

University of New Orleans

ScholarWorks@UNO

University of New Orleans Theses and
Dissertations

Dissertations and Theses

Fall 12-20-2013

The Association between Hostile Attribution Bias, Social Intelligence, and Relational Aggression in Detained Boys

Gregory M. Fassnacht

University of New Orleans, gfassnac@uno.edu

Follow this and additional works at: <https://scholarworks.uno.edu/td>

 Part of the [Applied Behavior Analysis Commons](#)

Recommended Citation

Fassnacht, Gregory M., "The Association between Hostile Attribution Bias, Social Intelligence, and Relational Aggression in Detained Boys" (2013). *University of New Orleans Theses and Dissertations*. 1735.

<https://scholarworks.uno.edu/td/1735>

This Dissertation is protected by copyright and/or related rights. It has been brought to you by ScholarWorks@UNO with permission from the rights-holder(s). You are free to use this Dissertation in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Dissertation has been accepted for inclusion in University of New Orleans Theses and Dissertations by an authorized administrator of ScholarWorks@UNO. For more information, please contact scholarworks@uno.edu.

The Association between Hostile Attribution Bias, Social Intelligence, and Relational
Aggression in Detained Boys

A Dissertation

Submitted to the Graduate Faculty of the
University of New Orleans
In partial fulfillment of the
Requirements for the degree of

Doctor of Philosophy
in
Applied Developmental Psychology
Minor Clinical Psychology

by
Gregory Michael Fassnacht
B.A., Loyola University of New Orleans, 2005
M.S., University of New Orleans, 2010

December, 2013

© 2013, Gregory M. Fassnacht

Acknowledgement

There are several people that I must thank for supporting and inspiring me throughout my graduate career. First, I must thank my incredible mentor Dr. Monica Marsee, for her wisdom, help, and immense patience, especially in regards in pursuit of all my major goals in my graduate career. My gratitude must also extend to my parents for believing in and supporting me throughout my dissertation journey. Other individuals who must be recognized include my fellow graduate and undergraduate team members involved in aiding in data collection for Project SAINT. Specifically, my fellow graduate students Genevieve Lapré, Katherine Lau, Melissa Kunimatsu, and Kelli Thompson, who helped me contact parents and collect data from youth. My thanks is also extended to the undergraduate research assistants, Meredith Juncker, Maria Kireeva, Brian Meyer, Ilayna Mehrtens, Molly Miller, and Liliana Turcana, who helped administer questionnaires, collect charts, and complete data entry for my dissertation. Of course this research would not have been possible without the cooperation and support of Rivarde Juvenile Detention Center, Terrebonne Parish Juvenile Detention Center, and Orleans Parish Youth Study Center. Finally, I am also grateful to the rest of my committee members Dr. Paul Frick, Dr. Michelle Martel, and Dr. Carl Weems, for their input, support, and advice.

Table of Contents

LIST OF FIGURES	v
LIST OF TABLES	vi
ABSTRACT.....	vii
INTRODUCTION.....	1
HYPOTHESES	16
METHODS	17
RESULTS	22
DISCUSSION	26
LIMITATIONS AND FUTURE DIRECTIONS	30
IMPLICATIONS AND CONCLUSIONS	32
REFERENCES.....	34
APPENDIX.....	43
VITA.....	45

List of Figures

Figure 1	17
----------------	----

List of Tables

Table 1	23
Table 2	23
Table 3	24

Abstract

Research on factors that contribute to the forms and functions of aggression (reactive, proactive, relational, and overt) is important for informing intervention efforts with aggressive youth. Previous research shows that aggressive youth often have cognitive and social deficits associated with their aggressive behavior. For example, aggressive youth may exhibit deficits in social variables such as social intelligence (i.e., the understanding of behaviors of people and ability to predict outcomes of situations). Hypothetically, this lack of social intelligence may be related to how youth interpret social situations, and could conceivably lead to hostile attributional bias, or the tendency to interpret ambiguous stimuli as hostile. The main purpose of this study was to examine whether HAB mediated the relationship between social intelligence and reactive relational aggression in a sample of detained adolescent boys (ages 12-18). The results failed to support this hypothesis. Supplemental analyses explored whether HAB moderated the relationship between social intelligence and the subtypes of aggression, but results were not consistent with this hypothesis.

Subtypes of aggression, social intelligence, hostile attribution bias, detained sample

The Association between Hostile Attribution Bias, Social Intelligence, and Relational Aggression in Detained Boys

Person 1: Are you angry with me?

Person 2: I'm fine.

Above is a common text message exchange that many people may have experienced. Depending on the circumstances, many people may find Person 2's response to be ambiguous and have trouble determining if the person is actually angry or not. Also, depending on how Person 1 interprets Person 2's response, Person 1 may take Person 2's statement as fact and move on with the conversation, may feel that they are somewhat upset and respond apologetically, or he or she may feel that Person 2 is being passive aggressive and respond angrily and aggressively. It certainly is important to understand what underlying factors affect whether or not someone responds aggressively.

Forms and Functions of Aggression

What is aggression? Years of research has evolved the construct of aggression from a single to a multi-faceted construct (Little, Jones, Henrich, & Hawley, 2003) that is defined by both its form and its function. There are two forms of aggression: overt and relational aggression. 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., punching or kicking) or verbal assaults (e.g. "You suck!") (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). Though research shows that the forms of aggression are moderately to highly positively correlated (e.g., Crick & Grotpeter, 1995; 1996; Little et al., 2003; Marsee & Frick, 2007), research has also supported that they are separate from one another (for a review see Card, Stucky, Sawalani, & Little, 2008). Crick, Casas, and Mosher (1997) conducted factor analyses and found support for the relational and overt aggressive forms using both teacher-report and peer-nomination measures. Similarly, Vaillancourt, Bredgen, Boivin, Tremblay (2003) used maternal reports of aggression in a four year longitudinal study of boys and girls (starting at ages of 4 to 7), and found a two factor model of aggression (overt and relational) that was stable across time and gender.

Overt and relational aggression have different developmental outcomes that distinguish them from each other. Research has revealed that overt/ physical aggression is associated with externalizing problems, poor peer relations (for a review see Card et al., 2008) and future maladjustment (Crick, 1995). While the literature reveals that relational and overt aggression have very similar correlates (Crick & Grotpeter, 1995; 1996), there is evidence to support that relational aggression also has unique correlates that set it apart from overt aggression. Research has shown that relational aggression is uniquely related to psychosocial adjustment (Card et al., 2008; Crick, 1996; Crick & Grotpeter, 1995; Rys & Bear, 1997). For example, Crick and Grotpeter (1995) found that when controlling for overt aggression, relationally aggressive children identified through the use of peer nomination and self-report techniques reported higher levels of depression and loneliness than non-relationally aggressive children. In support of these findings, Crick (1996) conducted a longitudinal study with children in grades third through sixth grade and found that although overt and relational aggression were positively related to peer rejection, relational aggression significantly predicted future peer rejection and negative changes

in peer rejection for girls when overt aggression was controlled. Research has also focused on how being a victim of aggression distinguishes the forms from one another. For example, using a sample of third through sixth graders, Crick and Grotpeter (1996) demonstrated that victimization by relational aggression uniquely predicted social anxiety, social avoidance, and loneliness while controlling for victimization by overt aggression.

Aggression research has also revealed some gender differences. Early research suggested that girls tend to use more relational aggression than boys, and boys tend to use more overt aggression than girls (Bonica, Arnold, Fisher, & Zeljo 2003; Crick & Grotpeter, 1995). However, the majority of the recent research demonstrates that boys and girls do not have mean differences in relational aggression; rather, girls use relational aggression more than they do physical aggression, whereas, boys use more physical aggression than relational aggression (for review see Card et al., 2008). Research using cluster analyses has found that boys and girls show distinct profiles girls for physical aggression (e.g., high reactive only, high proactive, and combined types), but only girls showed the distinct profiles for relational aggression, where there was a high reactive/ low proactive relational group (Crapanzano, Frick, & Terranova, 2010). The authors suggest that the causes of relational aggression in boys may be different from the causes of physical aggression, but that the causes for physical and relational aggression may have similar causal factors for girls. This indicates that more research is needed in understanding the driving forces behind the different forms of aggression for boys as they might be more complex than that of girls.

There is other research that indicates that girls (Putallaz et al., 2007) and women (Linder, Crick, & Collins, 2002; Loudin, Loukas, & Robinson, 2003) do not show more relational aggression than boys and men. One 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).

