Maladaptive Personality and Neuropsychological Features of Highly Relationally Aggressive Adolescent Girls

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Abstract

The maladaptive personality and neuropsychological features of highly relationally aggressive females were examined in a group of 30 grade 6, 7, and 8 girls and group-matched controls. Employing a multistage cluster sampling procedure, a group of highly, yet almost exclusively, relationally aggressive females were identified and matched on a number of variables to a group of nonaggressive females. Parents of the students in both groups completed the Coolidge Personality and Neuropsychological Inventory, a 200-item DSM-IV-TR aligned, parent-as-respondent, standardized measure of children's psychological functioning. It was found that high levels of relational aggression, in the absence of physical and verbal aggression, were associated with symptoms of DSM-IV-TR Axis I oppositional defiant disorder and conduct disorder. The highly relationally aggressive group also exhibited a wide variety of personality traits associated with DSM-IV-TR Axis II paranoid, borderline, narcissistic, histrionic, schizotypal, and passive aggressive personality disorders that were not exhibited by the matched controls. Implications of these findings are discussed.

Keywords: Maladaptive personality, relational aggression, adolescent girls, personality disorder, psychopathology

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Over the past several years there has been increasing concern over how young females are developing socially and behaviorally (Cote, Zoccolillo, Tremblay, Nagin, & Vitaro, 2001). This concern is reflected in the empirical research being conducted on the negative trajectories of females (e.g., Cote et al., 2001; Moffitt, Caspi, Rutter, & Silva, 2001) as well as in the media attention they have been receiving. The latter has largely been fueled by dramatic and tragic events that have involved adolescent girls, such as the brutal death of Reena Virk (Tafler, 1998). Teachers, juvenile justice workers, and mental health professionals who work with these troubled girls argue that the risk factors, characteristics, and outcomes for disruptive behaviors may differ in males and females (Chamberlain & Reid, 1994). Therefore a better understanding of the sex differences in antisocial behavior should be a priority, especially as they relate to their interpersonal relationships.

Some researchers, such as Crick and Grotpeter (1995), propose that the sex differences in the rates of antisocial behaviors may be explained by males' propensity to use greater amounts of physical aggression and females' tendency to use relational aggression to express anger or inflict harm. Crick et al. (1999) defined relational aggression as "behaviors that harm others through damage (or the threat of damage) to relationships or feelings of acceptance, friendship or group inclusion" (p. 77). Relational aggression involves interpersonally manipulating others rather than causing bodily harm through physical attacks (Crick & Grotpeter, 1995). Crick, Casas, and Nelson (2002) outlined that these manipulative behaviors include social exclusion, social alienation, rejection, and direct control. Several studies have found that these relationally aggressive behaviors are more commonly found in females than males (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Crick & Grotpeter, 1995) and are perceived as more harmful by females than males (Crick, 1995).

A recent study conducted by Salmivalli and Kaukiainen (2004) investigated whether females were more relationally aggressive than males. Their sample included 272 girls and 274 boys from 22 school classes in Finland. The participants were from three grade levels and were aged 10, 12, and 14 years. Salmivalli and Kaukiainen found that girls were generally nonaggressive compared to boys, but that girls who were highly aggressive rarely used all the forms of aggression to any great extent. In fact, Salmivalli and Kaukiainen found a group of highly aggressive females who used relational aggression almost exclusively. This was in direct contrast to highly aggressive males who were found to favor physical and verbal aggression or to employ high levels of all forms of aggression. Salmivalli and Kaukianen did not find any highly aggressive males who almost exclusively used relational aggression. From these findings it appears that there are a group of females in the population who are highly aggressive but who employ relationally aggressive behaviors almost exclusively in order to inflict harm.

Unfortunately, we know very little about girls and women who are highly aggressive but whose aggression is almost exclusively relational in nature. Few studies have examined the relationship between high levels of relational aggression, antisocial behaviors, and personality dimensions. Several studies conducted on children and adolescents have found that high levels of relational aggression are positively correlated with maladaptive personality features and externalizing behaviors (Crick, 1996; Crick & Grotpeter, 1995; Prinstein, Boergers, & Vernberg, 2001). The limitation of these particular studies is that the more overt forms of aggression were not controlled for when analyzing the behavioral and personality correlates of relational aggression. As a result, the participants in these studies also regularly engaged in other forms of aggression (e.g., physical) as well as being relationally aggressive.

