

**THE RELATIONSHIP BETWEEN CHILDHOOD
MALTREATMENT AND GIRLS' AGGRESSION: THE
ROLE OF REJECTION SENSITIVITY**

by

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ABSTRACT

While the association between maltreatment in childhood and later aggression has been well established, the possible mechanisms involved remain unclear. The current study examined the role of rejection sensitivity (RS) in the relationship between maltreatment and aggression in 134 high-risk adolescent girls. Witnessing interparental violence perpetrated by both maternal and paternal figures was related to increased levels of overt and relational aggression. Psychological abuse was also associated with higher levels of both types of aggression when combined across perpetrators and when perpetrated by a paternal figure. Reports of combined and paternal physical abuse were related to higher levels of relational aggression. Furthermore, RS was associated with higher levels of both types of aggression. It was not however, found to moderate the association between any maltreatment subtype and aggression. An indirect effect of sexual abuse on overt aggression through RS was found. Implications of these findings for gender-focused interventions are discussed.

Keywords: maltreatment; aggression; rejection sensitivity; girls; high-risk.

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INTRODUCTION

Research over the past decade has focused on documenting increasing rates of aggressive and violent behaviour in girls, however the factors that give rise to aggression and influence its expression are less well known. Attention has been given to possible antecedents of aggressive behaviour, with a number of studies focusing particularly on the role of exposure to maltreatment during childhood. While these studies have documented an association between maltreatment experiences and later externalizing behaviours in girls (Antonishak, Reppucci, & Mulford, 2004; Herrera & McCloskey, 2003), far less is known about *why* this association occurs.

The current study examines the role of a social-cognitive processing system known as rejection sensitivity as a possible mechanism or process through which exposure to maltreatment is related to girls' aggression. According to Downey, Irwin, Ramsay, & Ayduk (2004), rejection early in life creates a hypersensitivity to rejection that results in a host of maladaptive behavioural outcomes, including aggression. The majority of this research however, has been conducted on normative populations such as school-aged children and undergraduate students. Less is known about how this process operates in high-risk populations. The purpose of the current study is to therefore explore the role of rejection sensitivity in the association between maltreatment and aggression in a sample of high-risk female youth. The study will also examine whether the

influence of RS on this association varies as a function of both the type of maltreatment experienced by girls and the perpetrator of the abuse.

Understanding how these processes operate in high-risk girls will provide valuable information to assist in the development of gender-focused rehabilitation and treatment programs.

Gender and Aggression: Trends and Types of Aggressive Behaviour

Until recently, research on aggression in youth has focused primarily on understanding the function and expression of violent behaviour in boys, with girls being seen as far less prone to aggressive behaviour. Research in the last two decades however, has suggested that girls are quite capable of being aggressive towards others. Although rates of violent behaviour remain much higher in boys, physical and overt expressions of aggression have also been documented in girls (Leschied, Cummings, Van Brunschot, Cunningham, & Saunders, 2001; Moretti, Holland, & McKay, 2001; Snethen & Van Puymbroeck, 2008). Speaking to the presence of such violent behaviour are recent statistics showing the rate of arrests for serious violent crime among female youth in the US almost doubled from 1980 to 2003 (Snyder & Sickmund, 2006), with arrests for various violent offenses increasing more or decreasing less than those of male youth from 1996 to 2005 (Feld, 2009). There is still much debate over the reasons for these increases however, with some arguing this increase is due to the broadening of definitions of violence to include more minor incidents – which girls are more likely to commit, as well as increased policing of domestic violence where girls' violence is more common (Goodkind, Wallace, Shook, Bachman, & O'Malley,

2009; Steffensmeier, Schwartz, Zhong, & Ackerman, 2005). The lack of a unified conclusion as to these documented increases in girls' violent crime highlights the need for further research on aggressive and violent behaviour in girls.

The expansion of the definition of aggression to include social and relational aggression has been deemed particularly important in directing greater attention to the issue of aggression in girls and women. Relational (Crick & Grotpeter, 1995), indirect (Lagerspetz, Bjorkqvist, & Pfeltonen, 1988), and social aggression (Underwood, 2003) were defined as covert types of aggression largely used within the context of one's close interpersonal relationships. Aggression in this form involves behaviours such as talking about others, spreading rumours or gossiping, and social exclusion (Owens, Slee, & Shute, 2001). Earlier research suggested girls display greater levels of this relational or indirect aggression than physical aggression when compared to same-age male peers (Bjorkqvist, Lagerspetz, & Kaukianen, 1992; Crick & Grotpeter, 1995; Pakaslahti & Keltikangas-Jarvinen, 1998), however more recent reviews have argued that the rates of relational aggression are similar between boys and girls (Archer, 2004; Card, Stucky, Sawalani, & Little, 2008; Chesney-Lind, Morash, & Irwin, 2007), with rates of overt aggression remaining higher in boys (Archer, 2004; Smith, Rose, Schwartz-Mette, 2010). These inconsistencies point to the need to gain a clearer understanding of the rates of overt and relational aggression in girls.