In addition to its forms, aggression can also be differentiated by its function, which refers to the motivation behind the aggressive act. Reactive aggression refers to aggression used because the individual is reacting to a perceived harm or wrong (Dodge, 1991; Dodge & Coie, 1987), whereas proactive aggression refers to aggression that is used instrumentally or to achieve some goal (Berkowitz, 1993). Reactive aggression is rooted in the frustration-aggression model (Berkowitz, 1989), and has been described as an angry response to perceived provocation. Proactive aggression is thought to have its roots in the social learning theory (Bandura, 1973), and is described as deliberate behavior, wherein the individual is motivated by external reinforcements to obtain a desired goal. Research has shown that these two functions tend to be highly correlated (Hubbard et al., 2002; Marsee & Frick, 2007). Factor analyses have supported a two factor model for the two functions of aggression within young boys between grades third through sixth (mean age = 10 years old) (Poulin & Boivin, 2000) and adolescent boys between 7 and 16 years old (Raine, et al., 2006).

The unique emotional and cognitive correlates of reactive and proactive aggression support the distinction between them and suggest that they may develop differently and require different types of treatment. For example, research has shown that there is a unique association between emotional dysregulation and reactive aggression (Little et al. 2003; Marsee, 2008; Marsee & Frick, 2007); whereas proactive aggression is more associated with a lack of emotional reactivity (Hubbard et al., 2002; Kimonis, Frick, Fazekas, & Loney, 2006). In addition, proactive aggression tends to be more associated with callous and unemotional (CU) traits (Frick, Cornell, Barry, Bodin, & Dane, 2003; Kimonis, Frick, Boris, et al., 2006; Marsee & Frick, 2007). Furthermore, in a meta-analytical review Card and Little (2006) showed that reactive aggression is more significantly related to internalizing problems than proactive aggression. In terms of cognitive correlates distinguishing the functions of aggression, research has shown that not only do proactively aggressive children and adolescents believe that they are more competent when aggressing, they also tend to believe that their aggression will lead to more positive outcomes (versus children who are less aggressive) (Crick & Dodge, 1996; Dodge, Lochman, Harnish, Bates, & Petit, 1997; Marsee & Frick, 2007). Research also demonstrates that highly reactive aggressive individuals tend to possess hostile attribution biases, which is the tendency to attribute malicious intentions to ambiguous provocation (Bailey & Ostrov, 2008; Crick & Dodge, 1994; Crick & Dodge, 1996).

Research combining the forms and functions of aggression (i.e. reactive relational, proactive relational, reactive overt, and proactive overt) has shown that they are positively correlated (Bailey & Ostrov, 2008; Marsee & Frick, 2007; Marsee, Weems, & Taylor, 2008; Ostrov & Houston, 2008) yet distinct from one another. For example, Marsee and Frick (2007) found that in a group of detained adolescent girls, proactive relational aggression was associated

with positive expectations for aggression outcomes, whereas reactive relational aggression significantly accounted for variance in anger (though proactive relational aggression did not). Analyses also indicated that when proactive overt aggression was controlled for, proactive relational aggression contributed a significant amount of unique variance to the prediction of CU traits. Using a sample of college-aged men and women, Bailey and Ostrov (2008) found that reactive physical aggression was uniquely associated with hostile attribution biases when controlling for gender and all other subtypes. Other research has revealed that these subtypes of aggression may have unique correlates with psychosocial adjustment, and both internalizing and externalizing symptoms. Using multiple observation methods for a sample of preschool boys and girls, Ostrov and Crick (2007) found that the use of proactive relational aggression predicted future peer rejection and student teacher conflict. However, reactive relational aggression did not predict future peer rejection, when controlling for proactive relational aggression.

Yet, reactive relational aggression has been associated with adjustment problems. For example, in adolescents, Marsee et al. (2008) demonstrated that reactive relational aggression was positively associated with anxiety symptoms in boys. In support of these findings, Mathieson and Crick (2010) performed a study with a sample of third graders that explored links of the reactive and proactive subtypes of aggression with concurrent and longitudinal adjustment using teacher reports. Reactive relational aggression was shown to be uniquely associated with concurrent internalizing problems. Results also indicated that proactive relational aggression was more strongly associated with externalizing maladjustment problems than reactive relational aggression. When controlling for gender and reactive relational aggression, proactive relational aggression was the only aggressive subtype that was associated with changes in adjustment, which was the decrease of internalizing problems from Time 1 to Time 2. The researchers

suggest that this finding may indicate that children who are proactive relational aggressors may have learned to use relational aggression to acquire certain social goals with minimum emotional harm.

Social Skills/ Intelligence and Aggression

Several studies have explored how social/cognitive skills, in conjunction with the use of aggression, may affect psychosocial adjustment. Walcott, Upton, Bolen, and Brown (2008) used peer nomination measures to look at the associations of both physical and relational aggression with popularity and peer preference in a sample of 7th grade boys. They found that both reactive and proactive forms of relational aggression were associated with low peer preference, but also high and low levels of popularity. More specifically, it was the pattern of relational aggression and overt aggression that seemed to separate the high and low popular boys. For example, boys who were rated highly popular also rated high on all levels of aggression. However, boys who rated low in popularity rated low on levels of overt aggression, but not on levels of relational aggression. The researchers stated that the boys may believe that the key to high social status may be the use of relational aggression, thus explaining “why unpopular youth are also utilizing it, albeit unsuccessfully” (p. 558).

In line with these findings, Hawley, Little, and Card (2007) conducted a study that 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. These “bi-strategic” youth also showed evidence of using high levels of both overt and relational aggression. These findings not only indicate that aggressive youth may use strategic behaviors in their friendships to maintain social status, but in conjunction with the findings of Walcott and colleagues (2008),

suggest that use of both overt and relational aggression may be related to social skills, as this pattern identified the most popular students.

These two studies indicate that relational aggression may be the key to social dominance, however, one may have to possess certain social skills to effectively wield relational aggression (Walcott et al., 2008). Further, these social skills may be necessary to successfully use other forms of aggression at appropriate times to maintain power. Another way to conceptualize these findings is that with the right social skills, one can effectively use relational aggression to acquire popularity. Once popularity has been obtained, new forms of aggression can be introduced, such as overt aggression, to maintain one's social status. In essence, relational aggression becomes the "gateway" form of aggression before other forms are introduced. However, if someone does not have the necessary social skills to use relational aggression effectively but recognizes it as important to acquire that high social standing, then any attempts to use relational aggression will lead to one being unpopular.

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. Björkqvist, 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 relational 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 relational aggression one would need to possess social intelligence.

Social intelligence has had varying definitions over the years. Thorndike (1920) originally referred to individuals with social intelligence as people who had the ability to understand and manage other people and to become involved in adaptive social interactions. Other definitions include “the ability to select an appropriate behavior for the purpose of achieving goals” (Bjorkvist, Osterman, & Kaukiainen, 2000). Bjorkvist et al. proposed that a high amount of social intelligence could be used like a tool, which may allow an individual to use other forms of aggression (i.e. relational aggression) more effectively, allowing for a reduction in retaliation for their acts (2000). In support of the idea that social intelligence may have some protective component, researchers using a sample of 5th graders and peer nomination measurements have indicated that a significant negative correlation exists between social intelligence and victimization, indicating that those who had high social intelligence were less likely to be bullied (Kaukiainen, et al. 2002).

Previous research has explored the relationship between social intelligence and aggression (Kaukiainen et al., 1999). In a sample of adolescents, researchers used 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. These 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 indicates that social intelligence has a unique association with relational aggression, but not overt forms of aggression.

Further support of the idea that relational aggression may help bolster one's social status (with the help of certain cognitive abilities) comes from a study conducted by Eleni Andreou (2006) using a sample of fourth through sixth graders. Using peer nomination measures of aggression, social intelligence, and popularity, Andreou found that overt aggression was positively correlated with perceived popularity of boys, while relational aggression was positively correlated with perceived popularity in both boys and girls (2006). Andreou suggested that relational aggression may allow for effective management of "social power in ways that contribute to the popularity reputation" (p. 340). Further analyses revealed that overt aggression lost its significant positive association with perceived popularity when controlling for relational aggression, but significant positive relationships between perceived popularity and relational aggression held when controlling for overt aggression.