Frick, Cornell, Barry, Bodin, and Dane (2003), Marsee, Silverthorn, and Frick (2005), and Essau, Sasagawa, and Frick (2006) found a strong correlation between high levels of relational aggression and callous-unemotional personality traits and antisocial behaviors in females. Interestingly, this relationship was found only in females, not in males. The limitation of these studies is that the researchers used an alternate conception of personality pathology and antisocial behavior than the one used by the diagnostic standard, the DSM-IV-TR (American Psychiatric Association [APA], 2000). As a result, these findings have no diagnostic utility for clinicians, as the callous-unemotional personality traits and antisocial behaviors defined by Frick et al. and Marsee et al. are found scattered throughout numerous DSM-IV-TR Axis I and Axis II diagnostic categories. Specifically, these two studies demonstrate that the study of personality traits, particularly those characteristic of personality pathology, are important for understanding the development of antisocial and aggressive behaviors in females. Thus, it would be particularly salient to examine the association between highly, almost exclusively, relationally aggressive girls with DSM-IV-TR clinical syndromes (Axis I), personality disorders (Axis II), neuropsychological dysfunction, and other psychopathological behaviors so that the association would have some diagnostic utility.

The purpose of this study was to examine the association between females who are highly, yet almost exclusively, relationally aggressive with DSM-IV-TR (APA, 2000) clinical syndromes (Axis I), personality disorders (Axis II), neuropsychological dysfunction, and other clinically relevant psychopathological behaviors. The purpose was initiated in order to ascertain whether females who were highly, almost exclusively, relationally aggressive were manifesting a symptom of underlying psychopathology.

The four research questions this study sought to answer were: (a) Do females who are highly relationally aggressive also exhibit behaviors that are associated with Axis I disorders found in the DSM-IV-TR (APA, 2000); (b) Do these relationally aggressive females have personality traits typically associated with any of the DSM-IV-TR (APA, 2000) personality disorders?; (c) Do highly relationally aggressive females have high levels of neuropsychological behavioral impairment?; (d) Do highly relationally aggressive females exhibit other clinically relevant psychopathological behaviors?

Method

Instrumentation

Three instruments were used in this study. The first was the Direct and Indirect Aggression Scales (Bjorkqvist, Lagerspetz, & Osterman, 1992). This is a self- and peer-report instrument that measures physical, verbal, and relational aggression. It consists of 24 items assessed using a 5-point Likert scale, ranging from (0) *never* to (4) *very often*. Five items measure physical aggression, 7 items measure verbal aggression, and 12 items measure relational regression. Factor analysis has confirmed the construct validity of the three subscales (Lagerspetz, Bjorkqvist, & Peltonen, 1988; Toldos, 2005). High levels of internal consistency have been found, ranging from 0.80 to 0.96, in subsamples that have used this instrument in a variety of cultural settings (Bjorkqvist et al., 1992; Owens, Daly & Slee, 2005; Salmivalli & Kaukiainen, 2004; Toldos, 2005).

The second instrument used was the Coolidge Personality and Neuropsychological Inventory (Coolidge, 1998). This is a standardized measure of children's and adolescents' (aged 5-17 years) psychological functioning. The 200-item parent-as-respondent CPNI assesses (a) nine Axis I

syndromes from DSM-IV-TR (APA, 2000; conduct disorder, oppositional defiant disorder, attention-deficit hyperactivity disorder, depression, general anxiety disorder, separation anxiety disorder, gender identity disorder, anorexia nervosa, and bulimia nervosa), (b) nine personality disorders and their features (avoidant, borderline, dependent, histrionic, narcissistic, obsessive-compulsive, paranoid, schizoid, schizotypal) according to the criteria on Axis II of the DSM-IV-TR, and two personality disorders in its appendix (passive-aggressive and depressive; note that antisocial personality disorder is not assessed by the CPNI because it requires an age of 18 years to be diagnosed), (c) four neuropsychological-behavioral syndromes including mild neurocognitive disorder (in the appendix of DSM-IV-TR), postconcussion disorder, general neuropsychological dysfunction, and executive function deficits (and its three subscales: decision-making, metacognitions, and social judgment), and (d) 13 clinical scales: dangerousness, aggression, emotional lability, apathy, paranoia, psychotic thinking, emotional coldness, social anxiety, social withdrawal, self-esteem problems, sleep disturbances, antisocial triumvirate symptoms, and disinhibition.

