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Exploring the Moderating Effects of CU traits on the Relationship Between Social Intelligence
and Aggression

A Thesis

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Master of Science
In
Psychology

By

Gregory Fassnacht

B.A., Loyola University, 2005

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Abstract

The purpose of this study was to examine the potential moderating effects of CU traits on the relationship between self-reported social intelligence and aggression in a community sample of boys and girls (ages 14-18). Four subtypes of aggression were measured: reactive overt, reactive relational, proactive overt, and proactive relational. Results indicated that there was not a significant association between social intelligence and any of the aggression subtypes. Neither CU traits nor empathy moderated the association between social intelligence and any of the four subtypes of aggression. Supplementary analyses were conducted to investigate whether level and type of aggression was related to levels of social intelligence and CU traits (or an interaction between the two). Results indicated that at high levels of CU traits, youth exhibited significantly higher levels of proactive overt and reactive overt aggression ($t(113.06)$) than at low levels of CU traits.

Keywords: *social intelligence, callous and unemotional traits, aggression subtypes, adolescents*

Introduction

Overview of Aggressive Subtypes

Over the years, research has demonstrated that aggression is not a unified construct, but one that can be broken down into distinctive forms and functions (Bailey & Ostrov, 2008; Card & Little, 2006; Marsee & Frick, 2007). Research has supported two distinct forms of aggression (overt and relational) (Card, Stucky, Sawalani, & Little, 2008; Crick, 1996; Crick & Grotpeter, 1996; Rys & Bear, 1997). Overt aggression, commonly referred to as physical or direct aggression, consists of behaviors that are intended to cause bodily or emotional harm through direct physical (e.g., hitting or kicking) or verbal assaults (Crick & Grotpeter, 1996). In contrast, researchers have defined relational aggression as behaviors that “represent purposeful attempts to harm, or threats to harm, another’s peer relationships” (e.g., gossiping or group exclusion) (Crick & Grotpeter, 1995, p. 712). Research has shown that relational and overt aggression are generally moderately to highly positively correlated in measures of peer nominations (e.g., $r = .57$, Crick & Grotpeter, 1996; $r = .54$, Crick & Grotpeter, 1995) and self-report measures of community and detained samples of adolescents (disattenuated $r = .83$, Little, Jones, Henrich, & Hawley, 2003; $r = 0.73$, Marsee & Frick, 2007) and this is generally consistent across age and gender. Using factor analyses, research has supported the distinction of overt/physical and relational/indirect aggression in a sample of preschoolers using teacher and peer-nomination measures (Crick, Casas, & Mosher, 1997) and maternal reports of aggression in a four year longitudinal study of boys and girls between the ages of 4 to 11 (Vaillancourt, Bredgen, Boivin, & Tremblay, 2003).

Similar to relational aggression, researchers have also identified both indirect and social forms of aggression. Kaukiainen et al. (1999) used the term “indirect aggression” to describe

behaviors that use social manipulation to attack others in a covert way that does not place the attacker directly into any harm that may result from retaliation. Although it has been argued that relational and indirect aggression are one and the same (Björkqvist, 2001), the subtle difference between the two types of aggression is that indirect aggression is covert (e.g., spreading harmful rumors), whereas relational aggression encompasses both indirect and direct acts (e.g., telling someone that you will not be his or her friend anymore) that are geared to destroying someone's social support. In addition, Galen and Underwood (1997) use the term "social aggression" to refer to aggression that focuses on "damaging another's self-esteem, social status, or both, and may take direct forms such as verbal rejection, negative facial expressions or body movements, or more direct forms such as slanderous rumors or social exclusion" (p. 589). Thus, social aggression includes both indirect and direct acts, as well as some non-verbal bodily cues. Despite the conflict in names, most researchers agree that relational, indirect, and social aggression share the common underlying goal of harming another individual using social manipulation strategies (Björkqvist, 2001).

Two functions of aggression have also been identified (proactive and reactive), and they are based on the reason behind the aggressive act. Proactive aggression has been defined as aggression that is designed to acquire some sort of gain (Dodge, 1991; Dodge & Coie, 1987), whereas reactive aggression has been defined as aggression that is an angry response to some perceived harm or wrong (Berkowitz, 1993). These functions of aggression tend to be highly correlated in teacher reports of children who were about 8 years old ($r = .77$, Hubbard et al., 2002) and self reports of detained adolescents ($r = .65$, Marsee & Frick, 2007) and are generally consistent across gender. Factor analyses have supported a two factor model for reactive and proactive aggression within a community sample ($N = 149$) of French speaking boys (Mean age

= 10.65 years) (Poulin & Boivin, 2000) and a sample (N= 334) of sixteen year old adolescent boys (Raine, et al., 2006). Each of these functions of aggression has unique cognitive and emotional correlates, which supports the distinction between them and suggests that they may develop differently and require different types of treatment.

Recent research has started to emerge that suggests that both relational and overt aggression can be used reactively and proactively (Bailey & Ostrov, 2008; Marsee & Frick, 2007; Marsee, Weems, & Taylor, 2008; Ostrov & Houston, 2008). Self-report studies of children (Marsee et al., 2008), adolescents (Marsee & Frick, 2007; Marsee et al., 2008), and emerging adults (Bailey & Ostrov, 2008; Ostrov & Houston, 2008) have shown that the four subtypes are moderately to highly positively correlated and demonstrate acceptable internal consistency (Cronbach's $\alpha > .69$). Specifically, studies have shown that youth engage in four distinct subtypes of aggression: reactive relational, proactive relational, reactive overt, and proactive overt, and that each of these subtypes has unique cognitive, emotional, and personality pathology correlates. Studies have provided evidence that there is good internal consistency (coefficient alphas: reactive overt = .85-.87; proactive overt = .82 - .84; reactive relational = .80 - .83; proactive relational = .74 - .76) among the subtypes for both detained girls (Marsee & Frick, 2007) and a community sample of youth between the ages of 6 to 17 (Marsee et al., 2008).

Development and Correlates of Reactive and Proactive Aggression

Different theories have emerged to explain the development of the proactive and reactive aggressive functions. Reactive aggression is rooted in the frustration-aggression model (Berkowitz, 1989; Berkowitz, 1999), and has been described as an angry response to perceived provocation. Proactive aggression is seen to have its roots in the social learning theory (Bandura, 1973) and is described as deliberate behavior that is controlled by external reinforcements in

order to obtain a desired goal. The maintenance of reactive and proactive aggression can be described by Dodge's social information processing (SIP) theory (Crick & Dodge, 1994, Crick & Dodge, 1996; Dodge & Coie, 1987). According to the SIP models, children's social behavior is controlled by specific sequential steps of functioning, which include 1) encoding of social cues, 2) interpretation of social cues, 3) clarification of goals, 4) response access or construction, 5) response decision, 6) and behavioral enactment (Crick & Dodge, 1994; Crick & Dodge, 1996). It is believed that how well one progresses through each step will affect whether one will behave appropriately in a situation or engage in deviant behavior. Two SIP patterns have been associated with aggressive children. The first pattern is the misinterpretation of social cues (the second step of the previously mentioned model) leading to the manifestation of hostile attributional biases (which is attributing malicious intentions to ambiguous provocation more often than normal children) (Crick & Dodge, 1996). Research has supported that this pattern exists in children, adolescents, and emerging adults who are more reactively aggressive (Bailey & Ostrov, 2008; Crick & Dodge, 1994; Crick & Dodge, 1996).

For example, a study conducted by Bailey and Ostrov (2008) using 165 young college men and women (mean age was 19.05 years) explored the association between self-reported aggression and hostile attribution biases as assessed using vignettes. Results indicated that reactive physical aggression had a unique association with hostile attribution biases for instrumental provocation situations (e.g., "the student spills the drink all over your back") and reactive relational aggression had a unique association with hostile attribution biases for relational provocation scenarios (e.g., "you have not been invited to this party") when controlling for gender and all other subtypes.

The second pattern that has been found involves the response decision step in the SIP

model. This pattern shows that proactively aggressive children and adolescents are more likely to expect positive outcomes to happen as the result of their aggressing and they believe themselves to be more competent when aggressing than other less aggressive children (Crick & Dodge, 1996; Dodge, Lochman, Harnish, Bates, & Petit, 1997; Marsee & Frick, 2007). Using self-report measures, Marsee and Frick (2007) found in a sample of 58 detained girls (aged 12 to 18), that proactive relational aggression was more strongly associated with possessing positive outcome expectations for acts of aggression they committed on a same sex peer. Proactive overt aggression was also uniquely associated with lower expectations for punishment when controlling for reactive overt aggression.