Childhood Maltreatment and Aggressive Behaviour

Although much progress has been made in recognizing gender differences in the expression and function of aggression, the antecedents of aggressive behaviour are less understood. One of the more commonly studied antecedents to aggressive behaviour in youth is childhood maltreatment. A number of studies have found that several types of early childhood maltreatment predict aggressive behaviour in later childhood and into adolescence (Dodge, Petit, & Bates, 1997; Widom, 1989). More specifically, negative communication styles, rejection, and low levels of support from primary caregivers have all been linked to aggression in adolescent girls (Cote, Vaillancourt, Barker, Nagin, & Tremblay, 2007; Heaven, 1994; Pakaslahti, Spoof, Asplund-Peltola, & Keltikngas-Jarvinen, 1998; Saner & Ellickson, 1996). Furthermore, both physical and sexual abuse have been associated with aggressive and delinquent behaviour in young women (Browne, Miller, & Maguin, 1999; Giordano, Cerkovich, & Lowry, 2004). However, with the knowledge that sexual abuse occurs more often in girls than in boys (Herrera & McCloskey, 2003; Putnam, 2003; Sedlak & Broadhurst, 1996; Silverthorn & Frick, 1999), researchers have proposed that sexual abuse during childhood is particularly salient to the development of externalizing behaviours in girls. As predicted, childhood sexual abuse has been linked to increased relational aggression (Cullerton-Sen, Cassidy, Murray-Close, Cicchetti, Crick, & Rogosch, 2008) and has emerged as the strongest predictor of violent and non-violent criminal behaviour in girls (Herrera & McCloskey, 2003).

Dysfunction in the family dynamic has also been found to be of particular influence to girls' psychosocial development. Chaotic family environments marked by both physical and sexual abuse have been associated with both aggressive and antisocial behaviour (Connor 2002; Antonishak, Reppucci, & Mulford, 2004), with girls at a greater risk of victimization within their own families (Chesney-Lind, 2001). Exposure to interparental violence (IPV) has also been found to be associated with aggressive behaviour in girls (Howells & Rosenbaum, 2008; McCloskey & Lichter, 2003; Moretti, Obsuth, Odgers, & Reebye, 2006). Since girls are found to focus on the relational aspects of their environments, they are believed to be at higher risk for being adversely affected by witnessing relational violence in their homes compared to boys (Coyne, Archer, & Elsea, 2006; Cullerton-Sen et al., 2008). The interpersonal context for aggression in females is further illustrated in studies showing girls' aggression is most often directed towards individuals they are closest to (Acoca, 1999; Rutter, Giller, & Hagel, 1998; Franke, Huynh-Hohnbaum, & Chung, 2003), with domestic assaults representing a larger proportion of total female violence than male violence (Snyder & Sickmund, 2006). Early family dynamics therefore appear to serve as a significant risk factor for later maladaptive interpersonal behaviours, including aggression, in adolescent girls.

Despite the well-established relationship between child maltreatment and the emergence of aggressive behaviours in children and youth, the mechanisms underlying this effect are not well understood. In part this reflects the focus of research over the past several decades on documenting specific forms of

maltreatment, timing of maltreatment, and the specific emotional and behavioral outcomes in children and youth. It is necessary to go beyond merely documenting this relationship to determining the actual social-cognitive processes that underlie girls' aggressive behaviour, such as how these young girls internalize maltreatment experiences. Understanding these mechanisms is critical not only to furthering the current knowledge base on female aggression, but also to the design of gender-specific prevention and risk reduction programs.

Maltreatment has been hypothesized to increase the risk for later aggression through the over-activation of social-cognitive information processes, ultimately resulting in cognitive distortions or biases (Lee & Hoaken, 2007). Social information processing involves first encoding relevant environmental cues, interpretation of those cues, evaluation of possible responses/behaviours and their consequences, and the selection of a response/behaviour (Dodge, Pettit, & Bates, 1990). In aggressive children this process is altered. Aggressive children have been shown to demonstrate deficits in attending to and encoding relevant social cues (Dodge et al., 1990). These deficits can involve hypervigilance to hostile cues, a lack of attention to relevant cues signaling the situation is not hostile, or both (Lansford, Malone, Dodge, Pettit, & Bates, 2010). Difficulties in accurately attributing intent to the behaviour of others have also been found in these children. The bias to attribute hostile intent to the acts of others has been referred to as a hostile attributional style (Dodge, 2006). It has recently been suggested that hostile attribution biases are universally attained early in life and it is rather the failure to learn a benign attributional style – that

some provocations are not hostile, that leads to a hostile attributional style in these children (Dodge, 2006). The failure to develop this style is believed to occur as a result of both individual differences in brain chemistry and social environments, with abuse from primary caregivers fostering a hostile attributional style (Dodge, 2006). Maltreatment early in life may therefore lead children to chronically attribute malicious intent in ambiguous or benign situations and subsequently react aggressively in the absence of an objective threat.

Maltreatment has also been proposed to increase the risk for later externalizing behaviours by disrupting attachment relationships between primary caregivers and their children. In maltreated or neglected children, the sense of security and trust that should develop through the caregiver-child dyad does not, as a result of inconsistent responsiveness and support from the caregiver (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969). Instead of developing a secure attachment to caregivers, using them as a base with which to explore the environment and as a comfort in times of distress, these children develop insecure or disorganized attachment patterns. Insecurely attached children are instead found to either avoid proximity and contact with their caregiver, or to seek proximity but meet contact with anger and resistance (Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010). Disorganized attachment, the most anxious type of insecure attachment, involves the child showing confusion or apprehension towards their caregivers (Cyr et al., 2010).