The CPNI uses a 4-point Likert scale ranging from (1) *strongly false* to (4) *strongly true.* The CPNI normative sample consists of 780 children, aged 5-17 years old. The 11 personality disorder scales have a median internal scale of reliability of 0.67 and a median test-retest reliability of 0.81 (4- to 6-week interval). The nine Axis I scales have a median internal scale reliability of 0.81 and a median test-retest reliability of 0.87. The four neuropsychological scales have a median internal scale reliability of 0.91 and a median test-retest reliability of 0.83. The 13 clinical scales have a median internal scale reliability of 0.64 and a test-retest reliability of 0.70.

The general construct validity of the CPNI scales has been demonstrated in a variety of clinical and nonclinical empirical studies (Coolidge, DenBoer, & Segal, 2004; Coolidge, Segal, Stewart, & Ellet, 2000; Coolidge, Thede, & Jang, 2001; Coolidge, Thede, & Jang, 2004). Coolidge, Thede, Stewart, and Segal (2002) provide a summary of the CPNI reliability and construct validity studies.

The final measure used was the Demographic Information Form. It asked for the participants' birth month and year, grade, and ethnicity. The measure included questions that sought to elicit general socioeconomic status indicators from the parents, including mother's and father's highest education level achieved and approximate total annual family income. This measure was used to describe the sample and to provide variables on which to match the targeted and control groups.

Participants and Procedure

This study employed a multistage cluster sampling procedure. In the first phase female students in grade 6, 7, and 8 in 12 elementary schools located in a medium-sized city in southern Ontario, Canada, and their parents were selected to participate in this study. Clearance by Brock University's Research Ethics Board was obtained prior to recruitment. Once permission was obtained from the school board and each individual principal, the researcher travelled to each site, convened the potential participants, delineated the study to the potential participants, and disseminated letters of information and consent.

During the initial recruiting procedure, 560 information and consent packages were distributed. Informed consent was received for 365 participants (65.2%). These female students became the initial sample. Approximately 1 week after the informed consent forms were retrieved, the researcher returned to the schools and gathered together all the students whose parents allowed them to participate in the study in a location that was convenient for the school

staff (the library, an empty classroom, the cafeteria, etc.). At this time they were asked to independently fill out the self-report version of the Direct and Indirect Aggression Scales (Bjorkqvist et al., 1992). The female students used this to evaluate their own behavior when dealing with a conflict with a classmate. The participants were not permitted to talk to each other during the administration of the DIAS, but the researcher read each item aloud to the assembled group and answered any questions they had regarding the items. It took them approximately 10 minutes to fill out the questionnaire. All of their responses were anonymous; they did not indicate their names on the questionnaires.

When the participants had completed the questionnaire they returned the questionnaire to the researcher. The researcher then gave the participant an envelope with a unique number on it. These tracking numbers were used so the researcher could preserve the anonymity of the participants while still being able to match the measures for data analysis.

Included in the envelope the students took home was a copy of the Coolidge Personality and Neuropsychological Inventory (Coolidge, 1998), and the Demographic Information Form. The parents/guardians then filled out both forms, which took them approximately 25 minutes to complete. The responses on both forms were anonymous; the parents did not indicate their names on either form. Once the CPNI and the demographic data forms were filled out they were put into the provided envelope, sealed, and returned to the school. The researcher returned approximately 1 week later to retrieve the envelopes. The researcher then scored the measures and the scores were inputted into SPSS 15.0.

To obtain the final sample, the raw scores from the self-report DIAS measure were converted to standard *z*-scores. SPSS K-means cluster analysis was performed with the standardized self-reported scores on the three aggression scales as criterion variables for forming the clusters. Five clusters with different aggression profiles were identified. The standardized mean scores on the aggression variables of the participants in each of the five clusters and the number of participants in each cluster are presented in Table 1.

A one-way analysis of variance was conducted in order to ensure the members of each of these clusters differed significantly from each other on self-reported physical [$F(4, 360) = 111.511$, $p = .000$], verbal [$F(4, 360) = 149.907$, $p = .000$], and relational aggression [$F(4, 360) = 200.429$, $p = .000$].

The 30 female students who made up Cluster 1, the highly, almost exclusively, relationally aggressive cluster became the target sample. The target sample consisted of 11 grade 6 students (36.7%), 10 grade 7 students (33.0%) and 9 grade 8 students (30.0%). They ranged in age from 11.4 years to 14.3 years ($M = 12.7$ years, $SD = 0.91$ years).