In line with these findings, Meijs, Cillessen, Scholte, Segers, and Spijkerman (2010) have shown that social intelligence was associated with perceived popularity, which is based on visibility, peer dominance, and status in the peer group, but that it was not associated with sociometric popularity which is a measure of peer acceptance. The researchers state that these results show that being socially intelligent as an implication for adolescent's dominance status in a peer group, but not specifically to the degree that they are liked by peers. However, Braza, Azurmendi, Munoz et al., (2009) have shown that in 5 year olds, teacher reported social intelligence was positively correlated with teacher reported peer acceptance, sociometric popularity. This may indicate that there are age related differences that social intelligence may play in the role of peer acceptance. As demonstrated, social intelligence may help individuals bolster their social statuses with various people in their environment, but it may also play a role

in helping others accurately understand and perceive social situations that may be ambiguous to others.

Hostile Attribution Bias and Aggression

Hostile attribution bias (HAB) has been defined as the tendency to attribute hostile intent to the behaviors of others, even when the social situation is ambiguous or harmless in nature (Godleski & Ostrov, 2010). According to the Social Information Processing (SIP) model, how children “perceive, interpret, and make decisions” in social situations is controlled by specific sequential steps of functioning (Godleski & Ostrov, 2010; p. 447). The steps include encoding of social cues, interpretation of social cues, clarification of goals, response access or construction, response decision, and behavioral enactment (Crick & Dodge, 1994; Crick & Dodge, 1996). It is believed that the progress through each step will affect how one will behave in a situation, and whether or not he or she will engage in negative behavior. Hostile attribution biases are believed to be the result of a pattern that involves the second step in the SIP model: the misinterpretation of social cues (Crick & Dodge, 1996). Going back to our text message example at the beginning of this paper, it is the second step of the SIP model that determines how one may interpret the “I’m fine” text example.

Associations between hostile attribution bias and the forms of aggression has also been a focus of research. Early research examining the association between hostile attribution bias and aggression first looked at strictly overt aggression (Dodge & Frame, 1980; Dodge & Newman, 1981). This early research revealed that greater levels of HAB were found to be in aggressive children than in non- aggressive children. Later HAB research included other forms and functions of aggression. For example, hostile attribution biases have been associated with relational aggression in children (Crick, 1995; Crick & Werner, 1998; Gentile, Coyne, & Walsh,

2011) and adolescents (Werner, 2012; Möller, & Krahé, 2009) for relationally aggressive scenarios. For adolescents, research using regression analyses have revealed that hostile attribution biases predict the use of relational aggression (Möller, & Krahé, 2009).

As previously mentioned, there have been several studies that seem to indicate hostile attribution biases may differentiate the functions of aggression. Research has supported that hostile attribution biases are related to reactive aggression in children, adolescents, and adults (Bailey & Ostrov, 2008; Crick & Dodge, 1994; Crick & Dodge, 1996; Dodge & Coie, 1987). However, research has also recently explored the subtypes of aggression with hostile attribution biases. For example, a study conducted by Bailey and Ostrov (2008) used self-report measures on 165 young adults exploring the association between aggression and hostile attribution biases as assessed using vignettes. The vignettes had the participants imagine both instrumental (e.g., “the student spills the drink all over your back”) and relational (e.g., “you have not been invited to this party”) provocation scenarios. Results indicated that when controlling for gender and all other subtypes, reactive physical aggression had a unique association with hostile attribution biases for instrumental provocation situations whereas reactive relational aggression had a unique association with hostile attribution biases for relational provocation scenarios.

Studies with male offender populations also support associations between HAB and aggression. For example, Dodge, Price, Bachorowski, and Newman (1990) found that in a sample of 128 adolescent boys in a maximum security prison, hostile attributional biases were positively related to reactive aggression, conduct disorder, and interpersonal violent crimes. Quiggle, Garber, Panak, and Dodge (1992) found that compared to a control sample, aggressive and depressed children were more likely to show hostile attributions. Also, only the aggressive children were more likely to choose an aggressive response to a provocative scenario, which

suggest different pathways that hostile attributions may follow. These associations have also been found in samples with adult male offenders (Vitale, Newman, Serin, & Bolt, 2005). However, research has not yet examined whether there are differential associations between the reactive and proactive subtypes of relational aggression and HAB in aggressive samples of boys, who are most in need of interventions aimed at understanding and preventing problem behavior. Findings of unique associations between relational aggression and internalizing symptoms for boys (Marsee, Weems, & Taylor, 2008) suggest that including relational aggression in the assessment of at-risk boys may be necessary to gain a comprehensive picture of their aggressive behavior and may even provide unique information not gained by focusing solely on physical aggression. As Crick (1997) discovered, children who engage in gender non-normative forms of aggression (i.e., relationally aggressive boys or physically aggressive girls) had greater externalizing and internalizing problems than gender normative and nonaggressive children. Therefore, studying relational aggression in boys may reveal essential missing components for understanding various factors contributing to externalizing behavior. Also, as previously mentioned, research has suggested that the causes of relational aggression in boys may be different from the causes of physical aggression, but that the causes for physical and relational aggression may have similar causal factors for girls (Crapanzano et al.2010), which supports the need to further understand the driving forces behind boys' aggression, which appears to be potentially more complex than that of girls.

Is Social Intelligence Associated with Hostile Attribution Biases?

As previously mentioned, hostile attribution biases are thought to be the result of the second step of the SIP model, where an individual tends to interpret hostility in an ambiguous situation or scenario. One has to inquire about what underlying factor could potentially lead to

increased error in interpretations of ambiguous scenarios. The answer could be social intelligence. As previously discussed, possessing higher levels of social intelligence or a particular set of skills is seen as a way that one may improve one's social status through the careful use of certain strategies (Andreou, 2006, Hawley et al., 2007).

Social intelligence may be an underlying cognitive construct that affects how people interpret scenarios. As previously demonstrated, social intelligence can be used as a tool to help maintain social status. However, there is also evidence that it may have some protective effect on adjustment (Hooda, Shamra, & Yadava, 2009). Hampel, Weis, Hiller, Witthoft (2011) demonstrated that for individuals aged 19 to 66, all three facets of social intelligence (social understanding, social memory, and social perception) were negatively associated with social anxiety. This suggests that perhaps those who are higher in social intelligence may be less prone to internalizing problems.

While possessing higher levels of social intelligence may protect one from internalizing problems and help one gain or maintain a high social status, deficits in social intelligence have also been attributed to higher levels of delinquency and behavior problems. One study examined potential social cognitive deficits in both a sample of young offenders and a sample of community college students (Jones, Forster, and Skuse, 2007). The researchers used tasks designed to measure individuals' ability to recognize emotions, detect the accuracy of another's gaze, and take on another's point of view (theory of mind). Results indicated that the young offenders performed significantly worse in their ability to recognize emotions or accurately assess eye gazing versus the community sample. The authors suggest that the inability to correctly recognize emotions may lead to a problem in interpreting threatening stimuli, which causes individuals to respond inappropriately, such as with aggression. This indicates that

perhaps those individuals who rate high on reactive aggression are showing a less skilled form of aggression due to low levels of social intelligence, since they are reacting aggressively because they do not fully understand the situation.

Research has previously supported positive associations between social intelligence and the use of relational aggression (Andreou; 2006; Björkvist, Lagerspetz, & Kaukiainen, 1992; Kaukiainen et al., 1999; Peeters, Cillessen, & Scholte, 2010), perhaps suggesting that those with the power to understand and predict others' behavior can use social intelligence as a tool to efficiently use a form of aggression less likely to result in retaliation. However, research has yet to explore associations of social intelligence with the proactive and reactive relational aggression subtypes. The positive association between social intelligence and relational aggression found in previous research may be due to proactive components of aggression, which may be associated with increased social competence (Crick & Dodge, 1996). Therefore, those with high levels of social intelligence could effectively know the "best" aggressive techniques to use to coerce individuals to give them what they want, making proactive forms of aggressive very adaptive to their needs. Furthermore, deficits in social intelligence may be associated with more misinterpretations of ambiguous stimuli and therefore more attribution of hostile intent leading to more frequent displays of reactive aggression.

The first purpose of this study is to examine the association between hostile attributional bias and social intelligence. It is expected that social intelligence will be negatively associated with hostile attributional bias. A second purpose is to examine differential associations between social intelligence and the reactive and proactive subtypes of relational aggression. It is expected that there will be a positive association between social intelligence and proactive relational aggression because social intelligence may be a tool allowing for one to more comfortably use a

more harmful form of aggression. However, social intelligence is expected to be negatively associated with reactive relational aggression because the reactive aggressive subtype would emerge as a consequence of increased amounts of hostile interpretations or “perceived threats” of ambiguous scenarios. Finally, it is expected that hostile attributional biases will account for the expected negative association between social intelligence and reactive relational aggression.