Support for the association between maltreatment and insecure or disorganized attachment has been found in a number of studies (Baer &

Martinez, 2006; Barnett, Ganiban, & Cicchetti, 1999; Egeland & Sroufe, 1981; Lyons-Ruth, Connell, Grunebaum, & Botein, 1990), including a recent meta-analysis by Cyr et al. (2010). This review of 55 studies of both maltreated and nonmaltreated children from high-risk groups found lower proportions of securely attached and higher proportions of disorganized children in maltreated samples. Combined effect sizes of $d = 2.14$ for attachment security and $d = 2.20$ for attachment disorganization illustrate the strong impact of maltreatment on attachment. Given such large effect sizes, the chances for a maltreated child to develop a secure, non-disorganized attachment pattern with their caregivers was deemed quite small. These findings are alarming, as insecure patterns of attachment have been consistently linked to subsequent emotional and behavioural problems, including aggression in childhood and adolescence (Arbona & Power, 2003; Cicchetti & Toth, 2005; Greenberg, 1999; Guttman-Steinmetz & Crowell, 2006; Kobak, Zajac, & Smith, 2009). A specific cognitive-affective processing system known as Rejection Sensitivity (RS), which integrates aspects of both social information processing and attachment theory, has been posited as a mechanism involved in this maltreatment-aggression link.

Rejection Sensitivity

Rejection Sensitivity (RS) is the disposition to defensively expect, readily perceive, and overreact to perceived rejection by others (Downey, Feldman, & Ayduk, 2000). The RS model proposes that severe and prolonged rejection in early childhood leads to the development of expectations of rejection from others. When even minimal cues of rejection are encountered in individuals high in RS

they activate what has been referred to as a “defensive motivational system” (Downey, Mougios, Ayduk, London, & Shoda, 2004; Romero-Canyas, Downey, Berenson, Ayduk, & Kang, 2010). In this state of threat, such individuals will interpret ambiguous or even slightly negative information as evidence of rejection. This bias to expect and perceive rejection results in a range of maladaptive behaviours that negatively affect the individual’s interpersonal functioning. Perceived rejection has been found to result in two different (but not mutually exclusive) responses – anxiety and anger. It has been proposed that angry expectations of rejection result in externalizing behaviours such as aggression, hostility, and delinquent acts in response to mild or ambiguous threat (Downey, Irwin, Ramsay, & Ayduk, 2004). Anxious expectations of rejection, in contrast, result in internalizing symptoms such as depression and social withdrawal (London, Downey, Bonica, & Paltin, 2007). Of most interest to the current study however, is the association between RS and aggressive behaviour. Previous research has shown that individuals high in RS often respond to rejection with increased aggression (Ayduk, Gyurak, & Luerksen, 2008), and hostile thoughts and actions (Ayduk, Downey, Testa, Yen, & Shoda, 1999). What is most problematic is that while those high in RS use these behaviours as a means to protect against or avoid possible rejection (Purdie & Downey, 2000), they instead elicit and exacerbate interpersonal rejection. Hence, what they fear and wish to avoid is further intensified through their maladaptive beliefs and consequent aggressive actions. This creates a vicious cycle as beliefs of rejection are reinforced once the hostile and aggressive actions elicit actual

rejection (Downey et al., 2004). This in turn affirms and deepens their maladaptive beliefs and thereby limits opportunities for change. The cognitive-behaviour-interpersonal sequence therefore becomes entrenched and reflexive, making attempts to break free from the cycle extremely difficult.

Gender Differences in Rejection Sensitivity

The mechanisms involved in the RS model have been found to apply to both boys and girls. There are differences however, in the context in which RS occurs and the behaviours expressed as a result of high levels of RS (Downey et al., 2004). For example, within the context of intimate relationships, young females high in RS often become hostile and unsupportive to their partners, while young males instead respond with controlling and jealous behaviours (Downey & Feldman, 1996). Research has also shown that the association between RS and aggression is stronger and observed more consistently in young females than males (Downey et al., 2004). This stronger relationship between RS and aggression in girls could be the result of the high level of importance placed on girls' emotional connectedness with others and forming close interpersonal relationships. It has been argued that young girls' sense of self is deeply influenced by their ability to connect with others, unlike young males, who are often more autonomous in their relationships with others (Moretti et al., 2001; Letendre, 2007). It would therefore make sense that when connections with others are threatened as in the case of perceived rejection, greater adverse consequences, and subsequently stronger associations with aggression, would be observed in highly rejection sensitive girls.

The Role of Maltreatment in Rejection Sensitivity

RS is proposed to exist on a continuum with all individuals experiencing this sensitivity to some degree. The question then is why are some individuals prone to high levels of RS, and subsequent maladaptive interpersonal strategies, while others are not? Numerous studies have shown that child maltreatment places both children and youth at risk for higher levels of RS. These findings are consistent with the original theoretical conceptualization of RS as stemming from early childhood maltreatment and neglect from primary caregivers (Feldman & Downey, 1994). According to this view, repeated rejection from those closest to the child are especially detrimental early in life as they shape the ways in which children understand and approach future relationships. These early relationships with caregivers form what is referred to as an “internal working model” which directs how information is encoded and interpreted, and how individuals interact within the environment (Bowlby, 1969). When caregivers are consistent and respond to the needs of their child in a positive and supportive way the child develops a secure model of relationships. Such a child comes to expect acceptance and support from others. When caregivers respond to their child’s needs with rejection or neglect, the child instead develops an insecure model for subsequent relationships. These children become highly sensitive to interpersonal rejection and often develop exaggerated and maladaptive interpersonal strategies (Downey & Feldman, 1996). For example, they may attempt to force and coerce others into meeting their needs through aggressive acts in response to even the mildest evidence of rejection. Alternatively, they may threaten to harm themselves to capture and control the attention of others.