In addition to unique cognitive correlates, reactive and proactive aggression also show unique emotional and psychosocial adjustment correlates. For example, research has shown that reactive aggression is uniquely associated with emotion dysregulation, which is the inability to control one's emotions (Card & Little, 2006; Little et al. 2003; Marsee, 2008; Marsee & Frick, 2007). Marsee and Frick (2007) found that reactive relational but not proactive relational aggression significantly accounted for variance in anger to provocation. Also, results demonstrated that reactive overt aggression but not proactive overt aggression was significantly associated with poor emotional regulation (emotional dysregulation).

The previously mentioned research suggests that reactive aggression is characterized by emotional reactivity and dysregulation. Conversely, research suggests that it is the lack of emotional reactivity that sets proactive aggression apart from reactive aggression. Specifically, research has shown that proactive aggression is positively associated with callous and unemotional (CU) personality traits, which are described as a particular affective (absence of guilt, constricted display of emotion) and interpersonal pattern (failure to show empathy, use of

others for one's own gain) (Frick, Cornell, Barry, Bodin, & Dane, 2003; Kimonis, Frick, Boris, et al., 2006; Marsee & Frick, 2007) and also low emotional reactivity, which was measured by skin conductance and heart rate acceleration (Hubbard et al., 2002). Marsee and Frick (2007) found that proactive overt aggression was also uniquely associated with CU traits when controlling for reactive overt aggression. However, when controlling for proactive overt aggression, proactive relational aggression had significant amount of unique variance in CU traits. When controlling for proactive relational aggression, proactive overt aggression had only minimal variance in CU traits, which shows that proactive relational aggression had the stronger association with CU traits among the detained girls who participated in that study.

In support of the unique association between proactive aggression and the lack of emotional reactivity, Kimonis, Frick, Fazekas, and Loney (2006) found that in a sample of boys and girls (Mean age = 9) regardless of sex, proactive aggression was negatively and uniquely associated with responsiveness to distressing stimuli when controlling for reactive aggression. In this particular study, a dot probe task was used to determine whether a variety of different picture types that are emotionally charged (i.e., threatening, distressing, positive emotion) would help facilitate reaction time to the task. Youth that were considered to be proactively aggressive, according to parent and self-report measurements, did not show an increased response time when presented with distressing pictures. This indicated that those who were high on proactive aggression showed the expected lack of emotional responsiveness to stimuli that was designed to elicit distress.

In a meta-analytic review of the differential correlates of reactive and proactive aggression, Card and Little (2006) showed that reactive aggression is more significantly related to internalizing problems than proactive aggression. In support of this finding, a self-report study

showed that with a sample of youth aged 6 to 17, reactive relational aggression was uniquely associated with anxiety when controlling for both reactive overt and proactive overt aggression (Marsee et al., 2008). Furthermore, this association was moderated by gender, where males with high anxiety showed higher levels of reactive relational aggression than girls or males with low anxiety. This indicated that possessing higher levels of anxiety may increase the likelihood that someone chooses a safer and covert means of retaliation. Another finding from Card and Little (2006) was that reactive aggression was more strongly associated with symptoms of ADHD than was proactive aggression. In terms of psychosocial adjustment, reactive aggression was found to have a significant positive relationship to victimization, whereas proactive aggression had a significant negative association with victimization (Card & Little, 2006).

Other research has found support for unique associations between the aggressive subtypes and personality characteristics. Research using self-report measures has shown that both reactive and proactive relational aggression subtypes were associated with features of borderline personality disorder, even when controlling for the two subtypes of physical aggression and gender (Ostrov & Houston, 2008). Ostrov and Houston have also found that proactive physical aggression was uniquely and positively associated with fearless dominance and reactive relational aggression was a unique negative predictor of fearless dominance. This indicates that those who exhibit more proactive physical aggression are more inclined to possess superficial charm, have higher sensation seeking tendencies, and have low stress proneness, while those who exhibit more reactive relational aggression are less inclined to possess these tendencies. Finally, for women but not men in this study, proactive relational aggression was shown to be significantly associated with impulsive antisociality, which represents behaviors and feelings such as lying, cheating, using others, and rebelliousness.

There is ample research that supports the distinctiveness between the reactive and proactive aggression functions. As previously demonstrated, reactive aggression has a positive association with emotional reactivity and dysregulation whereas proactive aggression has a negative association with emotional reactivity and positive association with CU traits. Currently, there is also research that supports and stresses the importance of the distinctiveness of the overt and relational forms of aggression.

Development and Correlates of Relational and Overt Aggression

Decades of research has been conducted on the development of overt aggression and research has shown that overt/ physical aggression is associated with externalizing problems and poor peer relations (Card et al., 2008) as well as future maladjustment (Crick, 1995). Research suggests that relational aggression has similar correlates as overt aggression and is at least as harmful to both aggressors and victims (Crick, 1996; Crick & Grotpeter, 1995; Crick & Grotpeter, 1996). However, there is evidence to support that relational aggression also has unique correlates that set it apart from overt aggression. Research has supported that relational aggression is uniquely related to psychosocial adjustment (Card et al., 2008; Crick, 1996; Crick & Grotpeter, 1995; Rys & Bear, 1997). Crick and Grotpeter (1995) studied a sample of third to sixth grade children using peer nomination and self-report techniques and found that those who were rated as relationally aggressive reported higher levels of depression than non-relationally aggressive children. However, it was only the relationally aggressive girls that reported having a lower peer acceptance rate. In support of these findings, Crick (1996) used peer nomination and teacher reports to assess overt and relational aggression in a sample of 245 third through sixth graders. Results indicated that for boys, teacher-rated overt and relational aggression was positively related to peer rejection. Using hierarchical regression analysis of the peer nomination

data, the authors demonstrated that relational aggression significantly predicted future peer rejection and negative changes in peer rejection for girls, even when controlling for overt aggression.

Research has also demonstrated that regardless of gender or socio-economic status, preschoolers aged 3-5 years old who are more relationally aggressive are more likely to be victimized by relational aggression (Bonica, Arnold, Fisher, & Zeljo, 2003). Similarly, a self report study by Crick and Grotpeter (1996) has demonstrated that while controlling for victimization by overt aggression, victimization by relational aggression uniquely predicted social anxiety, social avoidance, and loneliness in a sample of third through sixth graders.

The negative effects of relational aggression on psychosocial adjustment seem to warrant further research due to their great impact on social and emotional development. Further, unlike overt aggression, which tends to be more common among males (Bailey & Ostrov, 2008; Crick, Casas, & Mosher, 1997), both sexes are equal victims of relational aggression (Bonica et al., 2003; Crick & Grotpeter, 1996). Though victimization is equal across sex, research has found gender differences in the use of relational aggression. Some research has demonstrated that girls tend to use relational aggression more often than boys, while boys are typically found to be more overtly or physically aggressive than girls (Bonica et al., 2003; Crick & Grotpeter, 1995). Research has also demonstrated that preschoolers as young as three years old attribute physically aggressive behaviors to boys and relationally aggressive behaviors to girls (Giles & Heyman, 2005). However, not all research is consistent. In a peer nomination study with fourth grade children, no gender differences were detected in the use of relational aggression (Putallaz et al., 2007). Further, in self report studies of adults, findings indicate that men and women have either no gender differences in relational aggression concerning romantic relationships (Linder, Crick,

& Collins, 2002) and peer interactions (Burton, Hafetz, & Henninger, 2007) or that men may use more relational aggression than women (Loudin, Loukas, & Robinson, 2003).

These inconsistencies in research on gender and relational aggression might be explained by a variety of factors including age, measurement techniques, and statistical methods. One explanation is that gender differences in relational aggression might increase with age. In one study, researchers used peer nominations to assess physical and relational/indirect aggression with three age cohorts: 8, 11, and 15 year olds (Björkqvist, Lagerspetz, & Kaukiainen, 1992). The results indicated that at age 8 there were no significant gender differences between males and females in relational aggression, but the results of the 11 and 15 year old cohort samples did reveal significant gender differences, where females rated higher in relational aggression than males. The authors believe that this form of aggression is more prominent in girls at an older age because their verbal skills develop more quickly than boys, which allows them to manipulate their close and intimate friendship groups.