Hypotheses

Hypothesis 1. Social intelligence will be significantly and negatively correlated with hostile attributional biases (HAB).

Hypothesis 2. Social intelligence will be differentially associated with the reactive and proactive subtypes of relational aggression.

- a. Proactive relational aggression is expected to be positively associated with social intelligence.
- b. Reactive relational aggression is expected to be negatively associated with social intelligence.
- c. These associations are expected to remain significant after controlling for overt aggression.

Hypothesis 3: It is hypothesized that HAB will mediate the link between social intelligence and reactive relational aggression (see Figure 1).

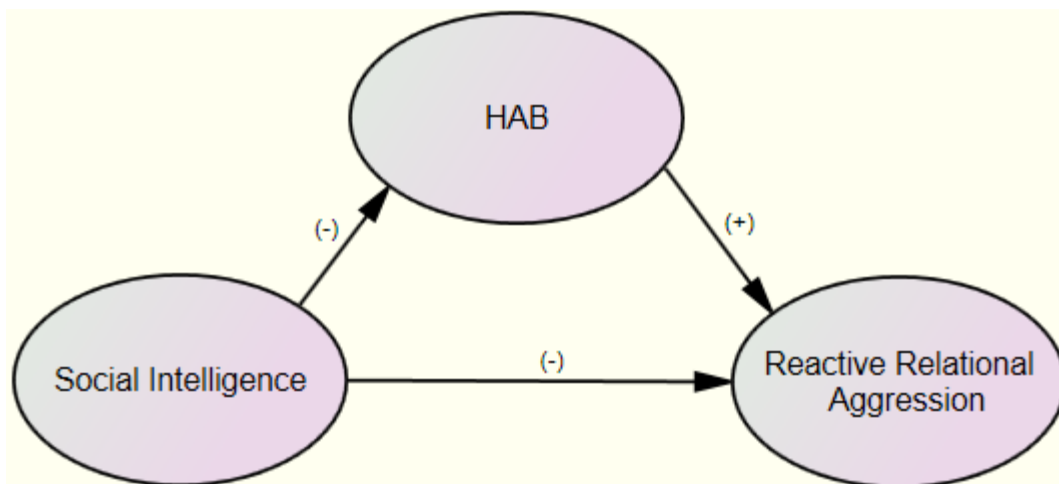


Figure 1. Hostile attributional biases will mediate the relationship between social intelligence and reactive relational aggression.

Method

Participants

Participants were recruited from three juvenile detention centers in Southeastern Louisiana: Terrebone Parish Juvenile Detention Center (7%), Youth Study Center (58%), and Rivarde Detention Services (35%). Boys between the ages of 10 to 18 were recruited as part a larger study dedicated to examining unique cognitive, emotional, and behavioral associations among various problem behaviors. Participation in the study depended on the basis of both parental and youth consent, youth availability to fill out questionnaires, and availability of their juvenile justice charts for review. Exclusionary criteria for subject participation included parental reports of severe psychotic symptoms or mental retardation. However, no participants were excluded for these reasons. Of the 507 names provided across the three detention centers, 273 parents were able to be contacted. Of those parents contacted, 208 parents provided consent. Of the youth for which parental consent was obtained, 135 youths provided assents, 10 declined to

participate, and 63 were released before they could be contacted. Further, 3 participants dropped out after reporting they were “bored”, leaving a final sample size of 132.

Of this 132, seven cases were excluded from the final analyses due to inconsistent and random responding and three were removed because they were missing more than 20% of their data points on some of the main measures of interest. Therefore, the final sample consisted of 122 boys between the ages of 12 and 18 ($M = 15.44$; $SD = 1.09$). Of the youth who participated, 85.2% were African-American, 13.9% were Caucasian, and 0.8% described themselves as another ethnicity. For the purposes of data analysis, ethnicity was coded as 1 = Caucasian (13.9%) and 0 = All others (86.1%). Of the 122 boys, the majority were currently detained for non-violent offenses (non-violent = 60.7%; violent = 39.3%). However, the majority of offenders in the sample had a history of at least one violent offense (violent history = 66.4%; non-violent history = 33.6%).

Measures

Demographic Information. A standard chart review form was completed to collect information on participants’ age, gender, ethnicity, and offense history.

Peer Conflict Scale. The Peer Conflict Scale (PCS; Marsee et al., 2011) is a 40-item self-report instrument used to measure the four subtypes of aggression: reactive overt: (e.g. “When someone hurts me, I end up getting into a fight”), reactive relational (e.g. “If others make me mad, I tell their secrets”), proactive overt: (e.g. “I start fights to get what I want”), and proactive relational (“I gossip about others to become popular”). Items are rated on a 4-point scale (0 = “not at all true,” 1 = “somewhat true,” 2 = “very true,” and 3 = “definitely true”). Aggression subtype scores are calculated by summing the 10 items that compose each of the subscales (range = 0-30). A factor analysis by Marsee et al. (2011) showed strong support for the four-

factor structure of this measure across samples (i.e., community, residential, and detained). Other research with detained girls demonstrated good internal consistency (Cronbach's α : reactive overt = .87, proactive overt = .82, reactive relational = .80, proactive relational = .76) (Marsee & Frick, 2007). For the current study, all subtypes of aggression demonstrated adequate to good internal consistency (Cronbach's α : reactive overt = .84, proactive overt = .72, reactive relational = .60, proactive relational = .72).

The Tromsø Social Intelligence Scale. The Tromsø Social Intelligence Scale (TSIS; Silvera, Martinussen, & Dahl, 2001) is a 21-item self-report instrument designed to measure three aspects of social intelligence: (a) social information processing (SP), which is the ability to understand and predict other people's behaviors and feelings (e.g., "I can predict other people's behavior"); (b) social skills (SS), which is the ability to enter and adapt to new social situations (e.g., "I fit easily in social situations"); and (c) social awareness (SA), which is the tendency to be unaware of or surprised by events in social situations (e.g., "People often surprise me with the things they do"). Respondents are asked to rate the degree to which each statement describes them on a 7-point scale (from 1 "Describes me extremely poorly" to 7 "Describes me extremely well"). Past research has confirmed the factor structure of the TSIS in both college students (Dogan & Cetin, 2009; Silvera et al., 2001) and adolescents (Gini, 2006; Meijs et al., 2010). The three factors have shown acceptable internal consistency with alphas as follows: SP ($\alpha = .79 - .80$); SS ($\alpha = .79 - .85$) and SA ($\alpha = .70 - .72$) (Gini, 2006; Silvera et al., 2001). A reliable composite score has been achieved in a sample of adolescents ($\alpha = .82$; Meijs et al., 2010). Analyses revealed that the TSIS (composite score) had poor internal consistency in the current sample (Cronbach's $\alpha = .49$).

Hostile Attributional Bias. Hostile attributional bias (HAB; Crick, 1995) was measured using an adaptation of the original Crick (1995) HAB vignettes. Each story involves a situation with a negative outcome (e.g., having milk spilled on your back, not being invited to a party) where the intent of the provocateur is ambiguous. The stories consist of five relational (e.g., seeing two peers whispering and looking at you in the hallway) and five overt (e.g., being bumped from behind and falling into a mud puddle) provocation situations. These stories have demonstrated adequate reliability for both relational ($\alpha = .65-.78$) and overt ($\alpha = .77-.86$) situations (Crick, Grotpeter, & Bigbee, 2002), as well as predictive utility for both the forms (Crick, 1995; Crick et al., 2002) and functions (Crick & Dodge, 1996) of aggression. In the original stories the provocateur is described as a ‘kid’ but five of the vignettes used in this study (two overt and three relational situations) have been modified to be gender specific, two stories involve mixed gender groups (both relational situations), and three stories (overt situations) involve a provocateur of ambiguous gender.

For the current study, the content of two stories was altered to better fit the age range. In the first, an original vignette involves bringing a radio to school to show other kids. In the modified vignette, the story contains a cellular phone instead of a radio. The second modified story involves seeing a friend receive a text message from someone unknown instead of the original version, which involved seeing a friend playing with someone unknown. After reading each story, youth are asked to answer six follow-up questions. For this study, the fifth question will be used to assess overall HAB. The question asks whether or not the participant thinks the provocateur in the story was “trying to be mean” (yes or no) and scores can range from 0 to 10. This measure demonstrated fair internal consistency (Cronbach’s $\alpha = .69$).