The target sample was then matched for age, grade, school, ethnicity, mother's highest achieved education level, father's highest achieved education level, and approximate total annual family income with participants in Cluster 5, the nonaggressive cluster. This became the matched control group. Identical to the target sample, the control group consisted of 11 grade 6 students (36.7%), 10 grade 7 students (33.3%) and 9 grade 8 students (30.0%). They ranged in age from 11.4 years to 14.3 years ($M = 12.8$ years, $SD = 0.89$ years).

In order to ensure that the target sample and the control group did not differ significantly on any of the matching variables the categorical variables were quantified (e.g., *Caucasian* = 1, *Mixed Ethnicity* = 2, etc.), and a Mann-Whitney *U* test was conducted. The results indicated that the groups were evenly matched on age ($Z = -.081$; 2-tailed Asymp. Sig. = .935), school ($Z = .000$; 2-tailed Asymp. Sig. = 1.000), grade ($Z = .000$; 2-tailed Asymp. Sig. = 1.000), ethnicity ($Z = -.043$; 2-tailed Asymp. Sig. = .966), mother's/female guardian's education level ($Z = -.061$; 2-

tailed Asymp. Sig. = .952), father's/male guardian's education level (Z = .994; 2-tailed Asymp. Sig. = .994), and approximate total annual family income (Z = -.108; 2-tailed Asymp. Sig. = .914).

Results

To examine the symptoms of underlying psychopathology, highly, yet almost exclusively, relationally aggressive females exhibited descriptive and inferential statistics were used. The raw scores on each of the CPNI's (Coolidge, 1998) 50 scales were converted to standard T scores using the means and standard deviations of the normative sample, as outlined in the CPNI Manual (Coolidge, 1998).

Descriptive statistics in the form of means and standard deviations were calculated for both the relationally aggressive group and the control group on each of the CPNI's (Coolidge, 1998) scales in order to examine the direction of differences between the two groups.

Clinical (Axis I) Scales

A MANOVA was performed on the six Axis I–Internalizing disorders scales for the main effect of group (relationally aggressive and controls). The MANOVA was not statistically significant, approximate $F(6,53) = 1.32$, $p = 0.265$.

A MANOVA was also conducted on the three Axis I–Externalizing disorders scales. The MANOVA was significant, approximate $F(3,56) = 16.53$, $p = 0.001$. To examine this further post hoc t tests with a modified Bonferroni correction (Holm, 1979) were conducted. The post hoc tests revealed that scores on the conduct disorder and oppositional defiant disorder scales were significantly elevated in the relationally aggressive group. The effect sizes for these differences were large. The attention deficit/hyperactivity scale was not significant (see Table 2).

Inspection of the relationally aggressive group indicated that 20% of the students were clinically elevated, which Coolidge defines as $T \geq 60$ (Coolidge, 1998), for the conduct disorder scale, and 60% were clinically elevated for the oppositional defiant disorder scale.

Personality Disorder (Axis II) Scales

A MANOVA was performed on the CPNI's (Coolidge, 1998) 11 personality disorder scales. The MANOVA was significant, approximate $F(11,48) = 6.80$, $p = 0.001$. Post hoc t tests, with the modified Bonferroni correction, revealed that the paranoid personality disorder, borderline personality disorder, schizotypal personality disorder, narcissistic personality disorder, histrionic personality disorder, and passive-aggressive personality disorder scales were significantly different between the two groups (See Table 2).

Neuropsychological Scales

A MANOVA was performed on the CPNI's (Coolidge, 1998) four neuropsychological problems scales. The MANOVA was significant, approximate $F(4,55) = 8.2$, $p = 0.001$. To further examine this difference, post hoc t tests with the modified Bonferroni correction were performed on the four neuropsychological problems scales and their subscales. The t tests revealed that the scores on the postconcussion disorder scale, emotional dysfunction subscale, and social inappropriateness subscale were significantly different between the highly relationally

aggressive group and the nonaggressive group (see Table 2).

Other Clinical Scales

A MANOVA was performed on the CPNI's (Coolidge, 1998) 13 clinical scales. The MANOVA was significant, approximate $F(13, 46) = 5.46$, $p = 0.001$. Post hoc t tests with the modified Bonferroni correction revealed that the highly relationally aggressive group was significantly elevated on the emotional coldness, emotionally labile, aggression, apathy, and dangerousness scales (see Table 2).

