × gender were created.

Entering both of the mother reports (CSBS-Mom, SRQ-P) as simultaneous predictors may decrease interpretability of overall informant patterns given the high correlation for the two mother reports. Thus, regressions were conducted separately for each mother report with all three informants (mother, father, and youth) entered as simultaneous predictors. Interaction terms were signifi-

cant in only one of the regressions (externalizing problems predicted by CSBS-Mom, CSBS-Dad, and SRQ-Y). To ensure interpretability of primary predictors, results are presented from regressions without interaction terms for all other analyses.

The first four regressions are presented in Table 2: internalizing and externalizing as DVs with gender, CSBS-Mom, CSBS-Dad, and SRQ-Y as IVs; internalizing and externalizing as DVs with gender, CSBS-Dad, SRQ-P and SRQ-Y as IVs. Internalizing problems were significantly predicted by gender and CSBS-Dad and not by SRQ-Y in both regressions. For mothers' reports, only CSBS-Mom predicted internalizing problems; SRQ-P did not. Externalizing problems were significantly predicted by CSBS-Dad and not by gender or SRQ-Y in both regressions. Unlike the findings for internalizing, both mother reports also predicted externalizing problems in their respective regression models. In total, measures of relational aggression accounted for approximately 10% more variance in externalizing problems than in internalizing problems.

The next two regressions are presented in Table 3: social problems as the DV with gender, CSBS-Mom, CSBS-Dad, and SRQ-Y as IVs; social problems as the DV with gender, CSBS-Dad, SRQ-P and SRQ-Y as IVs. In both regressions, CSBS-Dad was a significant predictor of social problems whereas gender and SRQ-Y were not significant predictors. Further, both mother reports of relational aggression were significant predictors of social problems.[1]

As noted, all six regressions were run with potential gender interactions added in the next step. Gender interactions were significant in only one of these: the regression in which externalizing problems were predicted by gender, CSBS-Mom, CSBS-Dad, and SRQ-Y (see Table 4). Two of the gender interactions were significant: gender*CSBS-Mom and gender*SRQ-Y. As illustrated in Fig. 1, the interaction between gender and CSBS-Mom suggested that, at low levels of mother-reported relational aggression on the CSBS there were no externalizing differences for boys and girls. However, girls rated as high on relational aggression by mother reports on the CSBS had significantly higher externalizing scores than did boys rated as high on relational aggression by mother reports on the CSBS. The other interaction is not discussed further, as it did not emerge robustly across both externalizing regressions in which it was included.

Discussion

In the present study, evidence for gender differences in relational aggression differed across method. Mother and father reports on the CSBS questionnaire resulted in higher rates of relational aggression for girls than for boys. However, mother and self reports on the SRQ interview resulted in equivalent rates of relational aggression for girls and boys. Correlation coefficients across methods and informants were all significant. Gender differences were found for mother-father interrater agreement, which was higher for girls than for boys.

Relational aggression was associated with internalizing, externalizing, and social problems in girls and boys, although stronger associations were found with externalizing problems for both genders. Fathers' reports of relational aggression on the CSBS were the only robust unique predictors of problems across all analyses. Gender was a significant predictor only for internalizing problems. Mothers' reports on both the CSBS and the SRQ uniquely predicted externalizing and social problems. However, only mother's report on the CSBS predicted internalizing problems. Youth self-report on the SRQ-Y was not a unique predictor of any problem domains after accounting for gender, mother- and father-report. An interaction was found such that mothers rated high externalizing girls as significantly higher on the CSBS than they did for high externalizing boys.

The examination of gender differences found that mothers and fathers do not appear to be reporting different rates of their child's relational aggression from their partner. That is, the gender of the parental informant did not show a significant influence on these results for overall frequency of relational aggression reported. Differences were found, however, for method of assessment and for strength of interparental agreement. The CSBS questionnaire method produced gender differences favoring girls, although the SRQ interview method did not. This is particularly interesting given the high correlation for mother's reports obtained from the two methods (r=.73/.74, p<.01). In addition, the effect sizes for gender differences on the CSBS were medium for both mothers (d=.28) and fathers (d=.37). This suggests that the questionnaire and interview formats, despite being highly related within reporter, are

[1] Regressions predicting internalizing and social problems were also run controlling for physical aggression. Specifically, both informants' Aggressive Behaviors scale scores were entered into the first step in each regression. For prediction of internalizing problems, in the first regression, gender (B=.98, p=.006) and CSBS-Dad (B=.33, p=.037) remained significant predictors; in the second regression, gender (B=1.02, p=.004) and CSBS-Dad (B=.43, p=.006) again remained significant predictors. For prediction of social problems, in the first regression, CSBS-Mom (B=.13, p=.042) remained a significant predictor; in the second regression, no significant predictors remained. Given that the Aggressive Behaviors scale is part of the sum Externalizing Behaviors score, additional analyses were not conducted for this domain.