Procedures

The Institutional Review Board (IRB) of the University of New Orleans (UNO) granted approval of the study before any data was collected. Upon receiving IRB approval, the detention center directors were contacted and they granted permission to begin the study. For recruitment purposes, the centers provided a list of names of the detained youth with phone numbers to contact their parents or legal guardians. These contact lists were given on a weekly basis. Consent was obtained by trained graduate and undergraduate research assistants through telephone calls and by recording the consents through a digital voice recorder. Parents were informed that the purpose of the study was to determine how children develop behavior problems and to find out unique behavioral, cognitive, personality, and emotional correlates associated with those behavior problems. The parents were also informed that the assessment would take approximately 2 hours and that the participants would receive a snack afterwards. All recorded consents were transferred to a secure computer drive. Once parents consented, their children were visited in order to acquire assent. All parents and children were informed that upon completion of the study, they would receive a snack.

All data collection occurred within private rooms within the facilities, and was conducted by a data collection team consisting of trained graduate and undergraduate research assistants (RAs). After obtaining parental consent and youth assent, the RAs administered a battery of questionnaires to participants during small group sessions or individually. To control for reading and comprehension differences, one RA read each instrument aloud to the group. While the RA read the measures, the other RAs were stationed in the room to ensure that a) participants understood the questions, b) participants were not influenced by how others were answering the questions, c) participants were answering the questions one at a time, and d) participants were

able to ask questions at any time. The rooms were set up so as to maximize the separation of participants during data collection. The assistants stood close enough to the youth to observe them, but far enough away to allow them privacy. After completion of the battery, the youth received a snack as a thank you for participation.

Results

Descriptive Analyses

All means and standard deviations for the main variables can be found in Table 1. Two demographic variables, age and ethnicity, were positively and significantly associated with social intelligence and were used as covariates for the rest of the analyses. Dependent samples t-tests were run comparing aggression means. Since multiple t-tests were run a Bonferroni correction was performed ($.05/6 = .008$). As can be seen in Table 2, reactive overt aggression is significantly higher than all other subtypes of aggression and proactive overt aggression is significantly higher than proactive relational aggression.

Correlational Analyses

Hypothesis 1 stated that social intelligence would be significantly and negatively correlated with hostile attributional bias (HAB). To test this hypothesis, bivariate correlations were conducted. As can be seen in Table 1, social intelligence (TSIS) was negatively and significantly associated with HAB ($r = -.21, p < .05$). Also, social intelligence was significantly and negatively associated with reactive relational aggression ($r = -.18, p < .05$), but not with proactive relational aggression ($r = -.14, p = .12$). Social intelligence was significantly and negatively associated with reactive overt aggression ($r = -.26, p < .05$), but not with proactive overt aggression ($r = -.15, p = .10$). HAB was not significantly associated with any of the aggression variables.

Table 1*Means, standard deviations, and correlations for main study variables*

(n = 122)	Mean	SD	Min	Max	1	2	3	4	5	6	7	8
1 ProOvt	3.23	3.66	0	16	-	.65**	.70**	.58**	-.15	.07	-.06	-.08
2 ProRel	2.28	3.20	0	16.67	-	-	.32**	.64**	-.14	.06	-.14	-.06
3 ReOvt	10.40	6.48	0	30	-	-	-	.44**	-.26**	.13	-.06	-.10
4 ReRel	2.88	2.92	0	16	-	-	-	-	-.18*	.01	-.08	-.07
5 TSIS	87.00	12.37	56	126	-	-	-	-	-	-.21*	.19*	.21*
6 HAB	4.41	2.47	0	9	-	-	-	-	-	-	-.04	.02
7Age	15.44	1.09	12	18	-	-	-	-	-	-	-	-.03
8 Ethnicity	-	-	-	-	-	-	-	-	-	-	-	-

Note. * $p < .05$, ** $p < .01$. ProOvt = Proactive Overt; ProRel = Proactive Relational; ReOvt = Reactive Overt; ReRel = Reactive Relational; TSIS = Social Intelligence; HAB = Hostile Attribution Bias. Ethnicity was coded as 1 = Caucasian and 0 = Minority.

Table 2*Dependent samples t-tests exploring mean differences in levels of aggression*

Aggression Subtype Pairs	Mean Diff	Std Error	t value	p-value	Lower limit	Upper limit
ProOvt-ProRel	0.95	.26	3.63**	.000	.43	1.47
ProOvt-ReOvt	-7.18	.43	16.76**	.000	6.32	8.03
ProOvt-ReRel	0.35	.28	1.26	.209	-.20	.90
ProRel-ReOvt	-8.12	.57	14.35**	.000	7.00	9.25
ProRel-ReRel	-0.60	.24	2.55	.012	.13	1.06
ReOvt-ReRel	7.53	.53	14.25**	.000	6.48	8.58

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

Regression Analyses

Hypothesis 2 stated that social intelligence would be differentially associated with the reactive and proactive subtypes of relational aggression. To test this, hierarchical regression analyses were conducted with social intelligence entered as the dependent variable. In step 1, age and ethnicity were entered as independent variables and in step 2, the four subtypes of aggression were added. As can be seen in Table 3, reactive overt aggression was the only subtype of aggression that was significantly associated with social intelligence ($\beta = -.31, p < .05, sr = -.21$).

Table 3

Regression analyses examining associations for proactive and reactive aggression with social intelligence

Dependent variable		β	t	p	sr
Social Intelligence					
Step 1	Age	.16	1.84	.07	.16
	Ethnicity	.18	2.06	.04	.18
Step 2	ProOvt	.19	1.12	.24	.10
	ProRel	-.09	-0.65	.51	-.06
	ReOvt	-.31	-2.43	.02	-.21
	ReRel	-.07	-0.61	.54	-.05

Note. ProOvt = Proactive Overt; ProRel = Proactive Relational; ReOvt = Reactive Overt; ReRel = Reactive Relational; Ethnicity was coded as 1 = Caucasian and 0 = Minority.

Mediational Analyses

To test Hypothesis 3, which stated that HAB would mediate the relationship between social intelligence and reactive relational aggression, the bootstrapping method recommended by Preacher and Hayes (2008) was used. For this procedure, social intelligence was entered as the

independent variable, reactive relational aggression as the dependent variable, and hostile attribution bias as the mediator, while controlling for age and ethnicity. The bootstrapping procedure sampled 5000 times from the initial sample of 122 participants who had values to produce coefficients for each pathway and confidence intervals for indirect effects of the proposed model. The results did not support mediation (Indirect effect = .00. S.E. = .00, Bias Corrected CIs: HAB = -.0059 to .0137). Specifically, the confidence intervals includes zero which indicates that the indirect effects through HAB cannot be distinguished from zero. Analyses were repeated controlling for reactive overt aggression and similar results were obtained.

Supplementary Analyses

Additional analyses were conducted in order to determine whether HAB moderated the relationship between the social intelligence and the aggressive subtypes. In order to test this, four hierarchical regression analyses were used to determine whether HAB moderated the relationship between social intelligence and any of the four subtypes of aggression. First, both the HAB and social intelligence variables were centered. For each of the hierarchical regression analyses one of the four subtypes was entered as the dependent variable, and total HAB, total social intelligence and an interaction term of social intelligence (centered) and HAB (centered) were entered simultaneously as predictors in step 2, after covariates (age and ethnicity) were entered in step 1. Results indicated that for each of the regression analyses, social intelligence was not a significant predictor of three of the aggressive subtypes (proactive relational: $\beta = -.13$, $p = .27$; proactive overt: $\beta = -.11$, $p = .30$; reactive relational: $\beta = -.17$, $p = .10$), but was for reactive overt aggression ($\beta = -.24$, $p < .05$). Also, HAB was not a significant predictor for any of the subtypes of aggression (proactive relational: $\beta = .03$, $p = .73$; proactive overt: $\beta = .06$, $p =$

.56; reactive relational: $\beta = -.03, p = .74$; reactive overt: $\beta = .09, p = .36$). Social intelligence did not interact with HAB as indicated by the non-significant interaction terms in all four models (proactive relational: $\beta = -.02, p = .82$; reactive relational: $\beta = .01, p = .93$; proactive overt: $\beta = .01, p = .51$; reactive overt: $\beta = .00, p = 1.00$). Since none of the interactions were significant, post hoc probing was not conducted.