Discussion

The first research question was concerned with associations between high levels of relational aggression and DSM-IV-TR (APA, 2000) Axis I clinical syndromes. Contrary to findings reported by Werner and Crick (1999), who found relational aggression to be related to increases in self-harm behaviour, affective features of depression, and bulimic symptoms in their female participants, we found no significant differences between the relationally aggressive female students and their nonaggressive peers on measures of internalizing disorders. A possible reason for the discrepancy in findings is that Werner and Crick's participants were much older than the participants in this sample, as they were all young adults enrolled in a postsecondary institution. It is possible that as they grow older the relationally aggressive females who participated in this study may also develop internalizing problems.

Yet, the highly relationally aggressive group was significantly elevated on symptoms associated with conduct disorder and oppositional defiant disorder compared to the nonaggressive controls in the current study. Furthermore, 20% of the relationally aggressive group were clinically elevated on the conduct disorder scale, and 60% of the relationally aggressive female students were clinically elevated on the oppositional defiant disorder scale. These findings are consistent with previous studies that found highly relationally aggressive females to be more likely to experience externalizing symptoms associated with conduct disorder and oppositional defiant disorder than females who were not as relationally aggressive (Keenan, Coyne, & Lahey, 2008; Prinstein et al., 200l). A key difference between this study and those conducted previously, however, is that this study did not statistically control for physical and verbal aggression but rather only examined female students who were highly, yet almost exclusively, relationally aggressive. This indicates that females whose aggression is almost exclusively relational seem to be at a substantial risk for developing externalizing behaviour problems. High levels of physical and verbal aggression as well as relational aggression are not required for the risk to be present.

The second research question was concerned with determining if high levels of relational aggression in female students were associated with any personality traits typically connected with DSM-IV-TR (APA, 2000) Axis II personality disorders. The current study found that the highly relationally aggressive females were significantly elevated on traits associated with paranoid personality disorder, borderline personality disorder, schizotypal personality disorder, narcissistic personality disorder, histrionic personality disorder, and passive-aggressive personality disorder. The strongest associations were found with traits typically characteristic of individuals suffering from narcissistic, histrionic, and passive-aggressive personality disorders.

To better understand which specific personality traits the relationally aggressive female students were manifesting, individual personality items from the CPNI (Coolidge, 1998) were

examined. What emerged were 20 personality traits that distinguished the highly relationally aggressive group from their nonaggressive peers. Consistent with Werner and Crick (1999), we found that the highly relationally aggressive females exhibited affective instability, anger problems, and a degree of impulsivity, all of which are features of borderline personality disorder.

Similar to previous research (Frick et al., 2003; Marsee & Frick, 2007) we found that the highly relationally aggressive group exhibited traits that have been identified as being characteristic of the psychopathy construct. Such traits include narcissistic traits such as taking advantage of other children, exaggerating abilities and accomplishments, rapidly shifting, shallow emotions, and acting like they are better than others. Moreover, they also include callous-unemotional traits such as hiding emotions or being unemotional and lacking empathy. Furthermore, they include impulsive traits evidenced by not thinking ahead. Consistent with previous findings (Marsee & Frick, 2007; Marsee et al., 2005) this study found that the highly relationally aggressive females exhibited all of the psychopathic traits listed above, while the nonaggressive controls did not.

Frick et al. (2003) and Kruh, Frick, & Clements (2005) have found that psychopathic traits, particularly the callous-unemotional traits, seem to be uniquely associated with a severe pattern of aggression characterized by proactive aggressive acts. In females only, callous-unemotional traits have been found to be associated with high levels of relational aggression and serious delinquent acts (Chamberlain & Moore, 2002; Frick & Marsee, 2006; Frick et al., 2003; Marsee et al., 2005).

The link we found between high levels of relational aggression and psychopathic traits is especially important due to the finding that the presence of psychopathic traits, particularly callous-unemotional traits, seems to designate a distinct developmental pathway in females to serious conduct problems that is associated with a temperamental style characterized by reduced emotional reactivity to the distress of others (Frick, 2007). The fact that high levels of relational aggression, in the absence of high levels of verbal and physical aggression, were found to be associated with a lack of empathy and a general lack of affect (callous-unemotional traits) further supports the importance of relational aggression in studying the development of antisocial tendencies in females.

The third and fourth research questions were concerned with the association between high levels of relational aggression in females and neuropsychological behavioural impairment and other psychopathological behaviours. In the current study the relationally aggressive group was significantly elevated on the postconcussion disorder scale compared to the nonaggressive controls. This finding requires some clarification, however, as further analysis of the individual items that make up the postconcussion disorder scale revealed that the relationally aggressive females were significantly higher than their nonaggressive peers only on items that had to do with regulating emotion such as quickly changing moods, irritability, touchiness, quick temper, and rapidly shifting, shallow emotions.