Research has also shown that some measurements may be more useful in capturing gender differences in relational aggression. Meta-analytic results indicate that studies using observations, peer ratings, and teacher reports show females displaying greater amounts of relational/indirect aggression than males than when other methods are used such as peer nominations and self-reports (Card et al., 2008). Researchers have argued that when children reach a certain age they may be less likely to report the use of relational aggression since they may have aged to a point where they are susceptible to self-report biases (Card et al., 2008, Crick et al., 1997). In terms of peer nomination procedures, researchers have argued that inconsistencies found using this particular method can be tied to ignoring of contextual characteristics, since traditional peer nomination techniques are generally standardized within

classes, which “eliminates any variation between classes” (Kuppens, Grietens, Onghena, Michiels & Subramanian, 2008, p. 641). Peer nominations require the children in a classroom to identify three classmates who they believe to be “relationally aggressive” or “overtly aggressive.” Nominations for the categories are then summed and standardized within each classroom, where the mean of each classroom is zero. This is somewhat problematic in that it does not allow for gender comparisons to be made across classes. Inconsistencies in finding gender differences can occur when grouping youth based on their aggression scores in that two youth may both be one standard deviation above the mean, but may still have dramatically different mean levels of aggression depending on the way their classmates scored. In contrast to peer nominations, peer ratings require classmates to rate all other students in their class on levels of relational and overt aggression using an interval scale. This method ensures that all children in the class are rated and can be compared to one another.

Another potential reason for inconsistencies in gender findings is the fact that many early studies examined relational aggression in youth without controlling for the overlap with overt aggression (Crick & Grotpeter, 1995; Prinstein, Boergers, & Verberg, 2001). As previously mentioned, relational and overt aggression are often very highly correlated in many samples and children often show both types (Crick & Grotpeter, 1996; Crick & Grotpeter, 1995). Gender differences may disappear when controlling for overt aggression, because males and females may not differ on relational aggression when only looking at nonshared variance. In support of this idea, research using peer nomination measures in preschoolers has shown that when overt aggression is controlled for, no gender differences are found in relational aggression (Crick et al., 1997).

One has to one wonder why some studies find that girls are rated more relationally

aggressive than boys. Various perceptions of harm associated with relational aggression may account for these gender differences. Research has shown that girls aged 11 to 15 were more likely than boys to view indirect aggression, direct relational aggression, and social aggression as harmful when asked to rate the level of harm they would feel using a Likert scale ranging from a score of 1 “they would not feel sad or hurt at all” to 4 “they would feel REALLY sad or hurt” (Coyne, Archer, & Eslea, 2006; p. 297). Different moral interpretations of relational aggression may also account for gender differences. In a sample of fourth and fifth grade boys and girls, Murray-Close, Crick, and Galotti (2006) demonstrated that girls hold different moral beliefs than boys concerning relational aggression. In this study, the participants were read three physically aggressive and three relationally aggressive scenarios and were asked to fill in a Likert scale that assessed “how wrong the behavior was, how often the conduct resulted in harm, and the domain used to judge each behavior” (Murray-Close & Crick, 2006; 351). Results showed that girls tended to judge relational aggression as being more wrong from a moral standpoint than boys. Taken together, these findings suggest that girls may have a better understanding of the damaging effects of relational aggression than boys, and thus see it as an effective means of aggression to attack their enemies.

Crick and Grotpeter (1995) suggested that gender differences in relational aggression may be due to the tendency for youth to use the most effective type of aggression to damage valued goals within their own gender peer groups. According to the authors, girls tend to focus on developing close intimate relationships in their social interactions. Within such close-knit groups, the social manipulation strategies that characterize relational aggression may be more effective in maintaining one’s social status. It has also been suggested that girls tend to have smaller groups of closer friends, whereas boys play more in larger groups that include close and

not so close friends (Björkqvist, K., Lagerspetz, et al., 1992). Relational aggression may be more effective in smaller groups, where the focus is more intimate. In contrast to girls, boys tend to focus on physical dominance in their relationships, which may explain the use of overt aggression, since relational aggression may not be as effective. Conversely, in a larger group, boys may need to use physical aggression to maintain dominance since more subtle relationally aggressive behaviors may not be noticed. In support of this, researchers comparing three age groups (Ages 8, 11, and 15) of boys and girls found that at age 15 there were gender differences in relational aggression and that it was at this age that girls generally stayed in close intimate pairings, whereas boys typically had a greater number of friends (Björkqvist, K., Lagerspetz, et al., 1992).

Relational Aggression and Social Intelligence

Youth who use relational aggression to harm others may at the same time be bolstering their own social status. In a study conducted by Eleni Andreou (2006), 403 Greek schoolchildren who were in fourth through sixth grade participated in a study that required them to rate popularity levels of the other students, while also assessing their overt and relational aggression levels. Andreou found that overt aggression was positively correlated with perceived popularity of boys and relational aggression was positively correlated with perceived popularity in both boys and girls. Andreou suggested that relational aggression may allow for effective management of “social power in ways that contribute to the popularity reputation” (p. 340). These findings support other research that has shown that a positive bidirectional relationship exists between relational aggression and perceived popularity for girls but not for boys (Rose, Swensen, & Waller, 2004). Also, significant positive relationships between perceived popularity and relational aggression held when controlling for overt aggression, however, overt aggression

lost its significant positive association with perceived popularity when controlling for relational aggression.

How do those children that rate high on relational aggression maintain social popularity and attain close friendships? Some theories suggest that the effective use of aggressive behavior requires certain skills and strategies. One study based on resource control theory states that some aggressive youth are able to maintain social prominence because they “possess the social skills that can mitigate the effect of lesser behavior” (Hawley, Little, & Card, 2007). According to resource control theory there are many strategies that can be used to acquire social prominence, such as coercive strategies, prosocial strategies, and bistrategic (using a bit of both) strategies (Pellegrino & Bartini, 2001). Coercive strategies include behaviors that are somewhat antisocial, such as taking, threatening, and deceiving, whereas prosocial behaviors are those that are described as behaviors that “win resources by forging alliances and other cooperative relationships that yield long term benefits (p.171).” Hawley et al. (2007) found that 7th through 10th graders who used both prosocial and coercive strategies in their friendships were rated as having relationships with the most intimacy, fun, and conflict. Also, youth who used prosocial and coercive strategies showed evidence of using high levels of overt and relational aggression. These findings suggest that aggressive youth may use strategic behaviors in their friendships to maintain social status. Such youth may need to be especially in tune with their peer group in order to know which strategies will best serve their purposes.

In line with this idea, some researchers have suggested that aggressive youth need specific social skills in order to effectively use aggression among their peers. Björkvist, Österman, and Kaukiainen’s (1992) developmental theory suggests that aggression is a three stage process whereby the use of aggressive behavior coincides with the development of specific

skills. According to this theory, the aggressive behavior of young children is primarily physical and coincides with advances in motor skills. The next stage is entered when verbal skills begin to develop, allowing for more peaceful interactions or new forms of aggression to emerge. One study conducted by Bonica et al. (2003) showed that in 3 to 5 year old children, relational aggression was positively and significantly associated with language development even when controlling for age. Finally, it is during the third stage that the use of indirect aggression becomes more common. Björkvist, Osterman, et al. (1992) suggest that this type of aggression develops along with social skills, and suggest that in order to efficiently use indirect aggression one would need to possess social intelligence. Those who possess social intelligence are said to have an ability to understand what other people want, are able to read social cues that may be subtle in nature, and can flourish in social situations (Silvera, Martinussen, & Dahl, 2001). Possessing a high amount of social intelligence may allow an individual to aggress differently compared to individuals who do not possess high levels of social intelligence or it may act as protection against becoming a victim of aggression. In a sample of fifth grade (mean age was 11-12 years) Finnish children, peer nomination measurements have indicated that a significant negative correlation exists between social intelligence and victimization (Kaukiainen, et al. 2002). Therefore, those who had high social intelligence were less likely to be bullied. This seems to suggest that social intelligence may have some protective component.

Previous research has explored the relationship between social intelligence and aggression (Kaukiainen et al., 1999). Using peer estimations from participants who were between 10 and 14 years old for social intelligence and a self-report measure for physical, verbal, and indirect aggression, researchers found that social intelligence was positively correlated with indirect aggression, but had almost no association with physical and verbal forms of aggression

when the other two forms of aggression were partialled out (Kaukiainen et al., 1999). This finding gives support to the theory that indirect aggression may require someone to have social intelligence, while overt forms of aggression may not (Björkvist, Lagerspetz, et al. 1992). This seems to suggest that those who are higher in social intelligence are more inclined to use a means of aggression that is less likely to result in retaliation.