Studies have confirmed that exposure to family violence, parental emotional neglect, and conditional love by parents (Downey, Bonica, & Rincon, 1999; Downey, Khouri, & Feldman, 1997; Feldman & Downey, 1994) during childhood increase expectations of rejection in youth and young adults. Rejection in the form of harsh parenting practices has also been found to predict increases in expectations of rejection in school-aged children over time (Purdie & Downey, 2000). There is however, a dearth of research on subtypes of maltreatment and RS. Only one study to date has looked at the relationship between childhood sexual abuse and sensitivity to rejection (Luterek, Harb, Heimberg, and Marx, 2004). The study used a different measure of RS than those used by Downey and colleagues known as the Interpersonal Sensitivity Measure (IPSM; Boyce & Parker, 1989). Luterek et al. found that those who had experienced sexual abuse in childhood reported higher levels of RS than individuals with no sexual abuse history. While these studies provide support for an association between maltreatment and RS, more research is needed to understand how exactly RS is related to specific forms of maltreatment.

Rejection Sensitivity as a Possible Moderator or Mediator of the Maltreatment-Aggression Link

The relationships between childhood rejection and RS on the one hand, and between RS and aggression on the other, suggest that a model that links childhood rejection, RS and aggression might be fruitful. RS may mediate the relationship between child maltreatment and aggression as RS was largely conceptualized as developing out of early rejection experiences from primary

caregivers. However, there may be other causes of RS beyond maltreatment. For example, a behaviourally inhibited temperament could serve to heighten the vulnerability of developing sensitivity to interpersonal rejection. In addition, it is possible that experiences of social rejection outside the family, for example with peers, may lead to RS. Thus RS may develop outside of maltreatment experiences and therefore may serve as a moderator rather than mediator of the association between maltreatment and aggressive behaviour. As such, the current study will explore the role of RS as both a moderator and mediator in the link between maltreatment and aggression.

Current Study

Several studies have supported components of the RS model but have used predominantly normative populations, namely undergraduate students as participants. Furthermore, research on the role of childhood maltreatment experiences on the development of RS has been quite limited. The few studies that have investigated the role of caregiver rejection experiences failed to examine levels of more severe violence or emotional abuse. The current study therefore expands existing research on RS by examining the role of RS in aggressive behaviour in a population of high-risk female adolescents, as well as investigating the association between RS and several types of parental maltreatment. The present study is therefore one of the first to examine the association between RS, maltreatment, and aggression in high-risk youth. The study has two main aims: 1) to determine whether a history of maltreatment is associated with aggression in adolescent females; and 2) to examine the role of

RS in the relationship between maltreatment and girls' aggression. Additionally, the relationship between maltreatment and RS, and RS and aggression will be explored.

In examining the relationship between early maltreatment experiences and aggression, it is hypothesized that a history of maltreatment in these girls will be associated with increased levels of aggressive behaviour, consistent with previous studies. With regards to investigating the relationships between RS and both maltreatment and aggression, it is hypothesized that maltreatment early in life will result in elevated levels of RS and that the higher the level of RS, the more aggressive the individual. Observing these findings would provide further support for Downey & Feldman's (1996) theoretical model of RS. No specific predictions regarding the role of RS in the association between exposure to maltreatment and aggressive behaviour were made – with analyses of both moderation and mediation serving as exploratory in nature.

METHOD

Overview

This study is part of a larger longitudinal project investigating risk and protective factors among Canadian and American adolescent girls at risk for aggression and antisocial behaviour. The current study focuses on a subset of measures administered at Time 1 of data collection and utilizing data from the American sample.

Participants and Procedure

Participants were 141 adolescent females between the ages of 13 and 19 ($M = 16.26$, $SD = 1.28$). All female adolescents sentenced to custody in a large southeastern state during a 14-month period were approached to participate in the first wave of this study. Approximately 93% of the females participated in the research. Active voluntary consent was obtained from participants and active parental consent was obtained for all girls under the age of 18. Each participant underwent approximately 6 to 8 hours of individual assessments over the course of approximately four visits. Assessments included semi-structured clinical interviews, computerized diagnostic assessments, a battery of self-report measures, and official juvenile offence records from psychological testing. Official psychological testing data and intake information from the Department of Juvenile Justice (DJJ) was also obtained for each participant. Confidentiality was assured to all participants. A federal certificate of confidentiality from the

Department of Health and Human Services was obtained to ensure that investigators could not be forced (e.g., by court subpoena) to disclose information that may identify participants in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. Protocols were approved by the Institutional Review Boards at the participating university as well as by the Department of Juvenile Justice.

Treatment of Missing Data and Sample Descriptives

Of the 141 females in the American sample, 7 did not complete two or more of the measures used in the current study (FBQ, RSQ-R, and FFAM). These participants' responses were therefore eliminated from further analyses resulting in an N of 134. For those girls who reported having no primary paternal figure at the time of the interview (e.g., participant never knew their father or father was deceased) paternal maltreatment items were coded as zero.