Complementing the above finding, analysis of the individual items on the social inappropriateness subscale evinced that that the highly relationally aggressive students possessed shallow, rapidly shifting emotions and a tendency to not think ahead. The analysis of the individual items on the social inappropriateness scale also revealed the highly relationally aggressive females were significantly elevated on the item that measured a lack of empathy. Furthermore, the relationally aggressive group was found to be significantly elevated on the emotional dysfunction subscale.

Taken together these findings appear to indicate that the relationally aggressive group exhibits an emotion regulation deficit, which would imply that their high levels of relational aggression are in reaction to anger due to a perceived provocation or threat. This is consistent with Marsee and Frick (2007), who found in their detained female sample that reactive relational aggression was associated with poorly regulated emotion. Adding further support to this interpretation, in the current study the relationally aggressive students were significantly elevated on the emotionally labile and aggression scales, both of which measure elements of emotional dysregulation, compared to nonaggressive controls. This supports Conway's (2005) assertion that highly relationally aggressive individuals may feel high levels of distress in relational conflict situations and that they reactively relationally aggress in order to attempt to regulate their emotions.

The difficulty is that this hypothesis is in direct opposition to this study's finding that the highly relationally aggressive group was significantly higher on the clinical emotional coldness and apathy scales, indicating a pronounced lack of empathy, a lack of care, and inhibited affect. Previous studies (Chamberlain & Moore, 2002; Frick & Marsee, 2006; Frick et al., 2003; Marsee et al., 2005) have found strong associations between a lack of empathy and inhibited affect (callous-unemotional traits) and relational aggression in females.

One possible explanation for these apparently contradictory findings is that there are two subgroups of highly relationally aggressive females. One subgroup would use relationally aggressive behaviours as a strategy to regulate their emotions. This group would primarily use reactive relational aggression in order to maintain control over their social status and relationships when they felt their position in the social hierarchy was being threatened or when they were angered. They would be the females who exhibited high levels of emotional dysfunction. The other subgroup would use high levels of relational aggression more proactively in order to achieve social and material gains. These females would be the ones who exhibited a lack of empathy and inhibited affect, the callous-unemotional traits. Marsee and Frick (2007) provide some empirical support for this hypothesis, as they found reactive relational aggression was associated with emotional dysregulation, while proactive relational aggression was associated with callous-unemotional traits and positive outcome expectations for aggression.

Implications for Research, Policy, and Practice

Future research could focus on these potential differences as it is possible that proactive and reactive relational aggression represent unique pathways to antisocial behaviour, each with its own characteristics and outcomes. These two pathways may require drastically different treatment approaches (Marsee & Frick, 2007). For example, treatments for females who engage in more reactive relational aggression perhaps should focus on better emotion regulation and anger management skills. Interventions for the group that proactively use relational aggression could be more effective if they included a component to address these females' emphatic lack of concern for others. Moreover, the proactively relationally aggressive females would benefit from a cognitive-behavioural component that addressed perceptions of the usefulness of aggression for obtaining their social and material goals. It appears to be very important that before any intervention is undertaken in this group that the proactively relationally aggressive students are convinced it is in their best interest to apply the strategies they are taught; otherwise the intervention will not be effective (Frick, 2007).

The current study was unique in that it examined a community sample of highly, yet almost

exclusively, relationally aggressive females and found them to exhibit a range of symptoms characteristic of DSM-IV-TR (APA, 2000) Axis I and Axis II disorders. Longitudinal studies need to be conducted in order to determine how stable high levels of relational aggression and the maladaptive personality traits and antisocial behaviours associated with them are. These studies should, ideally, begin in early childhood and continue into adulthood in order to give an accurate picture of the stability of these traits and behaviours.

This study has several limitations which must be acknowledged. The first is that the participants' aggression profiles were created exclusively from self report data. By exclusively using self reports to measure aggression it was assumed that the participants could accurately evaluate the type of aggression they used as well as how frequently they used aggressive behaviors. It was also assumed the participants would be willing to report their aggressive tactics honestly. This may not be the case. It is possible that they over or under estimated their aggressive behaviors or that they did not report their use of aggression honestly. Future studies should augment the self-reports with peer and teacher reports of aggressive behaviors. This would make any findings more robust. Another limitation is that only personality traits associated with personality pathology were examined. Future studies should also examine normal personality traits in this population of females. The study would also have been enhanced if both parents/guardians, where possible, could have filled out the CPNI or if clinical interviews could have been conducted. A final limitation is the current sample size is small so the results should be considered preliminary.