Table 2 Linear regressions predicting internalizing and externalizing problems from mother, father, and self-report of relational aggression

	Internalizing				Externalizing			
	Model with CSBS-Mom report		Model with SRQ-P report		Model with CSBS-Mom report		Model with SRQ-P report	
Predictor	*B* 95% CI	β	*B* 95% CI	β	*B* 95% CI	β	*B* 95% CI	β
Gender	0.81 [.06, 1.57]	0.11*	0.87 [.11, 1.63]	0.12*	−0.76 [−1.59, .07]	−0.09	−0.67 [−1.49, .16]	−.08
CSBS-Mom	0.42 [.09, .74]	0.15*			0.86 [.51, 1.22]	0.27**		
CSBS-Dad	0.74 [.42, 1.06]	0.27**	0.85 [.53, 1.17]	0.31**	0.97 [.61, 1.32]	0.31**	0.98 [.64, 1.33]	0.31**
SRQ-P			0.33 [−.27, .93]	0.06			1.67 [1.02, 2.31]	0.28**
SRQ-Y	−0.25 [−.68, .18]	−0.06	−0.23 [−.67, .21]	−0.06	0.09 [−.38, .56]	0.02	−0.02 [−.50, .45]	−0.01
Total R^2	0.15**		0.14**		0.24**		0.25**	

The Children's Social Behavior Scale (CSBS) is adapted from Crick and Grotpeter (1995); The Social Relations Questionnaire (SRQ) is from Lahey et al. (2004); SRQ-*P* = mother SRQ report; SRQ-Y = youth SRQ self-report; CI = confidence interval

Beta weights and proportions of variance are significant at *$p<.05$ or **$p<.01$

tapping into somewhat different pieces of information. One potentially important difference between these measures is the questions surrounding the relational aggression items. Specifically, the CSBS contains items asking about relational aggression as well as physical aggression and prosocial behavior. It is possible that this mix of items primes a more gender-typical response set, leading to stronger evidence for gender differences. The interview, however, contained only relational aggression items in a contiguous module. It is important to note that, in the present sample, the measurement of relational aggression evidenced higher internal consistency for the CSBS than the SRQ. It is also possible that the inclusion of the prosocial items in the CSBS reduced negative response biases, leading to a more accurate assessment of "true" relational aggression scores. Future research should more closely examine the technical aspects of relational aggression measures to better understand this difference. Experimental manipulation of these factors may help to resolve this assessment issue.

There is also potential importance in the higher interparental agreement found for girls relational aggression relative to boys. The results of this study overall point to greater difficulty in obtaining valid information from other informants regarding boys relational aggression, consistent with previous research (e.g., Crick et al. 1997; Coyne et al. 2008; Werner and Grant 2008) and despite self-reports from boys at equivalent rates to those of girls. One potential explanation is that parental biases may result in underestimation of relationally aggressive behavior in boys, which in turn limits the potential for finding associations with adjustment or maladjustment. Taken a step further, based on the study by Werner and Grant (2008), such dampening of parents' perception of boys relationally aggressive behaviors may also result in less accurate use of parenting practices that aid the route to better social adjustment. An

Table 3 Linear regressions predicting social problems from mother, father, and self-report of relational aggression

	Social problems			
	Model with CSBS-Mom report		Model with SRQ-P report	
Predictor	*B* 95% CI	β	*B* 95% CI	β
Gender	−0.06 [−.41, .28]	−0.02	−0.03 [−.38, .32]	−0.01
CSBS-Mom	0.27 [.13, .42]	0.22**		
CSBS-Dad	0.30 [.15, .45]	0.24**	0.33 [.19, .48]	0.27**
SRQ-P			0.40 [.12, .67]	0.17**
SRQ-Y	−0.02 [−.22, .17]	−0.01	−0.04 [−.24, .16]	−0.02
Total R^2	0.15**		0.13**	

The Children's Social Behavior Scale (CSBS) is adapted from Crick and Grotpeter (1995); The Social Relations Questionnaire (SRQ) is from Lahey et al. (2004); SRQ-*P* = mother SRQ report; SRQ-Y = youth SRQ self-report; CI = confidence interval