Of the 134 participants remaining, complete data were available for 116 participants. Rates of missing data were relatively low: 4.9% for maltreatment, 0.7% for rejection sensitivity, and 0% for aggression, with a total of 3.8% missing values across all participants and measures of interest. Missing data were replaced rather than deleted. For those datasets with 10-15% or more missing data, sophisticated methods of replacement such as multiple imputation (MI; Rubin, 1987) are necessary (Widaman, 2006). Given the low proportion of data missing in the current sample (3.8%) however, the method used to replace missing data points is considered adequate (Harrell, 2001). Individual mean substitution was used to replace missing values, which required calculating the

participant's mean for all non-missing values on the pertinent subscale and substituting this mean for the missing value. The use of all non-missing information on items within a scale for a given participant is considered a strength of this method (Widaman, 2006).

The final sample consisted of 134 females between the ages of 13 and 19 ($M = 16.22$, $SD = 1.28$), with 48.5% self-identifying as African American; 2.2% as Native American; 1.5% as Hispanic; and 8.2% as "other" ethnicity. The remaining 39.6% of girls identified themselves as Caucasian.

Measures

The *Family Background Questionnaire* (FBQ; McGee, Wolfe, & Wilson, 1997) is a self-report version of the Record of Maltreatment Experiences-Revised (ROME; McGee, Wolfe, Yuen, & Wilson, 1995; Wolfe & McGee, 1994) and includes global severity ratings for multiple types of maltreatment experienced during childhood, including: psychological abuse, physical abuse, sexual abuse, neglect, and exposure to IPV. The psychological abuse scale is comprised of 8 items including whether their parent engaged in the following acts: "...threatened to stop loving you", "...insulted you (for example called you stupid, lazy, worthless)" or "called you names (for example, slut or bastard)". The child physical abuse scale contains 3 items, including: "...hit, kicked or punched you" and "...threw you against something". The child sexual abuse scale contains 1 item, "... sexually assaulted you or made you be involved in unwanted sexual experiences". The child neglect scale contains 5 items, such as: "...fed you properly" and "kept your home clean". The exposure to IPV scale contains 4

items, such as: "...beat up her/his partner" and "threatened her/his partner with a gun". All items are answered on a 4-point scale, indicating the frequency of each experience within the participant's relationships (0 = never happened, 1 = happened a few times, 2 = happened sometimes, 3 = happened often or very often). Ratings were provided for the primary maternal and paternal figure, as well as other adults in the individual's life. The internal consistency of the original FBQ was found to be adequate to very strong (Cronbach alpha coefficients ranging from .76 to .96 for the subscales; Melchert & Sayger, 1998). Support for its content and construct validity was also demonstrated through factor analysis and expert evaluation (Melchert & Sayger, 1998). Retest reliabilities of 0.70 were reported for this instrument (McGee et al., 1997).

The FBQ was reduced from the original version of the measure through an exploratory factor analysis completed by the principal investigators (Moretti & Odgers, 2004) of the longitudinal study. The items were selected to represent the following factors - psychological abuse, IPV, child neglect, positive childrearing, and child physical abuse. Two factors - violent/destructive and serious threats and assaults, were integrated into the other dimensions. In the current sample, maternal IPV, psychological and physical abuse demonstrated acceptable internal consistency ($\alpha = .81, .83, \text{ and } .73$ respectively) as did paternal perpetrated abuse for these subtypes ($\alpha = .89, .88, \text{ and } .81$).

Measuring Maltreatment

There has been considerable debate in the literature regarding how to most accurately measure maltreatment. Some researchers have defined

maltreatment by subtype, others by perpetrator, and others by frequency or severity. At present, there lacks a definitive conclusion as to which method provides the most accurate representation of the construct. The current study chose maltreatment subtype as its focus, as there was an interest in examining whether the relation between maltreatment and RS differed by subtype (i.e., are there particular subtypes which are more relevant to RS than others?).

Due to the interest in types of maltreatment in the present study, it was decided that the subscale scores for each subtype would be collapsed across perpetrators (i.e., mother and father) to create a composite score for total IPV, psychological, and physical abuse. These three subtypes were chosen as they were thought to be most applicable to the rejecting environment described in RS literature. Total scores were derived by calculating the average of scores for each subtype across the two perpetrator types. For example, overall psychological abuse was determined by averaging maternal and paternal psychological abuse subscale scores. A secondary interest involved examining the role of maternal and paternal perpetration of these abuse subtypes. As such, analyses were completed first looking at subtypes perpetrated *across* parental figures and were followed by an examination of the roles of maternal and paternal maltreatment for each subtype separately. Abuse perpetrated by other adults across these three subtypes were not included in the analyses as RS theory posits that it is rejection from primary caregivers that is predominantly involved in the development of RS. However, given the significantly higher rate of reports of sexual abuse perpetrated by adults other than the girls' primary

caregivers (28% versus 0% and 3% in mothers and fathers, respectively), and previous research documenting links between sexual abuse and aggression in girls, the role of “other adult” perpetrated sexual abuse was explored.