Aggression, CU Traits, and Empathy

As previously mentioned, certain subtypes of aggressive behavior are associated with a callous and unemotional personality style. CU traits are defined as a particular pattern of affective (absence of guilt, constricted display of emotion) and interpersonal (failure to show empathy, use of others for one's own gain) deficits that have been consistently shown to be tied to higher rates of conduct problems (Essau, Sasagawa, & Frick, 2006; Frick, Kimonis, Dandreaux, & Farrell, 2003; Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005) and psychosocial impairment (Essau et al., 2006), and seem to designate a more dangerous subset of antisocial youth (Frick et al. 2005). The possession of CU traits not only predicts the severity of the crimes, but also has been reported to be stable in nature from late childhood and early adolescence using parent reports (Frick et al., 2005; Frick, Kimonis, et al., 2003). In a one year follow-up study with a sample of ninety-eight children from grades third, fourth, sixth, and seventh grades (M= 12.43 years), parent and teacher reports were given to assess CU traits and self-reports were used to assess levels of delinquency and functions of aggression (Frick, Cornell, Barry, Bodin, & Dane, 2003). One year later, the children filled out self reports of delinquency and an assessment designed to distinguish between proactive and reactive forms of aggression and they were screened for conduct problem symptoms. At the one year follow-up, those children who possessed high levels of CU traits and conduct problems had higher rates of

conduct behavior problems in terms of number and variety. Also, children with CU traits and conduct problems were more likely to rate higher on self-reports of delinquency. Those possessing CU traits and conduct problems rated higher on proactive aggression than those who were rated high on conduct problems alone.

The findings indicating that proactive aggression is uniquely associated with CU traits have been supported by previous research (Kimonis, Frick, Boris, et al. 2006; Kimonis, Frick, Fazekas, & Lonely, 2006, Marsee & Frick, 2007). Using a high risk preschool sample, Kimonis, Frick, Boris, and colleagues (2006) found that CU traits were significantly related to proactive aggression, but not reactive aggression. Research has also supported a unique association of CU traits with general relational aggression in a community sample of youth (Marsee, Silverthorn, & Frick, 2005) and with proactive relational aggression in a detained sample of girls (Marsee & Frick, 2007).

Studies examining lack of empathy (a component of CU traits) suggest that lacking empathy may increase aggressive behavior in others (Gini, Albiero, Benelli, & Gianmarco, 2007; Loudin et al., 2003). Using peer nomination scales for aggression and a self report measure for empathy in a sample of college students, Loudin et al. (2003) showed that two components of empathy (perspective taking and empathetic concern) are associated with relational aggression. Perspective taking, defined as the cognitive component of empathy and assesses the ability to spontaneously adopt the viewpoint of others, was negatively associated with relational aggression across gender. However, it was only found for males that lower levels of empathetic concern, which is the tendency to feel concern or warmth for another person, were associated with higher levels of relational aggression. Gini et al. (2007) have shown that in males low levels of empathy predicted bullying behavior and that higher levels of empathy was more associated

with defending victims of bullying behavior.

It is clear from research on CU traits, empathy, and aggression that a lack of empathy for others may play an important role in a youth's engagement in aggressive acts, especially those of a proactive nature (Kimonis, Frick, Fazekas et al., 2006; Marsee & Frick, 2007). This seems to be true for both proactive overt and proactive relational aggression (Marsee & Frick, 2007). Recently, researchers have begun to examine the role of social intelligence in the relationship between relational aggression and empathy. A recent literature review found that when researchers controlled for empathy, all relationships between social intelligence and aggression increased (Björkvist et al., 2000). Among the findings, increased use of indirect aggression tended to be found in socially intelligent individuals who lacked empathy, while those individuals who ranked high on social intelligence and empathy tended to be good at conflict resolution (Björkvist et al., 2000). These findings support the idea that empathy may explain the link between social intelligence and relational/indirect aggression, suggesting that a lack of empathy is needed for one possessing high social intelligence to engage in such aggressive acts (Björkvist et al., 1999). Possessing empathy may prevent those who have a superior ability to read, perceive, and manipulate others from engaging in aggressive behavior that could have long-lasting negative social effects. Conversely, a lack of empathy or the presence of CU traits, along with high levels of social intelligence, may predispose a youth to engage in higher levels of relational aggression of a proactive nature.

Statement of the Problem

Researchers agree that aggressive behavior is multidimensional and consists of different forms (i.e., overt and relational), as well as different functions (reactive and proactive). While both the forms and functions are highly correlated in youth, research supports their

distinctiveness and associations with unique developmental correlates (Card et al., 2008; Crick & Grotpeter, 1995; Crick, 1996; Rys & Bear, 1997). Examination of these correlates is crucial in order to understand the development of aggression and also has important implications for intervention with aggressive youth.

Of particular recent interest in the aggression literature is the distinction between relational and overt aggression. While these subtypes are similar in many ways, much less is understood about the development of relational aggression as compared to overt aggression. However, one developmental theory has been proposed to explain the emergence of relational/indirect aggression in youth (Björkqvist, Lagerspetz, et al., 1992; Björkqvist, Österman, et al., 1992), and this theory stresses the importance of social intelligence as key to the effective use of this type of aggression, particularly when combined with a lack of empathy. However, this research did not examine whether social intelligence was differentially associated with reactive versus proactive relational aggression. The proposed study seeks to address this question, with the expectation that social intelligence will show a stronger association with proactive relational aggression.

Secondly, the study sought to examine the relationship between social intelligence, lack of empathy, CU traits, and the subtypes of relational aggression. Numerous studies have examined the association between CU traits and aggression. Results consistently indicate that CU traits show a stronger association with proactive aggression than reactive aggression, and this appears to be true for both relational and overt forms of aggression (Marsee & Frick, 2007). Further, studies examining lack of empathy (a main component of CU traits) and aggression suggest that low levels of empathy are associated with bullying behavior (Gini, 2007). These findings converge to suggest that a lack of empathy and/or the presence of CU traits may play an

important role in the relationally and physically aggressive behavior of children and adolescents. Since social intelligence seems to explain variance in relational/indirect aggression after controlling for empathy levels, it is expected that a similar relationship will emerge when controlling for level of CU traits. That is, based on past research we expect both CU traits and empathy levels to moderate the relationship between social intelligence and proactive subtypes of aggression.

Hypotheses

1. Aggression will be correlated with social intelligence.
 - a. Proactive relational aggression is expected to be positively correlated with social intelligence.
 - b. Reactive relational aggression is expected to be negatively correlated with social intelligence.
 - c. Reactive overt aggression is expected to be negatively correlated or have no association with social intelligence.
 - d. Proactive overt aggression is expected to be negatively correlated or have no association with social intelligence.
2. The association between the proactive forms of aggression and CU traits will be significantly stronger than the association between reactive forms of aggression and CU traits.
 - a. Proactive relational aggression is expected to have higher association with CU traits than reactive relational aggression.
 - b. Proactive overt aggression is expected to have higher association with CU traits than reactive overt aggression.
3. CU traits will moderate the relationship between social intelligence and proactive relational

aggression.

- a. It is expected that there will be a positive correlation between proactive relational aggression and social intelligence and that the relationship will be stronger for children who are high on CU traits than those who are low on CU traits and that the difference between the two will be significant.
4. CU traits is not expected to moderate the relationship between social intelligence and the other three subtypes of aggression (i.e., reactive overt aggression, reactive relational aggression, and proactive overt aggression).
 5. Empathy will moderate the relationship between social intelligence and proactive relational aggression.
 - a. It is expected that there will be a positive correlation between proactive relational aggression and social intelligence and that the relationship will be stronger for children who are low on empathy than those who are high on empathy and that the difference between the two will be significant.

Methods and Design

Participants

Two local public high schools in southern Mississippi were targeted for data collection. The targeted participants were the students enrolled in 9th through 12th grade (n estimated at 1,800 within the two schools combined). Parental consent forms were distributed during the first period class in order to ensure that all of the students in the targeted grades received one. Only 1,300 of the 1,800 consent forms given to the first period teachers were distributed. Reminders to turn in completed consent forms were sent out to the students a few weeks after the consent forms were distributed. 317 students came to school with a signed parental consent form to

participate in the study. Of the 317 students who had signed consent forms, 120 students did not report to the testing area during any of the three days of collection. Additional students were prevented from participating due to standardized test preparation, leaving only 177 possible participants. 12 cases were not included in the final analyses because they were missing more than half of the data points on the main measures of interest and 1 was not included because it was an outlier on the social intelligence scale as identified by a z-score in excess of 3.29 (Tabachnick & Fidell, 2001). The final participating sample consisted of 164 students (61% females) between the ages of 14 to 18 ($M=14.97$; $SD = 1.10$). The ethnicity of the sample appeared to be representative of the entire student body. Of the students who participated, 63% of the sample was Caucasian, 30% was African American, and 7% reported “other” for ethnicity. Ethnicity was coded as 0 = minority (37%) and 1 = Caucasian (63%).

Measures

Demographic Survey A demographic survey was conducted in order to obtain information about the participants’ age, gender, and ethnicity.