Beta weights and proportions of variance are significant at **$p<.01$

Table 4 Hierarchical multiple regression analysis predicting parent-reported externalizing problems from relational aggression rated by mother (CSBS), father (CSBS), and self (SRQ-Y) including interactions with gender

	DV: Externalizing problems	
Predictor	ΔR^2	β
Step 1	0.24**	
Gender		−0.09
CSBS-Mom		0.27**
CSBS-Dad		0.31**
SRQ–Y		0.02
Step 2	0.02**	
Gender*CSBS-Mom		0.11*
Gender*CSBS-Dad		−0.01
Gender*SRQ-Y		−0.12*
Total R^2	.26**	

The Children's Social Behavior Scale (CSBS) is adapted from Crick and Grotpeter (1995); The Social Relations Questionnaire (SRQ) is from Lahey et al. (2004); SRQ-*P* = mother SRQ report; SRQ-Y = youth SRQ self-report

Beta weights and proportions of variance are significant at *$p<.05$ or **$p<.01$

alternative theoretical explanation is that given the salience of close interpersonal and dyadic relationships (Benenson 1993; Cross and Madson 1997) and the social communal goals that girls typically value (see Crick and Grotpeter 1995), relational aggression is more developmentally salient and thus, more likely to be associated with maladaptive outcomes for girls than for boys (see Crick and Zahn-Waxler 2003).

One important finding is that fathers' reports on the CSBS emerged as the most consistent and robust predictor for externalizing, internalizing, and social problems. This was true after accounting for mothers' reports, youth self-report, and gender. This demonstrates that the nonoverlapping information fathers provide about their child's relational aggression after accounting for information from the mother is both valid and useful. Fathers could potentially play an important role as an additional informant in future research on relational aggression (e.g., Nelson et al. 2006). However, in most analyses, mother's report was also a significant unique predictor. Although parental reports are correlated, the non-overlapping information each parent provides about their child's relational aggression continues to provide valid and important variance in predicting additional outcomes.

Additional findings of note are the differences found for mothers' reports of relational aggression depending on the method (i.e., CSBS vs. SRQ). Specifically, the mother's report on the CSBS is tapping into variance related to internalizing problems, while her report on the SRQ is not. This suggests that the nonoverlapping information being picked up by the mother's report via questionnaire and interview are differentially tapping into internalizing and externalizing problems. A related point is the gender interaction found for mother's reports on the CSBS. Mothers viewed externalizing girls as more relationally aggressive than externalizing boys, but only when relational aggression is measured by the CSBS. This may be consistent with potential gender contrast effects as a result of the other CSBS items, although it would not explain why it is only found for mother's reports on the CSBS and not for father's reports on the CSBS. Future research utilizing multiple methods and multiple informants may better disentangle the method-specific results for mother reports that we see here.

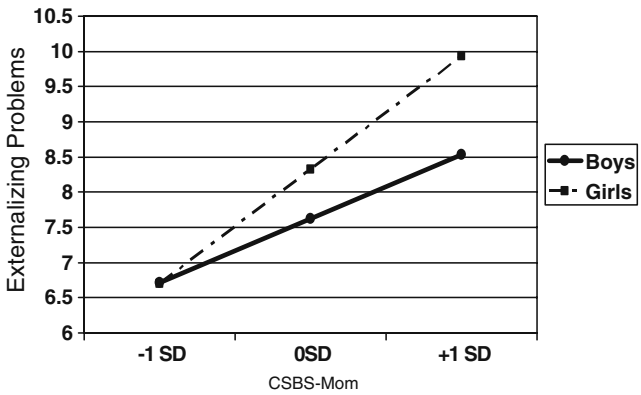

Fig. 1 Interaction between gender and relational aggression as rated on the CSBS-Mom in predicting externalizing behavior scores. *Note.* The Children's Social Behavior Scale (CSBS) is adapted from Crick and Grotpeter (1995); SD = standard deviation

Limitations and Future Directions

One of the fundamental aspects of demonstrating validity for a given informant/method is evidence for concurrent validity. However, the ability to demonstrate concurrent validity is often limited by 1) the lack of a gold standard for measurement of an outcome and 2) the reliance on outcome measures that typically utilize the same informants and methods as the predictor constructs of interest. Although we found evidence for concurrent validity in the present study, our measurement of outcome variables (i.e., internalizing, externalizing, and social problems) relied on a subset of the informants used for the measures of relational aggression. This could potentially lead to inflated estimates in the current study, although the use of two informants and demonstration of robust findings across both lend additional support to these results. We did not have an outcome measure using self-report, which may partially account for the smaller contribution of self-report of relational aggression to the

outcome measures. This does not necessarily mean that self-report of relational aggression is not offering valid or useful information. A related issue is the low reliability of the SRQ-P and SRQ-Y in the present sample. This may have reduced our ability to find connections with the interview-based reports of relational aggression.