The *Rejection Sensitivity Questionnaire – Revised* (RSQ-R) was specifically adapted for this longitudinal project from the Children’s Rejection Sensitivity Questionnaire (Downey, Lebolt, Rincon, & Freitas, 1998) in order to be developmentally salient for adolescents. The RSQ-R consists of 6 hypothetical situations in which rejection by a close friend and romantic partner are possible (e.g. “Your close friend has plans to go out with another group of people but you would rather go out alone with him/her”). For each situation, participants are asked to indicate both their degree of *anger* about a possible negative outcome (e.g. “How angry would you be imagining that he or she would not be willing choose to stay with you?”), and their degree of *anxiousness* about a possible negative outcome (e.g. “How anxious would you be imagining that he or she would not be willing to choose to stay with you?”). Responses are indicated on a 4-point scale ranging from 1 (not at all) to 4 (extremely). Items are summed to create an *angry rejection sensitivity* subscale score and an *anxious rejection sensitivity* subscale score. The psychometric properties of the RSQ are excellent (Downey et al., 1998), with test-retest reliabilities ranging from .83-.78 depending on the time period between assessments (Downey, Freitas, Michaelis, & Khouri, 1998). The angry rejection sensitivity subscale score will be used specifically in the current study due to its association with aggression in previous

research. The subscale demonstrated acceptable internal consistency in this sample ($\alpha = .70$).

The *Form-Function Aggression Measure* (FFAM; Little, Jones, Heinrich, & Hawley, 2003) is a 36-item self-report measure designed to separate and assess the forms (i.e., overt, relational) and functions (i.e., instrumental, reactive) of aggression. Items on the FFAM were derived from other published measures of overt and relational aggression (Crick, 1997; Crick & Grotpeter, 1995) as well as reactive and instrumental aggression (Dodge & Coie, 1987). In the current project, a modified 25-item version of the measure was used, reflecting those items that demonstrated the highest factor loadings and highest reliabilities in supplemental analyses performed by Little in 2003 (T. D. Little, personal communication, April 2003). Participants rate on a 4-point scale how true each statement is about them (1 = *not at all true*, 2 = *somewhat true*, 3 = *mostly true*, 4 = *completely true*). Items are summed to yield six subscales, three tapping overt aggression (12 items; pure-overt, reactive-overt, and instrumental-overt) and three tapping relational aggression (13 items; pure-relational, reactive-relational, and instrumental-relational). The pure overt and relational subscales assess the type of aggression, in which no function is implied (e.g., “I’m the type of person who hits, kicks, or punches others”). The other four subscales assess the four possible combinations of two forms (overt, relational) and two functions (instrumental, reactive) of aggression. Little et al. (2003) reported acceptable levels of internal validity and satisfactory external and criterion validity for the scale across age, gender and ethnicity. The psychometric properties of the

measure were recently explored by Lee, Penney, Moretti, & Odgers (in press), which supported the measurement of aggression as a multidimensional construct involving both forms and functions of the behaviour. The overall overt and relational subscales (derived from the sum of pure, reactive and instrumental subscales of overt and relational aggression) will be used in the current study and demonstrated acceptable internal consistency ($\alpha = .91$ and $\alpha = .86$, respectively).

Analytical Procedure

The predicted relations between childhood maltreatment subtypes and aggression were tested using hierarchical multiple linear regression. First, correlational analyses were used to examine relations among the variables of interest. Next, multiple regression analyses were used to test for simple main effects and interaction effects. The outcome variables for these analyses were overt and relational aggression. Age was found to be a significant predictor of both overt and relational aggression and was therefore retained in the first step for all regression analyses. Ethnicity was a significant predictor of overt aggression and was retained in all analyses with overt aggression as an outcome variable. In order to test for both moderation and mediation effects, linear regressions were conducted in three steps (Baron & Kenny, 1986). In the second step of each regression, a maltreatment subtype (IPV, psychological, physical, or sexual) was entered. In the third step, rejection sensitivity – anger was entered. In the last step, a two-way interaction term between the maltreatment subtype and rejection sensitivity – anger was used to test for moderation effects.

RESULTS

Data Preparation

Following individual mean substitution to replace missing values, the data were examined for normality and the presence of outliers. Univariate outliers were assessed on both the predictor (IPV, psychological, physical, and sexual abuse subtypes, RS anger) and outcome variables (overt and relational aggression). Outliers were identified through the inspection of standardized scores (Z-scores) for each variable. Tabachnick & Fidell (2007) suggest that standardized scores in excess of 3.29 are potential outliers. As such, z-scores were examined and those with scores at or above 3.29 identified as univariate outliers. Outliers identified using this method were then checked for possible errors in data entry. All were deemed appropriate and were retained in the analyses. In order to reduce their impact, scores on the variables were changed to produce scores that were deviant but far less deviant than the original value. This was achieved by assigning a score on each identified outlier that is one unit larger than the next most extreme score in the distribution (Tabachnick & Fidell, 2007, p.77).

Normality was evaluated through inspection of both values of skewness and kurtosis and visual inspection of histograms. Data were considered to exhibit univariate skew or kurtosis if their values were greater than or equal to |2.00| (Miles & Shevlin, 2001). All maltreatment subtypes exhibited positive skew,

indicating a large proportion of girls reported experiencing only a few incidences of maternal or paternal IPV, psychological, or physical abuse, which is expected in a sample that was not selected on the basis of maltreatment history. The values of skewness and kurtosis were found to exceed critical values for IPV and other adult sexual abuse. Both types of maltreatment were brought within acceptable limits using log10 transformation. All analyses with these particular subtypes (IPV combined, maternal, and paternal, as well as other adult sexual abuse) were performed using the transformed values.