Peer Conflict Scale (PCS; Marsee & Frick, 2007) The PCS is a self report measure, which contains 40 items that have been designed to measure aggression. Half the items are designed to assess reactive and proactive forms of relational aggression (reactive: “I make new friends to get back at someone who has made me angry; proactive: “I gossip about others to become popular”). The other 20 items are used to assess the reactive and proactive forms of overt aggression (reactive: “If others make me mad, I hurt them”; proactive: “I threaten others to get what I want”). The items are rated on a four point scale (0= “not at all true,” 1= “somewhat true,” 2= “very true,” and 3 = “definitely true”) and the scores are calculated by summing up the 10 items for each of the four separate subscales (range = 0-30) and the overall overt and

relational aggression scores can also be calculated by summing up each one's 20 corresponding items (range = 0-60). The PCS has shown good internal consistency for the four subtypes of aggression in previous studies (coefficient alphas: reactive overt = .85-.87; proactive overt = .82 - .84; reactive relational = .80 - .83; proactive relational = .74 - .76) among detained girls (Marsee & Frick, 2007); and a community sample of youth between the ages of 6 to 17 (Marsee et al. 2008). Evidence has been accumulated that has shown that this measure is appropriate for an adolescent population (Marsee & Frick, 2007) to find significantly unique correlates for reactive and proactive aggression. Good internal consistency was demonstrated for the scores for total reactive and total proactive aggression (Cronbach's α : total reactive = .87; total proactive = .86). For the purposes of this study the scores for each of the aggressive subtypes were calculated and demonstrated adequate to good internal consistency (Cronbach's α : proactive overt = .92; proactive relational = .77; reactive overt = .78; reactive relational = .86).

Interpersonal Reactivity Index (IRI; Davis, 1983) The IRI is a 28-item self-report instrument designed to measure cognitive and emotional aspects of empathy. The Index consists of four 7-item subscales, each of which assesses a specific aspect of empathy. The Perspective-Taking subscale measures an individual's tendency to adopt the point of view of others (e.g., "I try to look at everybody's side of disagreement before I make a decision"). The Fantasy subscale measures the tendency to take on the feelings of fictional characters (e.g., "I daydream and fantasize, with some regularity, about things that might happen to me"). The Empathic Concern subscale measures the tendency to experience feelings of warmth, compassion, and concern for others (e.g., "When I see someone being taken advantage of, I feel kind of protective towards them"). Finally, the Personal Distress subscale assesses an individual's feelings of personal unease and discomfort in reaction to the emotions of others (e.g., "I sometimes feel helpless

when I am in the middle of a very emotional situation”). Items are rated on a five-point scale (1 = “not true about me” to 5 = “extremely true about me”). For the purposes of the current study, only the Perspective-Taking and Empathic Concern subscales (combined for a total empathy score) were used. In the Italian population, there has been some evidence to support that this measure is appropriate for adolescents (Gini, Albiero, Benelli, & Altoe, 2007). Gini et al. found acceptable levels of internal consistency for the Perspective Taking scale (Cronbach’s $\alpha = .69$) and the Empathic Concern scale (Cronbach’s $\alpha = .73$). The total empathy scale used in the current study (i.e., the combined Perspective-Taking and Empathic Concern subscales) demonstrated adequate internal consistency (Cronbach’s $\alpha = .73$).

Inventory of Callous-Unemotional Traits (ICU; Frick 2004) The ICU is a 24-item self-report questionnaire that is designed to assess callous and unemotional traits in youth that had been previously adapted from a six-item scale of the Antisocial Process Screening Device (Essau, Sasagawa, & Frick, 2006). The items are rated on a four point scale (0= “not at all true,” 1= “somewhat true,” 2= “very true,” and 3 = “definitely true”). This measure is composed of items that are designed to measure three subscales of CU traits: Callousness, Uncaring, and Unemotional. The first subscale is for the callous attitude towards others (“I do not care if I get in trouble”). The second subscale measures the lack of caring about performance (“I always try my best”). The third subscale is designed to measure the lack of emotional expression (“It is easy for others to tell how I am feeling”). All positively worded items have to be reverse scored and then the total score is calculated by summing up the items.

The total ICU scale has demonstrated adequate internal consistency (Cronbach’s $\alpha = .77$) in past research with German adolescents (Essau et al., 2006) and juvenile offenders (Kimonis, Frick, Skeem, Marsee, Cruise, Munoz, et al., 2008) who were between the ages of 12 and 20. In

the current study, the total ICU score demonstrated good internal consistency (Cronbach's $\alpha = .83$). In the study with the sample of German adolescents, the total ICU score has shown good concurrent validity to be significantly and negatively associated with the Big Five personality traits such as extraversion ($r = -.26, p < .001$) and agreeableness ($r = -.57, p < .001$).

The study that used juvenile offenders demonstrated good construct validity with the total ICU score has been correlated with measures on the four aggressive subtypes (reactive relational, reactive overt, proactive relational, proactive overt) ranging from $r = .27$ to $r = .44$ ($p < .05, p < .001$, respectively) and all three types of self-reported delinquency (total, violent, and nonviolent) ranging from $r = .16$ to $r = .44$ ($p < .05$).

Tromsø Social Intelligence Scale (TSIS; Silvera, et al., 2001) The TSIS is a 21-item self report measure that is designed to measure social intelligence. There are 7 items dedicated to measure the three factors of social intelligence: social information processing ("I can predict other peoples' behavior"), social skills ("I often feel uncertain around new people who I don't know"), and social awareness ("It seems I have often hurt others without realizing it"). The items are measured on a 7 point Likert scale (1= "Describes me extremely poorly," and 7= "Describes me extremely well"). The negatively worded items are reverse scored, and all the items are summed to get a total social intelligence score. Past research has shown that the TSIS for adolescents showed acceptable levels of reliability across all three subscales (Social Information Processing (Cronbach's alpha = .80), Social Skills (Cronbach's alpha = .79), and social awareness (Cronbach's alpha = .70) (Gini, 2006). Past research has usually only looked at the alphas for the separate subscales. The total scale demonstrated relatively low internal consistency in the current study (Cronbach's alpha = .67).

Procedures

Before data were collected, the University of Mississippi's Institutional Review Board was contacted in order to obtain approval of the procedures of the study. The Mississippi School District granted permission for conducting the study. All of the first period teachers were given parental consent forms and invitations for the study, so that they could distribute them in class to all of the targeted students in grades 9 through 12. A list of contacts for local mental health facilities and services was attached to each consent form. Within three weeks of distributing the consent forms, parents who did not respond to the study's invitation were sent a reminder note. Signed parental consent forms were necessary for any student wishing to participate in the study. During their free period at school, the students who were willing to participate and had signed parental consent forms were assessed in large groups on three separate days.

Packets containing the questionnaires were distributed to the students. Upon receiving the packets, all of the students had the procedures for the study explained to them. The students were then asked if they wanted to participate and they were informed that they could drop out of the study at any time without any consequences. Those who agreed to participate were asked to write their names on the assent forms, which was the front page of each packet. They were then asked to tear off the assent form and use it to cover their answers while they worked, in order to help maintain their privacy.

Instructions on how to complete the measures were read aloud to the students. The data collection session lasted between 60 to 90 minutes. Once the packets were returned, each student was given a coupon that allowed them to receive a snack food item at a fast food restaurant. Data was collected over the course of three days, and each student was assessed in one session.

Results

Correlational Analyses

To test Hypothesis 1, bivariate correlations were conducted to assess the relationships between the variables, especially to determine the association between social intelligence and the overt and relational forms of aggression. Table 1 has all the means and standard deviations for the variables. As can be seen in Table 1, the four subtypes of aggression were significantly positively correlated with each other. The correlations between social intelligence (SI) and the subtypes of aggression were nonsignificant (r s ranging from $-.109$ to $-.010$).

Table 1

Means, standard deviations, and correlations for main study variables

(n = 164)	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12
1 ProOvt	1.69	2.93	0	21	-----	.716**	.623**	.594**	.923**	.706**	-.109	.380**	-.183*	.067	-.082	-.006
2 ProRel	2.22	3.05	0	22			.497**	.783**	.929**	.704**	-.010	.265**	-.066	-.025	.089	.143
3 ReaOvt	5.68	5.65	0	27				.478**	.603**	.916**	-.022	.449**	-.238**	.101	-.042	-.091
4 ReaRel	3.40	3.70	0	19					.745**	.790**	-.032	.267**	-.020	-.058	.175*	.029
5 Tot Pro	3.91	5.55	0	34						.761**	-.063	.346**	-.133	.022	.005	.071
6 TotRea	9.08	8.10	0	38							-.030	.435**	-.175*	.043	.051	-.052
7 SI	93.10	13.36	55	131								-.224**	.432**	.076	.101	.031
8 CU	23.62	9.35	6	47									-.444**	-.038	-.157*	-.086
9 Emp	46.56	7.95	26	70										.064	.344**	.007
10 Age																
11 Gender																
12 Ethnicity																

Note: * p < .05, ** p < .01. ProOvt = Proactive Overt; ProRel = Proactive Relational; ReaOvt = Reactive Overt; ReaRel = Reactive Relational; TotPro = Total Proactive; TotRea = Total Reactive; SI = Total Social Intelligence; CU = Total Callous and Unemotional Traits; Emp = Empathy. Gender was coded as 0 = male and 1 = female.