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Appendix A: Table 1

The Aggression Clusters With Their Average Standardized Scores on the Three Aggression Scales

Cluster	*N*	Physical	Verbal	Relational
1.High relational aggression group	30	-.46	-.22	1.54
2. Average aggression group	100	.46	1.22	.94
3. High direct aggression group	7	2.87	1.11	-.30
4. Extreme aggression group	5	3.91	2.22	1.68
5. Nonaggressive group	223	-.34	-.58	-.68

Appendix B: Table 2

Means, T Scores, t Values, and Correlation of Effect Size for Relationally Aggressive Group and Nonaggressive Group on the CPNI
*** Significant according to modified Bonferroni correction ****

	T scores	*T*	*p*	*r***	
	Relationally aggressive group (SD)	Nonaggressive group (SD)			
Axis I – Externalizing					
Conduct Disorder	52.7 (9.9)	42.7 (3.5)	5.3	0.001*	0.56
Oppos. Defiant Dis.	60.9 (4.7)	39.8 (7.7)	7.0	0.001*	0.67
ADHD	43.8 (8.4)	40.7 (7.7)	1.5	0.141	0.19
Axis II					
Paranoid PD	50.4 (11.5)	42.6 (10.9)	2.7	0.009*	0.33
Borderline PD	47.1 (9.8)	39.0 (10.6)	3.0	0.003*	0.36
Obsessive-compulsive PD	41.4 (11.8)	40.6 (10.1)	0.3	0.776	0.04
Dependent PD	36.4 (10.9)	37.0 (6.9)	-0.3	0.779	0.03
Schizotypal PD	48.3 (7.8)	42.9 (6.3)	3.0	0.004*	0.36
Schizoid PD	44.5 (10.3)	42.7 (11.3)	0.6	0.522	0.08
Narcissistic PD	55.1 (12.8)	40.8 (8.0)	5.2	0.001*	0.56
Avoidant PD	40.2 (8.3)	44.4 (9.9)	-1.8	0.082	0.08
Passive-aggressive PD	54.1 (10.5)	41.9 (8.0)	5.1	0.001*	0.55
Depressive PD	45.0 (9.7)	43.7 (9.8)	0.5	0.625	0.07
Neuropsychological scales					
Mild neurocognitive disorder	42.7 (8.0)	42.2 (8.0)	0.2	0.818	0.03
Postconcussion disorder	53.5 (8.5)	42.8 (9.9)	4.5	0.001*	0.50
Executive function deficits	43.5 (9.4)	40.0 (8.1)	1.6	0.124	0.20
Decision-making problems	39.2 (8.5)	40.9 (8.0)	-0.8	0.430	0.10
Metacognitive problems	44.6 (8.5)	41.5 (7.8)	1.4	0.155	0.19
Social Inappropriateness	50.0 (11.2)	39.8 (7.4)	4.1	0.001*	0.47
Neuropsych. Dysfunction	43.0 (8.1)	41.6 (8.0)	0.6	0.525	0.09
Emotional dysfunction	56.5 (9.0)	43.2 (10.4)	5.3	0.001*	0.56
Neurosomatic complaints	46.1 (10.2)	44.5 (8.6)	0.6	0.538	0.08
Language problems	45.7 (7.2)	44.4 (5.0)	0.8	0.400	0.10
Memory difficulties	43.1 (7.9)	41.6 (6.3)	0.8	0.403	0.10
Learning problems	45.7 (6.9)	44.4 (7.8)	0.7	0.516	0.09
Perceptual-motor problems	42.4 (6.4)	42.7 (5.8)	-0.2	0.870	0.02
Subcortical problems	44.7 (4.4)	45.3 (4.2)	-0.5	0.619	0.07
Delayed maturation	44.2 (3.4)	46.3 (10.5)	-1.0	0.430	0.13
Other clinical scales					
Emotional coldness	60.7 (16.5)	43.3 (5.5)	5.5	0.001*	0.58
Sleep disturbances	46.9 (9.8)	45.2 (6.7)	0.8	0.429	0.08
Emotionally labile	59.4 (12.5)	43.0 (8.6)	6.0	0.001*	0.61
Disinhibited	46.0 (9.1)	42.5 (6.8)	1.7	0.097	0.21
Aggressive	49.4 (11.0)	35.4 (6.7)	5.9	0.001*	0.36
Apathetic	58.2 (15.2)	43.2 (6.1)	5.0	0.001*	0.54
Paranoid	50.8 (11.3)	45.8 (8.4)	1.9	0.057	0.24
Dangerousness	55.7 (11.8)	38.8 (6.8)	6.8	0.001*	0.66
Antisocial Triumvirate	46.0 (3.1)	45.3 (1.8)	1.0	0.310	0.14
Psychotic thinking	45.5 (6.5)	43.8 (5.6)	1.0	0.309	0.13
Social anxiety	42.1 (8.2)	43.9 (9.3)	-0.8	0.429	0.10
Social withdrawal	44.9 (9.7)	43.8 (10.2)	0.4	0.689	0.05
Self-esteem problems	43.9 (8.9)	44.9 (7.8)	-0.4	0.676	0.06