The potential presence of multivariate outliers in the sample was examined using Mahalanobis' distance. Mahalanobis' distance was calculated for each participant using all predictor variables and compared with a critical value of the χ^2 distribution. Critical values were identified as those higher than the χ^2 value at $p < .001$ ($df = \text{number of predictor variables included} - \text{in this case, } 10$) (Tabachnick & Fidell, 2007). Four multivariate outliers were identified using this method. They were examined for possible data entry errors and were deemed appropriate. As recommended by Tabachnick & Fidell (2007), analyses were run with and without the identified multivariate outliers, and the participants were excluded from analyses when they were found to significantly influence the results. Multivariate outliers were removed in three analyses – all of which involved relational aggression as the outcome variable. The first analysis examined IPV perpetrated by a maternal figure as a predictor. When outliers were included, RS anger marginally predicted relational aggression; however, when excluded RS anger significantly predicted relational aggression. The

remaining two analyses requiring removal of multivariate outliers tested the effects of physical abuse on aggressive outcomes. In the case of physical abuse combined across perpetrators and paternal physical abuse, the removal of outliers resulted in a shift from a marginal to significant main effect of physical abuse on relational aggression.

Descriptive Analyses

Table 1 presents the means and standard deviations of all independent and dependent variables in the sample.

Table 1. Variable Means and Standard Deviations.

	<i>M</i>	<i>SD</i>
Interparental Violence ^a		
Maternal & Paternal Combined	.40	.64
Maternal	.36	.62
Paternal	.45	.83
Psychological Abuse		
Maternal & Paternal Combined	.64	.57
Maternal	.63	.62
Paternal	.66	.77
Physical Abuse		
Maternal & Paternal Combined	.54	.63
Maternal	.53	.71
Paternal	.56	.85
Sexual Abuse ^a		
Other Adult	.46	.85
Rejection Sensitivity – Anger	2.30	.58
Overt Aggression	20.34	7.15
Relational Aggression	20.13	5.65

Note: ^aValues shown are prior to logarithmic transformations to correct skew.

Self-reported rates of maltreatment on at least one occasion (meaning a report of 1 (happened a few times) on at least one item of each subscale) were fairly high in this sample. The maltreatment subtype reported most frequently was psychological abuse, with 86% and 69% of girls experiencing at least one episode of maternal and paternal psychological abuse, respectively. Experiences of physical abuse were quite common as well, with approximately 54% reporting maternal and 45% paternal physical abuse on at least one occasion. Incidents of violence within the home were also evident in this sample, as 38% reported witnessing IPV perpetrated by a maternal figure, and 30% by a paternal figure. With regards to sexual abuse, 3% of girls reported being sexually assaulted by a paternal figure, with no reports of sexual assault by maternal figures. It should be noted however, that a fair proportion of girls (28%) reported experiencing at least one incidence of sexual assault by adult figure other than their primary caregivers.

Zero-order correlations between combined and separate maternal and paternal perpetrated maltreatment subtypes are presented in Table 2. Levels of reported maternal perpetrated maltreatment were found to be positively and significantly correlated with reported levels of paternal perpetrated maltreatment across the three subtypes. In addition to the associations between maternal and paternal maltreatment *within* subtypes, significant associations were found *across* maltreatment subtypes, both when maternal and paternal perpetration were combined, and when viewed separately (with the exception of the relationship between maternal physical abuse and paternal IPV).

Table 2. Zero-order Correlations of Perpetrator and Maltreatment Subtypes

	1	2	3	4	5	6	7	8	9
1. IPV - Combined	---								
2. IPV - Maternal	.86**	---							
3. IPV – Paternal	.91**	.57**	---						
4. Psychological Abuse - Combined	.62**	.54**	.57**	---					
5. Psychological Abuse - Maternal	.40**	.47**	.27**	.78**	---				
6. Psychological Abuse - Paternal	.60**	.43**	.63**	.87**	.37**	---			
7. Physical Abuse - Combined	.53**	.46**	.50**	.74**	.59**	.63**	---		
8. Physical Abuse - Maternal	.27**	.36**	.16	.49**	.68**	.19*	.77**	---	
9. Physical Abuse - Paternal	.56**	.38**	.61**	.69**	.32**	.78**	.85**	.31**	---

*Note: * $p < .05$; ** $p < .01$*

Table 3 presents zero-order correlations between maternal, paternal, and combined subtypes with RS anger, and aggressive outcomes. Consistent with the literature documenting an association between maltreatment experiences and overt and relationally aggressive behaviour, combined IPV, psychological, and physical abuse were all positively and significantly correlated with aggressive outcomes in this sample. Sexual abuse however, was not found to be significantly associated with either form of aggression.

When maternal and paternal perpetrated abuse were examined separately, differences in the associations between maltreatment subtypes and aggression were observed. IPV, psychological, and physical abuse perpetrated by paternal figures were all significantly and positively associated with both overt and relational aggression in the sample. For maternal figures however, IPV was the only maltreatment subtype found to be significantly associated with overt and relational aggression in these girls.

As expected, RS anger was positively and significantly associated with girls' reported overt and relational aggression. With regards to the association between maltreatment subtypes, perpetrators, and RS anger, witnessing IPV perpetrated by a maternal figure and experiencing sexual assault by another adult were significantly associated with higher levels of RS anger.

Table 3. Zero-order Correlations of Maltreatment Subtype, Perpetrator, RS, and Aggression.