Discussion

This study sought to examine potential differential associations between social intelligence and the reactive and proactive subtypes of relational aggression in a detained sample of boys. The current findings indicate that social intelligence showed significant negative associations with the reactive forms of aggression (reactive relational and reactive overt) but not with the proactive forms (proactive relational and proactive overt). Specifically, social intelligence was negatively associated with reactive relational aggression, which is consistent with our expectations and in line with previous findings for relational aggression in community adolescents (Kaukiainen et al., 1999). However, social intelligence was also significantly negatively associated with reactive overt aggression, and reactive overt aggression was the only aggression subtype that negatively and significantly predicted social intelligence after controlling for the other three subtypes of aggression in a regression analysis. This finding was inconsistent with Kaukiainen et al.'s results showing no significant associations between overt aggression and social intelligence controlling for subtype overlap, but it makes sense when considering the aversive nature of reactive aggression. That is, youth with lower levels of social intelligence may be more likely to react aggressively due to their lack of knowledge of the social consequences of their actions. Those with lower social intelligence in this sample may be more reactive to

perceived aggressive acts, or conversely, those with higher levels of social intelligence may have been less likely to report reactive aggression for fear of being viewed poorly.

Social intelligence was not associated with proactive relational aggression as expected. As previous research has shown positive relationships between social intelligence and relational aggression (Kaukiainen et al., 1999) and also suggested that proactive relational aggression may be a method of aggression that allows for minimal harm to the aggressor (Mathieson & Crick, 2010), it was thought that perhaps proactive aggressors would have higher levels of social intelligence in this sample. At the bivariate level, associations between social intelligence and proactive aggression were negative, but interestingly when all subtypes were entered in the regression (Table 3), proactive overt aggression showed a positive (but non-significant) association. Unexpectedly proactive relational aggression remained negative and non-significant.

These unexpected results may be due to the low rate of proactive aggression reported in the current sample of detained boys. Boys in this sample reported significantly higher levels of reactive overt aggression than any other type of aggression. The reported rates of proactive aggression were much lower in the current sample when compared to a community sample of adolescents (Crapazano et al., 2010) or a sample of detained girls (Marsee & Frick, 2007). Thus, the rates of proactive aggression may have been too low to accurately assess these associations. Another interpretation could be that those that who have high levels of social intelligence may be less inclined to endorse certain types of aggression. This may be especially true for proactive aggression, which is generally viewed more negatively, as it is used to acquire gains and not in response to some sort of perceived threat (Dodge, Lochman, Harnish, Bates, & Petit, 1997).

Another important finding is that social intelligence was negatively associated with HAB, which was consistent with hypotheses and with previous research (Jones et al., 2007). This

indicates that those with lower levels of social intelligence may attribute more hostility to ambiguous actions, since they are unable to accurately understand the intentions of others. Another way to view these results is that the more social intelligence one possesses, the less likely that person will be to see hostility in ambiguous situations because they realize that perhaps other innocuous things could account for a situation occurring. The current study also found that hostile attribution bias was not associated with any of the subtypes of aggression, not even the reactive forms of aggression which is inconsistent with most previous research (Bailey & Ostrov, 2008; Crick & Dodge, 1994; Crick & Dodge, 1996). However, this finding is consistent with results from a sample of detained girls (Marsee & Frick, 2007), finding that hostile attribution bias was not associated with aggression regardless of the provocation scenario. Researchers have suggested that perhaps the widely used HAB vignette measure administered in the current study may be better suited for some samples than others (Leff et al., 2006). Specifically, it has been stated that the vignette HAB measure may not be appropriate for minority samples who have a greater chance of being exposed to high rates of violence, who come from more of an economically disadvantaged background, and who may have a different set of attributions or view aggression as a more acceptable resolution to conflict (Leff et al., 2006).

Results also showed a positive association between social intelligence and age. This finding makes sense given that certain cognitive abilities are thought to increase through either experience or continued development of areas of the brain that deal with processing of social information. This would be consistent with Björkvist, Osterman, et al.'s (1992) developmental theory of social intelligence, which states that as age increases, so should social intelligence.

However, inconsistent with the social intelligence developmental theory, age did not correlate with relational aggression.

HAB did not mediate the relationship between social intelligence and reactive relational aggression in this study. One reason that the expected findings did not emerge could be that these boys may not use relational aggression as much because they prefer to use a type of aggression that they view to be more harmful. Previous studies have demonstrated that girls view relational aggression as more harmful and worse than boys do (Coyne, Archer, & Eslea, 2006;; Murray-Close, Crick, & Galotti, 2006) However, it could also be that other mediators may be responsible for the association between social intelligence and reactive relational aggression, such as emotional regulation. Perhaps those with higher levels of social intelligence can reflect more on the consequences of their actions, which may give them a greater degree of self-control with presented with threatening stimuli. More research is needed to determine whether other variables mediate this association.

Moderation regression analyses were used to further explore the relationship between social intelligence and aggression. Analyses revealed that HAB did not moderate the relationship between social intelligence and any of the subtypes of aggression. This suggests that HAB may have little influence over the relationship between social intelligence and the aggressive subtypes. Perhaps other variables, such as emotional correlates, would moderate the relationship between social intelligence and other aggressive subtypes, as many individuals who come from poor or violent backgrounds tend to act out in a variety of ways because they may be suffering from internalizing symptoms (Begić, & Jokić-Begić, 2002). Therefore, internalizing symptoms such as anxiety or depression should be a focus for future research as moderators for social intelligence and aggressive subtypes.

Limitations and Future Directions

There are several limitations to keep in mind when reviewing the results of this study. First, causation and direction cannot be determined because the design of the study is correlational and cross-sectional in nature. Another limitation of the study is that the TSIS was found to have low internal consistency, which could have prevented one from finding a significant relationship between proactive relational aggression and social intelligence. This low alpha (versus the good alpha found in community adolescents) may indicate that the self-report measure of social intelligence used in this study might not be measuring the same construct in this detained sample. Alternatively, the expected relationship between social intelligence and proactive relational aggression may not have emerged simply because this sample had very low rates of reporting proactive aggression.

The use of self-report measures alone is also a limitation. A few of the studies that have explored the relationship between social intelligence and aggression have used peer nomination tasks to measure social intelligence (Kaukiainen et al., 1999; Kaukiainen et al., 2002). A peer nomination measure of social intelligence for the current sample would not have been feasible as it requires individuals to know each other well for long periods of time. As detention centers tend to have a high turnover rate with detained samples, either due to being released or transferred, this method would not have been possible to use. Another issue of using a self-report measure of social intelligence such as the TSIS is that it may not actually measure social intelligence but rather how much social intelligence one *perceives* him or herself possessing. However, it should be noted that the mean of social intelligence in this study ($M = 87$) was similar to that of other studies that used the TSIS with adolescent ($M = 98.49$, Meijs et al., 2010) or college samples ($M = 101.43$; Silvera et al., 2001).

Finally, since research has supported that detained samples have beliefs of aggressive self-efficacy (Dodge, Lochman, Harnish, Bates, & Petit, 1997; Marsee & Frick, 2007), detained samples may not be able to accurately report on their own level of social intelligence and may believe they possess more social intelligence than they actually do. Perhaps future research with this population would benefit from the use of performance measure of social intelligence, as it may more accurately reflect a participant's actual level of social intelligence. Performance measures, such as the Magdeburg Test of Social Intelligence (MTSI) would provide an added benefit of directly assessing someone's social intelligence skills by examining their responses to real life scenarios through four domains: written, spoken language, pictures, and video recordings (Hampel, Weiss, et al., 2011), whereas the self-report measures used in the current study may only tap into one's perceived level of social intelligence.

As our sample was primarily African American, and research has suggested that the HAB measure that was used may not be the best measure for African Americans, participants may have had a harder time maintaining attention and understanding the vignettes (Leff et al., 2006, Marsee & Frick, 2007). Research has shown that vignettes accompanied with cartoons displaying the scenarios may be more meaningful for minority samples, especially African Americans (Leff et al., 2006). Specifically, Leff et al. found that African American girls reported that the HAB cartoon task was more meaningful and understandable than the vignette version. The researchers assert that the cartoon task may be more appropriate in measuring social cognitions and assessing feelings of distress. Therefore, future research assessing HAB in minority youth should consider using vignettes that are accompanied by cartoons that help explain the scenario.