r = correlation of effect size; small = 0.100, medium = 0.243, large = 0.371.

In order to determine which specific personality traits the relationally aggressive females, as a group, were manifesting, independent *t* tests were performed on the standardized *T* scores of the individual items that make up the CPNI's (Coolidge, 1998) Axis II personality disorder scales. In order to minimize Type I error, $\alpha = 0.001$ for all the analyses. The *t* tests revealed the relationally aggressive group was significantly elevated on 20 personality disorder items. The mean *T* scores, *t* values, and correlation of effect size for the significant items are presented in Table 3.

Appendix C: Table 3

Means, T scores, t Values and Correlation of Effect Size for Relationally Aggressive Group and Nonaggressive Group on Significant Individual Items from the CPNI's Axis II Personality Disorder Scales

	T scores	*t*	*p*	*r**	
	Relationally aggressive group (*SD*)	Nonaggressive group (*SD*)			
1. My child takes advantage of other children.	56.0 (10.7)	44.0 (3.8)	5.8	0.001	0.60
2. I think my child exaggerates her emotions.	54.9 (8.5)	45.1 (9.1)	4.3	0.001	0.49
3. My child pouts and argues.	54.6 (8.0)	45.4 (9.7)	4.0	0.001	0.46
4. My child's moods change quickly.	53.5 (9.2)	46.5 (9.7)	2.9	0.006	0.35
5. My child seems to exaggerate her abilities and accomplishments.	53.0 (10.5)	47.0 (8.6)	2.4	0.018	0.30
6. My child's emotions shift rapidly and seem to be shallow.	56.3 (9.7)	43.7 (5.3)	6.2	0.001	0.63
7. My child criticizes or puts down authority figures.	55.1 (10.5)	44.9 (6.2)	4.6	0.001	0.51
8. My child has an anger problem.	54.2 (10.4)	45.8 (7.7)	3.5	0.001	0.42
9. My child uses physical attractiveness to draw attention to herself.	55.5 (9.7)	44.5 (6.7)	5.1	0.001	0.55
10. My child resents, resists, or refuses to do things when asked.	54.6 (9.5)	45.4 (8.3)	4.0	0.001	0.46
11. My child bears grudges for a long time.	54.5 (9.9)	45.5 (7.9)	3.9	0.001	0.45

Table 3 Continued

	T scores	*t*	*p*	*r**	
	Relationally aggressive group (*SD*)	Nonaggressive group (*SD*)			
12. My child demands lots of praise or admiration.	52.6 (9.8)	47.4 (9.7)	2.0	0.046	0.26
13. My child gets jealous and resents it when good things happen to others.	53.8 (11.5)	46.2 (6.4)	3.2	0.002	0.38
14. My child is unemotional.	55.6 (11.8)	44.4 (10.0)	4.2	0.001	0.46
15. My child lacks empathy and is not able to understand how others feel.	55.5 (11.4)	44.5 (3.5)	5.0	0.001	0.55
16. My child is envious or jealous of others and feels they are envious or jealous of her.	53.8 (10.8)	46.2 (7.5)	3.2	0.002	0.38
17. When hurt or insulted by others my child is quick to get angry or counter-attack.	53.9 (9.7)	46.2 (7.5)	3.3	0.002	0.39
18. My child has hurt herself or caused trouble for herself more than once because she did not think ahead.	52.8 (11.3)	47.2 (7.7)	2.2	0.032	0.28
19. My child has a style of speech that is dramatic but vague.	53.2 (9.9)	46.8 (9.2)	2.6	0.013	0.31
20. My child acts like she is better than others.	54.7 (11.7)	45.3 (4.5)	4.1	0.001	0.47

* *r* = correlation of effect size; small = 0.100, medium = 0.243, large = 0.371.