To test Hypothesis 2, bivariate and partial correlations (controlling for other subtypes of aggression) were used to examine whether the association between CU traits and aggression was stronger for the proactive subtypes of aggression than the reactive subtypes and to determine the level of association between CU and each of the four subtypes of aggression (reactive relational, proactive relational, reactive overt, and proactive overt). As can be seen from the bivariate correlations reported in Table 1, the association between CU traits and the proactive subtypes of aggression (r s ranging from .265 to .380) was not stronger than the association between CU traits and the reactive subtypes of aggression (r s ranging from .267 to .449). Using partial correlations, when total reactive aggression was partialled out, the association between CU traits and proactive aggression was not significant, however, when total proactive aggression was partialled out the association between total reactive aggression and CU traits was still significant ($r = .281, p < .001$). Using partial correlations, when reactive overt aggression was controlled for, the relationship between proactive overt aggression and total CU was not significant ($r = .143, p > .05$). However, when proactive overt aggression was controlled for, the relationship between reactive overt and CU traits was significant ($r = .293, p < .05$). When controlling for proactive relational aggression, the relationship between CU traits and reactive relational aggression was not significant ($r = .100, p > .05$). When controlling for reactive relational aggression, the relationship between CU traits and proactive relational aggression was not significant ($r = .093, p > .05$).

Moderation Tests

In order to test Hypotheses 3 through 5, moderational regression analyses were conducted. To test Hypotheses 3 and 4, four linear regression analyses were used to determine whether CU traits moderated the relationship between social intelligence (SI) and any of the four

subtypes of aggression. Both the CU traits and social intelligence variables were centered to decrease the possibility of multicollinearity influencing results. For each of the linear regression analyses one of the four subtypes was entered as the dependent variable, and total CU traits, total social intelligence and an interaction term of social intelligence (centered) and CU traits (centered) were entered simultaneously as predictors. Results indicated that for each of the regression analyses, social intelligence was not a significant predictor of any of the aggressive subtypes (proactive relational: $\beta = .052, p > .05$; proactive overt: $\beta = -.027, p > .05$; reactive relational: $\beta = .029, p > .05$; reactive overt: $\beta = .083, p > .05$). However, CU traits was a significant predictor for all subtypes of aggression (proactive relational: $\beta = .277, p < .05$; proactive overt: $\beta = .376, p < .05$; reactive relational: $\beta = .274, p < .05$; reactive overt: $\beta = .467, p < .05$). Social intelligence did not interact with CU traits as indicated by the non-significant interaction terms in all four models (proactive relational: $R^2 = .055, R^2 \text{ change} = .000, \beta = -.009, p > .05$; reactive relational: $R^2 = 1.31, R^2 \text{ change} = .002, \beta = -.009, p > .05$; proactive overt: $R^2 = .055, R^2 \text{ change} = .000, \beta = -.045, p > .05$; reactive overt: $R^2 = 1.93, R^2 \text{ change} = .000, \beta = .009, p > .05$). Since none of the interactions were significant, no post hoc probing was necessary.

To test Hypothesis 5, four linear regression analyses were used to determine whether empathy moderated the relationship between SI and any of the four subtypes of aggression. Both the empathy and social intelligence variables were centered. For each of the linear regression analyses one of the four subtypes was entered as the dependent variable, and empathy, total social intelligence and an interaction term of social intelligence (centered) and empathy (centered) were entered simultaneously as predictors. Results indicated that for each of the regression analyses, social intelligence was not a significant predictor of any of the aggressive subtypes (proactive relational: $\beta = .026, p > .05$; proactive overt: $\beta = -.045, p > .05$; reactive

relational: $\beta = -.024, p > .05$; reactive overt: $\beta = .098, p > .05$). However, empathy was a significant predictor for both reactive and proactive overt aggression (reactive overt: $\beta = -.281, p < .05$; proactive overt: $\beta = -.175, p < .05$), but not for reactive or proactive relational aggression (reactive relational: $\beta = -.004, p > .05$; proactive relational: $\beta = -.073, p > .05$). Social intelligence did not interact with empathy as indicated by the non-significant interaction terms in all four models (proactive relational: $R^2 = -.014, R^2 \text{ change} = .000, \beta = -.014, p > .05$; reactive relational: $R^2 = .018, R^2 \text{ change} = .001, \beta = -.019, p > .05$; proactive overt: $R^2 = -.017, R^2 \text{ change} = .000, \beta = .039, p > .05$; reactive overt: $R^2 = .047, R^2 \text{ change} = .000, \beta = .004, p > .05$). Since none of the interactions were significant, no post hoc probing was necessary.

Supplementary Analyses

Additional analyses were conducted in order to investigate the relationship between the aggressive subtypes, CU traits, and social intelligence. Due to the high correlation between the aggressive subtypes ($r_s = .478$ to $.783$), it was necessary to conduct analyses allowing for the control of overlap among the subtypes. Thus, profile analysis was conducted in order to examine potential differences in levels of CU traits and social intelligence across aggressive subtypes.

Profile analysis

To test whether or not level of aggression depended on level of CU traits and SI, a profile analysis was performed. This method allows one to look for an interaction between aggression, CU traits, and social intelligence. For this repeated measures multivariate analysis of variance (MANOVA), the grouping variables (IVs) were CU traits and social intelligence, with groups for each variable created by centering (creating a new variable where the mean is zero) the total CU and social intelligence variables and using a mean split to divide them into high and low groups, where everything below zero mean is the low group and everything above is the high group. The

dependent variables were the four subtypes of aggression. This 2 (high and low CU traits) by 2 (high and low SI) by 4 (four aggression subtypes) repeated measures MANOVA was used to determine whether individuals' level of social intelligence and CU traits was associated with differences in their levels of aggression.

Within subjects

First, the interaction between aggression, CU traits, and social intelligence within subjects was explored. Taking into consideration that Mauchly's test of sphericity was violated ($p < .001$) (i.e., the variances of the differences between the levels of the repeated measures factor were not equal), sphericity could not be assumed. To correct for the violation of sphericity, results are reported using Greenhouse-Geisser, which alters the degrees of freedom, affecting the significance value of the F-ratio. The results indicated that there was no significant interaction $F(1.83, 292.96) = .112, p > .05, \eta^2 = .001$, meaning that individuals' levels of aggression did not depend on the interaction of the levels of social intelligence and CU traits. There was a main effect of aggression $F(1.831, 292.96) = 77.60, p < .05, \eta^2 = .327$. Post-hoc analyses using paired sample t-tests were conducted to find the aggression differences. Since multiple t-tests were run a Bonferroni correction was performed ($.05/12 = .008$). As can be seen in Table 2, the mean of proactive overt aggression was significantly lower than that of proactive relational, reactive overt, and reactive relational aggression. In addition, reactive relational aggression was significantly higher than proactive relational aggression and significantly lower than reactive overt aggression.

Table 2

Post hoc paired t-tests exploring mean differences sample levels of aggression

Aggression Subtype Pairs	Mean Difference	Standard Error	t value	Lower limit	Upper limit
ProOvt-ProRel	-.53	0.18	-2.99*	-.88	-0.18
ProOvt-ReaOvt	-3.99	0.35	-11.46**	-4.68	-3.30
ProOvt-ReaRel	-1.71	0.24	-7.17**	-2.19	-1.24
ProRel-ReaOvt	-3.46	0.38	-9.03**	-4.22	-2.71
ProRel-ReaRel	-1.18	0.18	-6.59**	-1.54	-0.83
ReaOvt-ReaRel	2.28	0.40	5.75**	1.49	3.06

Note: Bonferroni Correction is .008. * $p < .008$, ** $p < .001$ for two-tailed test. ProOvt = Proactive Overt; ProRel = Proactive Relational; ReaOvt = Reactive Overt; ReaRel = Reactive Relational.