Shared method variance is another limitation of the study. Using only self-report measures could have created associations among our constructs that may not actually exist. This

highlights the need for future research 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 or biased self-reporting. The ability to generalize the results is another limitation as this particular research only included detained boys. Therefore, future studies may want to determine if these results would be consistent across community or clinical samples and/or girls.

Though this study failed to support the hypothesis that HAB would mediate the relationship between social intelligence and reactive relational aggression, the significant association between social intelligence and reactive aggression should encourage researchers to further explore social intelligence's relationship to other adjustment variables. Specifically, since previous research has found positive associations between reactive aggression and internalizing symptoms (for a review see Card & Little, 2006) perhaps future research should explore whether techniques that focus on increasing how one interprets an ambiguous situation could lead to a decrease in internalizing symptoms.

Implications and Conclusions

The current study found that social intelligence had negative associations with HAB and reactive forms of aggression in detained boys. Though this study failed to support the hypothesis that HAB would mediate the relationship between social intelligence and reactive relational aggression, the finding that social intelligence was uniquely negatively associated with reactive overt aggression controlling for proactive overt aggression increases support for the idea that reactive overt aggression may have different correlates than proactive overt aggression. These findings could have implications in creating intervention and prevention programs targeting individuals who are high on reactive aggression. More specifically, programs could target

individuals who may be at risk of engaging in reactive aggression by finding those with low social intelligence. Also, if future research shows that low social intelligence directly leads to acts of reactive aggression, then programs can focus on ways of reducing or preventing reactive aggression by attempting to increase an individual's social intelligence. Therefore, more research is needed in understanding how aggression and other cognitive variables are associated with one another in order to further the development of intervention and treatment programs that can be tailored to be the needs of detained youth.

References

- Andreou, E. (2006). Social Preference, Perceived Popularity and Social Intelligence: Relations to Overt and Relational Aggression. *School Psychology International*, 27(3), 339-351.
- Bailey, C. A., & Ostrov, J. M. (2008). Differentiating forms and functions of aggression in emerging adults: Associations with hostile attribution biases and normative beliefs. *Journal of Youth and Adolescence*, 37, 713-722.
- Bandura, A. (1973). *Aggression: A social learning analysis*. Englewood Cliffs, NJ: Prentice-Hall.
- Begić, D., & Jokić-Begić, N. (2002). Violent behaviour and post-traumatic stress disorder. *Current Opinion In Psychiatry*, 15(6), 623-626.
- Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin*, 106, 59-73.
- Berkowitz, L. (1993). *Aggression: Its causes, consequences, and control*. New York: Academic Press.
- Björkqvist, K., Lagerspetz, K. M. J., & Kaukiainen A. (1992). Do girls manipulate and boys fight? Developmental trends regarding direct and indirect aggression. *Aggressive Behavior*, 18, 117-127.
- Björkqvist, K., Österman, K., & Kaukiainen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In Björkqvist, K. & Niemela, P. (Eds.) *Of mice and women: Aspects of female aggression* (pp. 51-64). San Diego, CA. Academic Press, Inc.
- Björkqvist, K., Österman, K., & Kaukiainen, A. (2000). Social intelligence – empathy =

- aggression? *Aggression and Violent Behavior*, 5, 191-200.
- Bonica, C., Arnold, D. H., Fisher, P. H., Zeljo, A., & Yershova, K. (2003). Relational Aggression, Relational Victimization, and Language Development in Preschoolers. *Social Development*, 12(4), 551-562.
- Braza, F., Azurmendi, A., Muñoz, J. M., Carreras, M. R., Braza, P., García, A., & ... Sánchez-Martín, J. R. (2009). Social cognitive predictors of peer acceptance at age 5 and the moderating effects of gender. *British Journal Of Developmental Psychology*, 27(3), 703-716.
- Card, N. A., Stucky, B. D., Sawalani, G. M., & Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Development*, 79(5), 1185-1229.
- Coyne, S. M., Archer, J., & Eslea, M. (2006). “We’re not friends anymore! Unless...”: The frequency and harmfulness of indirect, relational, and social aggression. *Aggressive Behavior*, 32, 294-307.
- Crapanzano, A., Frick, P. J., & Terranova, A. M. (2010). Patterns of physical and relational aggression in a school-based sample of boys and girls. *Journal Of Abnormal Child Psychology*, 38(4), 433-445.
- Crick, N.R. (1995). Relational aggression: The role of intent attributions, feelings of stress, and provocation type. *Development and Psychopathology*, 7, 313-322.
- Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children’s future social adjustment. *Child Development*, 67, 2317-2327.

- Crick, N. R. (1997). Engagement in gender normative versus nonnormative aggression: Links to social-psychological adjustment. *Developmental Psychology, 33*(4), 610-617.
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*(1), 74-101.
- Crick, N. R., Casas, J. F., & Mosher, M. (1997). Relational and overt aggression in preschool. *Developmental Psychology, 33*(4), 579-588.
- Crick, N. R., & Dodge, K. A. (1996). Social information-processing mechanisms in reactive and proactive aggression. *Child Development, 67*, 993-1002.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66*(3), 710-722.
- Crick, N. R., & Grotpeter, J. K. (1996). Children's treatment by peers: Victims of relational and overt aggression. *Development and Psychopathology, 8*, 367-380.
- Crick, N. A., Grotpeter, J.K., & Bigbee, M.A. (2002). Relationally and Physically Aggressive Children's Intent Attributions and Feelings of Distress for Relational and Instrumental Peer Provocations. *Child Development, 73*(4), 1134-1142.
- Crick, N. R., & Werner, N. E. (1998). Response decision processes in relational and overt aggression. *Child Development, 69*(6), 1630-1639.
- Dodge, K.A. (1991). Emotion and social information processing. In J. Garber & K.A. Dodge (Eds.), *The development of emotion regulation and dysregulation* (pp. 159-181). New York: Cambridge University Press.

- Dodge, K. A., & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Journal Of Personality And Social Psychology, 53*(6), 1146-1158.
- Dodge, K. A., & Frame, C. L. (1982). Social cognitive biases and deficits in aggressive boys. *Child Development, 53*, 620-635.
- Dodge, K. A., Lochman, J. E., Harnish, J. D., Bates, J. E., & Pettit, G.S. (1997). Reactive and proactive aggression in school children and psychiatrically impaired chronically assaultive youth. *Journal of Abnormal Psychology, 106*, 37–51.
- Dodge, K. A., & Newman, J. P. (1981). Biased decision-making processes in aggressive boys. *Journal of Abnormal Psychology, 90*(4), 375-379.
- Dodge, K. A., Price, J. M., Bachorowski, J., & Newman, J. P. (1990). Hostile attributional biases in severely aggressive adolescents. *Journal Of Abnormal Psychology, 99*(4), 385-392.
- Frick, P. J., Cornell, A. H., Barry, C.T., Bodin, S.D, & Dane, H. E. (2003). Callous-unemotional traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31*(4), 457-470.
- Gentile, D. A., Coyne, S., & Walsh, D. A. (2011). Media violence, physical aggression, and relational aggression in school age children: a short-term longitudinal study. *Aggressive Behavior, 37*(2), 193-206.
- Gini, G. (2006). Brief report: Adaptation of the Italian Version of the Tromsø Social Intelligence Scale to the adolescent population. *Journal Of Adolescence, 29*(2), 307-312.
- Godleski, S. A., & Ostrov, J. M. (2010). Relational aggression and hostile attribution biases: Testing multiple statistical methods and models. *Journal Of Abnormal Child Psychology, 38*(4), 447-458.