Recent research has been increasingly adding to the support of the psychometric properties and overall utility of self-report assessments during middle childhood and adolescence (e.g., Fite et al. 2008; Keenan et al. 2008; Leadbeater et al. 2006) with some studies showing predictive validity for outcome measures obtained from other informants (e.g., Little et al. 2003). Moreover, a recent study examined themes of agency (i.e., autonomy, dominance) and communion (i.e., affiliation) in the imagined stories children provided to a set of thematic apperception test cards (Schell and Tackett 2009). This study found that positive themes of communion and negative themes of agency as coded in the children's stories significantly predicted children's self-reported relational aggression scores but showed no prediction of the parent's report of relational aggression. These results are particularly important because they suggest potential underlying motives or social-cognitive biases that may be influencing the relational aggression children manifest (Crick, Grotpeter and Bigbee 2002). They also suggest that children's self-report of relational aggression holds unique valid information that the parent report does not in helping us understand the manifestation and development of these behaviors. Nonetheless, researchers interested in outcome variables related to psychopathology and/or impairment will often be faced with this challenge. The use of impairment measurements that are not confounded by informant or method remains an important future direction in order to fully determine the utility of various informants and methods for assessing relational aggression.

The present study was able to utilize multiple informants and methods, offering a more nuanced look at the measurement issues raised in a large, diverse sample. The study was limited, however, by using only parents and self as informants. Given the frequency with which teacher and peer report are used in studies of relational aggression, future work must seek to incorporate these sources for a broader understanding of the validity of overlapping and nonoverlapping information provided by each. In addition, this study focused on a circumscribed age range in middle childhood, ages 9–10. This is a desirable age period for studying relational aggression, as longitudinal work has suggested that higher rates of indirect aggression are found at this age than in early childhood (Vaillancourt et al. 2007). It is not safe to assume that any measurement biases or limitations apply equally to all ages, however, and such issues likely change as developmental expectations of appropriate and inappropriate behavior and social sanctions for these behaviors also change (Bailey and Ostrov 2008; Werner and Grant 2008). Thus, it is important for future work to focus on measurement issues with a broader age range and with longitudinal samples.

Finally, as recent work has sought to integrate relational aggression into broader models of psychopathology (Baker et al. 2007; Crick et al. 2005; Hipwell et al. 2002; Keenan et al. 2008; Lahey et al. 2004; Loeber et al. 2009), much more empirical research is needed to fully understand the position of relational aggression versus other forms of psychopathology. In particular, future studies will need to address the question of whether relational aggression should be conceptualized as an independent form of externalizing problems (Loeber et al. 2009) or as potentially subsumed under existing diagnostic categories (Keenan et al. 2008; Lahey et al. 2004). Moreover, given that relational aggression has been found to be associated with a wide range of psychopathology including ADHD (Zalecki and Hinshaw 2004), ODD/CD (Keenan et al. 2008), substance use problems (Sullivan et al. 2006), somatic complaints (Crick et al. 2006b), and internalizing problems (Murray-Close et al. 2007) further research is needed to examine the specificity of these associations in both typically and atypically developing samples. Further research that includes an examination of both relational and physical forms of aggression as well as proactive (i.e., premeditated or instrumental) and reactive (i.e., impulsive, dysregulated and hostile) functions of aggression may help elucidate associations with psychopathology and impairment (e.g., Little et al. 2003; Marsee et al. 2008). For example, theoretically reactive relational aggression (and not proactive relational aggression) should be differentially associated with constructs such as impulsivity and hostile attribution biases (i.e., interpreting hostile intent even in ambiguous provocation situations; see Bailey and Ostrov 2008), which are core features of borderline personality (Crick et al. 2005). Given the theoretical and empirical links to personality pathology, borderline personality pathology in particular, future studies should also investigate the extent to which relational aggression at an earlier age may serve as a risk factor for or an early manifestation of borderline personality disorder (Geiger and Crick 2001). With the emergence of empirically-based assessment tools for measuring personality pathology precursors in childhood (De Clercq et al. 2009), such an empirical integration is imminent.

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