Another finding was that there was an interaction between level of CU traits and aggression $F(1.83, 292.96) = 10.13, p < .05, \eta^2 = .007$. For post-hoc analyses, the high and low CU traits groups were compared and using paired sample t-tests aggression differences were explored within each group. Since multiple t-tests were run a Bonferroni correction was performed (alpha = .05/12 or .004). As can be seen in Table 3, there were significant differences between all subtypes of aggression in the low CU trait group and high CU traits group, except between proactive overt aggression and the proactive relational aggression in the high CU trait group. The interaction between aggression and the high and low social intelligence variable was found to be nonsignificant $F(1.83, 292.96) = 1.16, p > .05, \eta^2 = .06$.

Table 3

Within subjects comparisons of aggressive subtypes in low and high CU trait groups

Aggression	ProOvt	ProRel	ReaOvt	ReaRel
Low CU	1.09(2.72) ^a	1.75(2.42) ^b	4.04(4.23) ^c	2.94(3.22) ^d
High CU	2.48(3.03) ^a	2.82(3.66) ^a	7.82(6.54) ^b	4.02(4.19) ^c

Note: CU = callous and unemotional; ProOvt = Proactive Overt; ProRel = Proactive Relational; ReaOvt = Reactive Overt; ReaRel = Reactive Relational.

^{abcd} row means with the same letter are not significantly different at alpha < .05 using Bonferroni correction.

Between subjects

In the model there was a between subjects main effect for the high and low CU trait variable ($F(1,160) = 14.07, p = .000, \text{partial } \eta^2 = .001$), but not for the high and low social intelligence variables ($F(1,160) = .082, p = .775, \text{partial } \eta^2 = .081$). In order to explore the main effect of the high and low CU traits variable, post hoc analyses were conducted. Since multiple t-tests were run a Bonferroni correction was performed (alpha = .05/4 or .01). Using independent sample t-tests, it was discovered that those with high levels of CU traits had significantly higher

levels of proactive overt ($t(141.76) = -3.05, p = .003$), and reactive overt ($t(113.06) = -4.24, p < .001$) aggression than those with low levels of CU traits.

Gender differences

As mentioned previously, gender research concerning relational aggression has been inconsistent. To explore whether or not the association between aggression, CU traits, and social intelligence differed for girls and boys, a 2 (male and female) by 2 (high and low CU traits) by 2 (high and low SI) by 4 (four aggression subtypes) repeated measures multivariate analysis of variance (MANOVA) was conducted to determine whether males' and females' level of social intelligence and CU traits were associated with differences in their levels of aggression.

Within subjects

There was no interaction between aggression, gender, SI, and CU traits, $F(1.80, 273.16) = .643, p > .05$. However, there was a significant interaction between gender and aggression, $F(1.80, 273.16) = 3.24, p < .05$. In order to explore these differences, males and females were compared and post hoc analyses using paired samples t-tests were conducted to explore which aggressive subtypes were significantly different from one another within males and females. A Bonferroni correction of .004 (.05/12) was used. The results of Table 4 show that for males, reactive overt aggression was significantly higher than all the other subtypes of aggression, and that there were no further differences among the other aggressive subtypes. When looking at females, the results indicate that they endorsed significantly higher levels of proactive relational aggression than proactive overt aggression. Furthermore, their levels of reactive overt aggression are significantly higher than proactive overt, reactive relational, and proactive relational aggression. Also, females had significantly higher levels of reactive relational aggression than proactive overt and proactive relational aggression.

Table 4

Within subjects comparisons of aggressive subtypes in gender groups

Aggression	ProOvt	ProRel	ReaOvt	ReaRel
Males	2.03(3.62) ^a	1.93(2.43) ^a	6.06(5.21) ^b	2.65(3.30) ^a
Females	1.54(2.44) ^a	2.49(3.43) ^b	5.57(6.00) ^c	3.98(3.91) ^d

Note: ProOvt = Proactive Overt; ProRel = Proactive Relational; ReaOvt = Reactive Overt; ReaRel = Reactive Relational.

^{abcd} row means with the same letter are not significantly different at alpha <.05 using Bonferroni correction.

Between subjects

When gender was the only independent variable looked at the results indicated that there were no significant differences in the amount of aggression between the aggression subtypes $F(1,152) = 2.38, p >.05$. Between subjects there was a significant interaction between gender and SI, $F(1,152) = 8.68, p <.05$. The groups were split by high and low SI and independent samples t-tests were conducted to see where males and females differed in aggression. A Bonferroni correction of .006 (.05/8) was used to determine significance. The only significant difference between males and females was in the high social intelligence group for reactive relational aggression. Table 5 shows that in the high social intelligence group, females scored significantly higher than males on the reactive relational aggression subscale. There was also a significant interaction between gender and CU traits, $F(1,152) = 5.18, p <.05$. The groups were split by high and low CU traits and independent samples t-tests were conducted to see where males and females differed in aggression. According to Table 6, the only significant difference found was that in the high CU traits group, females were significantly higher than males in reactive relational aggression.

Table 5

Independent t-tests examining gender differences in aggressive subtypes for high and low social intelligence groups

Aggression	Full Sample ($N = 80$)	Male ($N = 36$)	Female ($N = 44$)	p
<i>Low SI</i>				
Proactive Overt	1.89(3.33)	2.78(4.44)	1.25(1.89)	.060
Proactive Relational	2.16 (2.65)	2.46(2.89)	2.02(2.49)	.473
Reactive Overt	5.48(5.17)	6.58(5.41)	4.71(4.91)	.110
Reactive Relational	3.49(3.50)	3.44(3.85)	3.61(3.29)	.833
	Full Sample ($N = 80$)	Male ($N = 27$)	Female ($N = 53$)	p
<i>High SI</i>				
Proactive Overt	1.49(2.48)	1.03(1.70)	1.77(2.81)	.215
Proactive Relational	2.27(3.42)	1.22(1.37)	2.87(4.03)	.009
Reactive Overt	5.88(6.13)	5.37(4.95)	6.28(6.73)	.535
Reactive Relational	3.32(3.91)	1.59(1.99)	4.29(4.37)	.000

Note: SI = social intelligence; Bonferroni Correction is .006

Table 6

Independent t-tests examining gender differences in aggressive subtypes for high and low social CU traits groups

Aggression	Full Sample ($N = 90$)	Male ($N = 28$)	Female ($N = 62$)	p
<i>Low CU</i>				
Proactive Overt	1.09(2.72)	1.64(4.16)	.88(1.81)	.363
Proactive Relational	1.75(2.42)	2.07(2.60)	1.68(2.39)	.484
Reactive Overt	4.04(4.23)	4.57(3.82)	3.87(4.47)	.475
Reactive Relational	2.94(3.22)	2.75(3.61)	3.10(3.11)	.643
	Full Sample ($N = 70$)	Male ($N = 35$)	Female ($N = 35$)	
<i>High CU</i>				
Proactive Overt	2.48(3.03)	2.34(3.15)	2.69(2.96)	.640
Proactive Relational	2.82(3.66)	1.81(2.31)	3.91(4.43)	.016
Reactive Overt	7.82(6.54)	7.26(5.88)	8.58(7.15)	.339
Reactive Relational	4.02(4.19)	2.57(3.08)	5.55(4.68)	.003

Note: CU = callous and unemotional; Bonferroni Correction is .006

Discussion

The current results indicated that the four subtypes of aggression were not associated with social intelligence in this sample of adolescents. As expected, the overt forms of aggression were not associated with social intelligence. However, contrary to hypotheses, the relational forms of aggression showed no association with social intelligence, which is inconsistent with previous research (Kaukiainen et al., 1999). This inconsistency may be explained by the TSIS's relatively low internal consistency, which could have prevented one from finding a significant relationship between social intelligence and any of the forms of aggression. Another possible explanation for that inconsistency could be this study's use of a self-report method of assessing social intelligence, rather than a peer-nomination method. Previous research using a peer nomination approach has found a relationship between relational aggression and social intelligence (Kaukiainen et al., 1999). Perhaps those who are socially intelligent may not want to appear any different than anyone else and are subject to reporter biases when reporting on their own aggression. Thus, using a peer nomination approach or another method that is not subject to reporter biases (e.g., behavioral observation) might be necessary in order to examine the association between relational aggression and social intelligence.

In contrast to the results for social intelligence, the current study found that CU traits were associated with all subtypes of aggression. However, the pattern of results differed when controlling for the overlap between reactive and proactive aggression. When proactive aggression was controlled for, the relationship between CU traits and reactive aggression was still positively significant. However, the relationship between proactive aggression and CU traits was no longer significant when reactive aggression was controlled for. This finding may be due to overall low levels of proactive aggression in the current community sample. However,

research with detained samples (who would be expected to have higher levels of all types of aggression including proactive) is somewhat mixed. That is, the lack of association found in the current sample between proactive aggression and CU traits after controlling for reactive aggression is inconsistent with previous research with detained girls (ages 12-18) (Marsee & Frick, 2007), but consistent with results found in a sample of detained boys (ages 13-18) (Muñoz et al., 2007). More research is needed to determine whether sample characteristics such as gender affect the association between aggression subtypes and CU traits.