- Hampel, S., Weis, S., Hiller, W., & Witthöft, M. (2011). The relations between social anxiety and social intelligence: A latent variable analysis. *Journal Of Anxiety Disorders, 25*(4), 545-553.
- Hawley, P. H., Little, T. D., & Card, N. A. (2007). The allure of a mean friend: Relationship quality and processes of aggressive adolescents with prosocial skills. *International Journal of Behavioral Development, 31*(2), 170-180.
- Hooda, D., Sharma, N., & Yadava, A. (2009). Social intelligence as a predictor of positive psychological health. *Journal Of The Indian Academy Of Applied Psychology, 35*(1), 143-150.
- Hubbard, J. A., Smithmyer, C. M., Ramsden, S. R., Parker, E. H., Flanagan, K. D., Dearing, K. F. et al. (2002). Observational, physiological, and self-report measures of children's anger: relations to reactive versus proactive aggression. *Child Development 73*(4), 1101-1118.
- Jones, A. P., Forster, A. S., & Skuse, D. (2007). What do you think you're looking at? Investigating social cognition in young offenders. *Criminal Behaviour And Mental Health, 17*(2), 101-106.
- Kaukiainen, A., Björkqvist, K., Lagerspetz, K., Österman, K., Salmivalli, C., Rothberg, et al. (1999). The relationships between social intelligence, empathy, and three types of aggression. *Aggressive Behavior, 25*, 81-89.
- Kaukiainen, A., Salmivalli, C., Lagerspetz, K., Tamminen, M., Vauras, M., Mäki, H., et al. (2002). Learning difficulties, social intelligence, and self-concept: Connections to bully-victim problems. *Scandinavian Journal of Psychology, 43*, 269-278.
- Kimonis, E. R., Frick, P. J., Boris, N. W., Smyke, A. T., Cornell, A. H., Farrel, J. M. et al.

- (2006). Callous-unemotional features, behavioral inhibition, and parenting: independent predictors of aggression in a high-risk preschool sample. *Journal of Child and Family Studies*, 15(6), 741-752.
- Leff, S. S., Crick, N. R., Angelucci, J., Haye, K., Jawad, A. F., Grossman, M., & Power, T. J. (2006). Social Cognition in Context: Validating a Cartoon-Based Attributional Measure for Urban Girls. *Child Development*, 77(5), 1351-1358.
- Linder, J. R., Crick, N. R., & Collins, W. A. (2002). Relational aggression and victimization in young adults' romantic relationships: Associations with perceptions of parent, peer, and romantic relationship quality. *Social Development* 11(1), 69-85.
- Little, T. D., Jones, S. M., Henrich, C. C., & Hawley, P. H. (2003). Disentangling the “whys” from the “whats” of aggressive behaviour. *International Journal of Behavioral Development*, 27(2), 122-133.
- Loudin, J. L., Loukas, A., & Robinson, S. (2003). Relational aggression in college students: Examining the roles of social anxiety and empathy. *Aggressive Behavior*, 29
- Marsee, M.A. (2008). Reactive aggression and posttraumatic stress in adolescents affected by Hurricane Katrina. *Journal of Clinical Child and Adolescent Psychology*, 37, 519-529. 430-439.
- Marsee, M. A., Barry, C. T., Childs, K. K., Frick, P. J., Kimonis, E. R., Muñoz, L. C., Aucoin, K. J., Fassnacht, G. M., Kunimatsu, M. M., & Lau, K. S. L. (2011). Assessing the forms and functions of aggression using self-report: Factor structure and invariance of the Peer Conflict Scale in youths. *Psychological Assessment*, 23, 792-804. doi: 10.1037/a0023369

- Marsee, M.A., & Frick, P. J. (2007). Exploring the cognitive and emotional correlates to proactive and reactive aggression in a sample of detained girls. *Journal of Abnormal Child Psychology*, 35, 969-981.
- Marsee, M.A., Weems, C. F., & Taylor, L. K. (2008). Exploring the association between aggression and anxiety in youth: A look at aggressive subtypes, gender, and social cognition. *Journal of Child and Family Studies*, 17, 154-168.
- Mathieson, L. C., & Crick, N. R. (2010). Reactive and proactive subtypes of relational and physical aggression in middle childhood: Links to concurrent and longitudinal adjustment. *School Psychology Review*, 39(4), 601-611.
- Meijs, N., Cillessen, A. N., Scholte, R. J., Segers, E., & Spijkerman, R. (2010). Social intelligence and academic achievement as predictors of adolescent popularity. *Journal Of Youth And Adolescence*, 39(1), 62-72.
- Möller, I., & Krahé, B. (2009). Exposure to violent video games and aggression in German adolescents: a longitudinal analysis. *Aggressive Behavior*, 35(1), 75-89.
- Ostrov, J. M., & Crick, N. R. (2007). Forms and functions of aggression during early childhood: A short-term longitudinal study. *School Psychology Review*, 36(1), 22-43.
- Ostrov, J. M., & Houston, R. J. (2008). The utility of forms and functions of aggression in emerging adulthood: Association with personality disorder symptomatology. *Journal of Youth and Adolescence*, 37(9), 1147-1158.
- Peeters, M., Cillessen, A., & Scholte, R. (2010). Clueless or Powerful? Identifying Subtypes of Bullies in Adolescence. *Journal Of Youth & Adolescence*, 39(9), 1041-1052.
- Poulin, F., & Boivin, M. (2000). Reactive and proactive aggression: Evidence of a two-factor model. *Psychological Assessment*, 12(2), 115-122.

- Preacher, K. J., & Hayes, A. F. (2008). Contemporary approaches to assessing mediation in communication research. In A. F. Hayes, M. D. Slater, & L. B. Snyder (eds.), *The Sage sourcebook of advanced data analysis methods for communication research* (pp.13-54). Thousand Oaks, CA: Sage.
- Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression in adolescents: Social-psychological adjustment of aggressors and victims. *Journal Of Clinical Child Psychology, 30*(4), 479-491.
- Putallaz, M., Grimes, C. L., Foster, K. J., Kupersmidt, J. B., Coie, J. D., & Dearing, K. (2007). Overt and relational aggression and victimization: Multiple perspectives within the school setting. *Journal of School Psychology, 45*(5), 523-547.
- Quiggle, N. L., Garber, J., Panak, W. F., & Dodge, K. A. (1992). Social information processing in aggressive and depressed children. *Child Development, 63*(6), 1305-1320.
- Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., et al. (2006). The reactive-proactive aggression questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior, 32*, 159-171.
- Rose, A. J., & Swenson, L. P. (2009). Do perceived popular adolescents who aggress against others experience emotional adjustment problems themselves?. *Developmental Psychology, 45*(3), 868-872.
- Rys, G. S., & Bear, G. G. (1997). Relational aggression and peer relations: Gender and developmental issues. *Merril-Palmer Quarterly, 43*(1), 86-106.
- Silvera, D., Martinussen, M., & Dahl, T. (2001). The tromsø social intelligence scale, a self-report measure of social intelligence. *Scandinavian Journal of Psychology, 42*, 313-319.
- Thorndike, E.L. (1920). Intelligence and its use. *Harper's Magazine, 140*, 227-235

- Vaillancourt, T., Brendgen, M., Boivin, M., & Tremblay, R. E. (2003). A longitudinal confirmatory factor analysis of indirect and physical aggression: Evidence of two factors over time?. *Child Development, 74*(6), 1628-1638.
- Walcott, C. B., Upton, A., Bolen, L.M., & Brown, M.B. (2008). Associations between peer-perceived status and aggression in young adolescents. *Psychology In The Schools, 45*(6), 550-561.
- Werner N. Do Hostile Attribution Biases in Children and Parents Predict Relationally Aggressive Behavior?. *Journal Of Genetic Psychology* [serial online]. July 2012;173(3):221-245.

Appendix

University of New Orleans Institutional Review Board Approval Form

**University Committee for the Protection
of Human Subjects in Research
University of New Orleans**

Campus Correspondence

Principal Investigator: Monica Marsee
Co-Investigator: Katherine Lau
Date: April 2, 2012
Protocol Title: "Testing two models of aggression in predicting behavioral, emotional, cognitive, social, and personality factors in a sample of detained youth"
IRB#: 01Feb12

Your proposal was reviewed by the full IRB. The group voted to approve your proposal pending that you adequately address several issues. Your responses to those issues have been received and you have adequately addressed all of the issues raised by the committee. Your project is now in compliance with UNO and Federal regulations and you may begin conducting your research.

Please remember that approval is only valid for one year from the approval date. Any changes to the procedures or protocols must be reviewed and approved by the IRB prior to implementation. Use the IRB number listed on this letter in all future correspondence regarding this proposal.

If an adverse, unforeseen event occurs (e.g., physical, social, or emotional harm), you are required to inform the IRB as soon as possible after the event.

Best of luck with your project!
Sincerely,



Robert Laird, Ph.D., Chair
Committee for the Protection of Human Subjects in Research

Vita

Gregory Fassnacht was born in New Orleans, Louisiana. He received his Bachelor of Arts degree in psychology from Loyola University of New Orleans. He joined the University of New Orleans applied developmental psychology graduate program in 2007. Gregory received his Master of Science degree in applied developmental psychology from the University of New Orleans in 2010.