Moderational regression analyses resulted in mixed findings. Results were inconsistent with the idea that CU traits or empathy would moderate the relationship between social intelligence and proactive relational aggression. This may have been due to low levels of proactive aggression in our sample. However, the results were consistent with expectations that CU traits and empathy would not moderate the relationship between social intelligence and any of the other subtypes of aggression. This finding may indicate that regardless of levels of CU traits or empathy, social intelligence is likely to be unrelated to forms of aggression that are overt or reactive in nature. In order to examine whether the level of CU traits and social intelligence affected levels of aggression a profile analysis was conducted. The results of the profile analysis indicated that youths' level of aggression did not depend on their level of CU traits and social intelligence. These results are inconsistent with our expectations that levels of aggression would depend on levels of CU and SI. The profile analysis revealed some within and between subject findings that are worth discussing. First, it was revealed that there were significant mean differences in the amount of aggression. It was not surprising to find that the reactive subtypes of aggression were the dominant form of aggression within the community sample, since past samples with both detained adolescents (Muñoz, Frick, Kimonis, & Aucoin, 2007) and a

community sample of school children (Dodge et al., 1997) have found higher rates of and greater variability within reactive aggression than proactive aggression. Looking at the differences in aggression within high and low CU trait groups, results indicated that there were significant differences between all subtypes of aggression except that in high CU traits group there was not a significant difference between proactive overt and proactive relational aggression. This might indicate that those who are considered to be high in CU traits may use overt and relational forms equally when trying to acquire some goal, which seems to make them unpredictable. This unpredictability of aggressive behavior gives further support to the finding that having high levels of CU traits designates a more “dangerous subset of antisocial youth” (Frick et al. 2005). This study’s use of a community sample might explain the extremely low levels of proactive aggression. Using a high risk or detained sample might create groups who are not only extremely high on CU traits but also on proactive aggression.

The only aggression differences between the high and low CU trait groups were between the overt forms of aggression. Though this does provide some support that higher levels of CU traits are tied to higher levels of aggression, it is not surprising that these aggressive differences were not found in the relational subtypes of aggression. Perhaps these findings suggest that those who possess higher levels of CU traits engage in riskier violent behavior and are less concerned with getting caught for their actions, therefore, they do not engage in the more covert aggression, relational aggression, since there is research that supports that CU traits tend to be positively associated with thrill-seeking behaviors and fearlessness (Essau et al., 2006; Frick, Lilienfield, Ellis, Loney, & Silverthorn, 1999). These findings might once again be explained by the nature of the sample and that significant differences in relational aggression between high and low CU traits might be found with a high risk or detained population.

Since the research on gender differences in aggression, especially relational aggression, is inconsistent we examined gender differences in the current study, and found that there were some findings worth discussing after conducting a profile analysis using the repeated measures MANOVA. The current results indicate that among males, reactive overt aggression was significantly higher than all other subtypes of aggression. There is plenty of research that suggests overt aggression may be more prominent for males (Bailey & Ostrov, 2008; Crick, Casas, & Mosher, 1997). For females, all subtypes of aggression were significantly different from one another and the subtypes of aggression that females endorsed from highest to lowest are: reactive overt, reactive relational, proactive relational, and proactive overt. This suggests that females are more likely to use reactive forms of aggression than proactive, but when they use aggression to attain some goal, they are more likely to use the relational than the overt form.

Findings also show that although there were no differences between males and females in amount of aggression among the various subtypes, there were gender differences to be found when looking at differences in high and low groups of social intelligence and CU traits. Results indicate that in the high social intelligence group, females were significantly higher in reactive relational aggression than in the low social intelligence group. This may suggest that females with high social intelligence use more aggression that attacks social relationships and that will less likely have retributive consequences when provoked than males with high social intelligence. This fits in with past research that has demonstrated that girls in some studies do engage in more relational aggression than males (Bonica et al., 2003, Crick & Grotpeter, 1995). It should also be mentioned that females were higher than males in proactive relational aggression, but that difference only approached significance. This suggests that social intelligence might play a moderating role between gender and aggression. This finding suggests

that at higher levels of social intelligence, females might choose to engage in aggressive acts that are less likely to place them in danger of being retaliated against. Thus, the current results suggest at least for females, social intelligence may allow one to engage in forms of aggression that require certain cognitive and social skills. This would fit well with previous research that has speculated that females develop certain social or cognitive skills that allow them to engage in other types of aggression quicker than males (Björkqvist et al., 1992).

The results of the present study also suggest that CU traits may play a moderating role in the association between gender and aggression. According to the findings, the only significant difference was within the high CU traits group, where females were significantly higher in reactive relational aggression than males. As was previously mentioned, higher rates of CU traits are tied to higher levels of aggression and violence. Also, research has demonstrated that at younger ages, females rate relational aggression as more harmful and more immoral than males. With these two findings taken into consideration, perhaps at higher levels of CU traits, females are more likely to respond with aggression they happen to find more devastating and effective than men do. This particular finding is somewhat surprising in that research has typically shown that CU traits are uniquely associated with proactive aggression (Marsee & Frick, 2007). Specifically, in the current study females did not score higher than males on proactive relational aggression. Once again this finding might be explained by the use of a community sample. Perhaps in a higher risk sample, where higher rates of CU traits are expected, one might find greater differences between males and females when looking at the functions of relational aggression.

In summary, social intelligence and aggression were not associated in this community sample of adolescents. However, males and females differed in their levels of reactive relational

aggression under specific conditions. Specifically, gender differences were found in the high CU traits group and also in the high social intelligence group. These findings are particularly important because they add to the research that focuses on the distinctiveness of aggressive subtypes. This will give researchers important information that should be considered for future research in aggression subtypes when looking for gender differences. Surprisingly, there was no significant interaction which indicates that individuals who are high or low on social intelligence and CU traits do not differ in their levels of aggression. Therefore, this may indicate that within a community sample, CU traits and social intelligence might not play as an important role as it might with a sample with high levels of CU traits, such as a detained sample.

Limitations and Future Directions

Though the initial hypothesis was that CU traits and empathy would moderate the relationship between social intelligence and aggression, correlation analyses revealed that no significant relationship between the predictor and dependent variable existed. Despite this, moderation analyses were run and results indicated that neither CU traits nor empathy moderated the relationship between social intelligence and any of the four subtypes of aggression, which may have been due to the way data were collected for social intelligence within the study. The other studies that have looked at the relationship between social intelligence and aggression used peer nomination tasks to assess social intelligence, but for the purposes of this study social intelligence data was collected through self-report. We may also have had a biased community sample since we had a low participation rate. Perhaps parents with children who are higher in levels of aggression did not want their children to engage in this study, or there were working conditions that prevented children from being allowed to participate. Another limitation of the study is that the TSIS was found to have a low alpha, which could explain why no relationship

was found to exist between social intelligence and any form of relational aggression. Shared method variance is another limitation of the study. Using only self-report methods to gain all of the data could have created associations among our constructs that may not actually exist. Also, due to the cross sectional nature of the study, causation can not be implied.

Perhaps future studies that wish to examine the relationship between social intelligence and aggression should use alternative measures of social intelligence or continue to use peer nomination tasks. The results in this study did provide new information about the role of social intelligence and CU traits have on the relationship between gender and aggression. Future studies may want to look at the role social intelligence has on the relationship between gender and aggression. This study also revealed that levels of aggressive subtypes did not depend on the level of CU traits and the level of SI. One limitation is that this study was limited to a community sample. This particular finding may be limited to community samples, therefore, future studies that wish to explore if levels of CU traits and social intelligence affect levels of aggression, may want to focus on samples with higher levels of CU traits, such as a high risk or detained group. Also, this study helped highlight the importance of looking at higher levels of CU traits and social intelligence in finding gender differences in aggressive subtypes when conducting future studies. These differences might be enhanced when looking at other samples that might have higher levels of social intelligence (e.g. college level) or higher levels of CU traits (e.g. detained, high risk group). Also, future studies may want to collect data from multiple sources, such as from teachers and parents to avoid potential problems, such as elevated or false significant relationships between constructs of shared method variance. If a self report method of social intelligence is used for future research, researchers may want to consider trying to create a new measurement that has a higher internal consistency.

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