	RS Anger	Overt Aggression	Relational Aggression
IPV - Combined	.15	.39**	.31**
IPV - Maternal	.22**	.44**	.29**
IPV - Paternal	.07	.28**	.26**
Psychological Abuse - Combined	.10	.25*	.23**
Psychological Abuse - Maternal	.15	.16	.15
Psychological Abuse - Paternal	.03	.25**	.22**
Physical Abuse - Combined	.07	.18*	.19*
Physical Abuse - Maternal	.11	.06	.09
Physical Abuse - Paternal	.01	.22**	.20*
Sexual Abuse – Other Adult	.22**	.10	.13
RS Anger	---	.31**	.22*
Overt Aggression		---	.69**
Relational Aggression			---

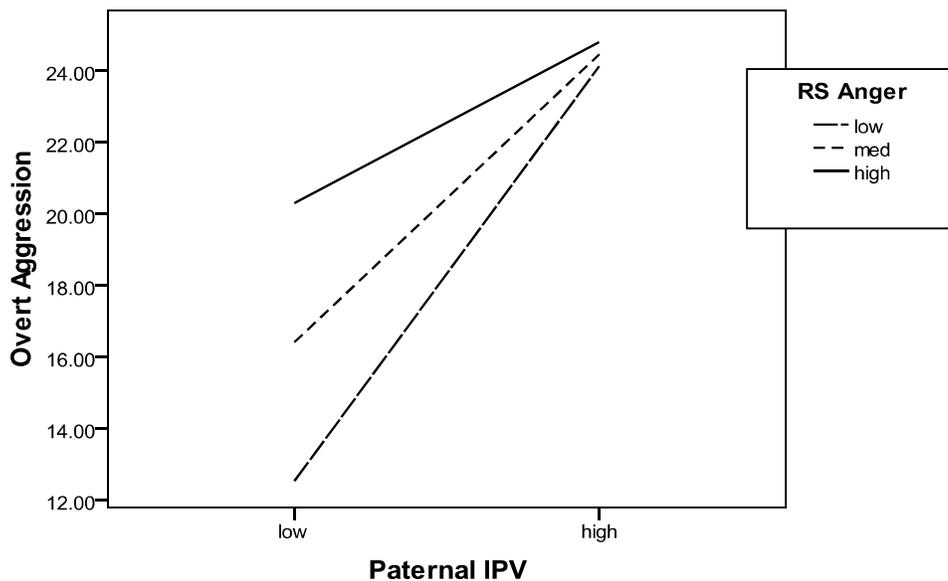
*Note: * $p < .05$; ** $p < .01$*

Relationship of IPV and Rejection Sensitivity to Aggression

Hierarchical multiple regression analyses were performed to assess both the main effects of IPV and RS anger, as well as the interaction between these two variables, in the prediction of aggressive behaviour. Regressions were run separately for the two outcome variables – overt and relational aggression.

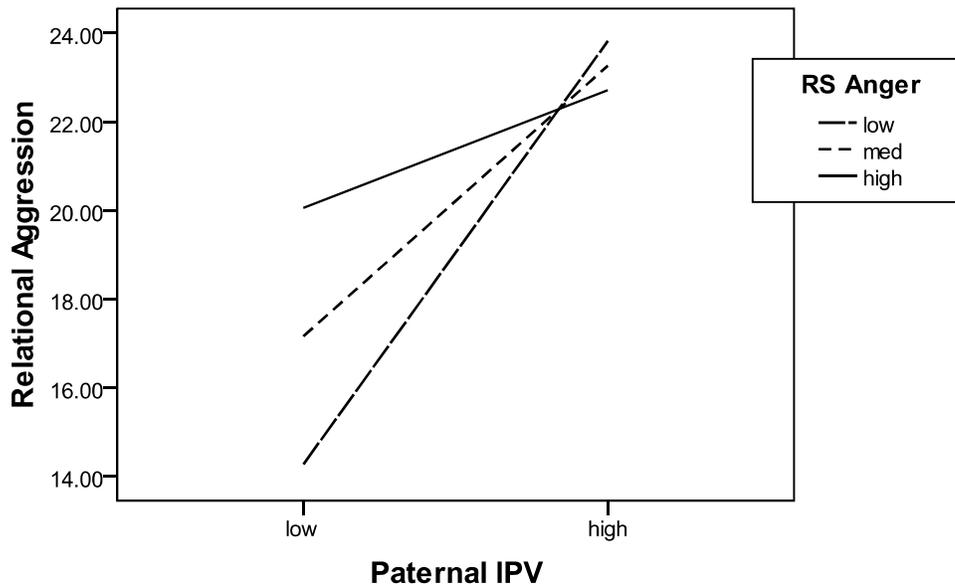
IPV was first looked at in relation to overt aggression (see Table A1 in Appendix). Maternal and paternal IPV, when combined, was not found to significantly interact with RS anger. When tested separately however, there was a marginally significant interaction between paternal IPV and RS anger ($p = .089$; see Figure 1).

Figure 1. Moderation Effect of Paternal IPV and RS Anger on Overt Aggression.



Regression analyses with relational aggression as an outcome revealed similar results to those with overt aggression (see Table A2 in Appendix). The interaction between IPV combined across maternal and paternal figures and RS anger was not significant. When looking at maternal and paternal figures separately however, a marginally significant interaction ($p = .069$) between paternal IPV and RS anger was found (see Figure 2). These findings suggest that RS anger could potentially serve to moderate the association between paternal IPV and both overt and relational aggression in girls.

Figure 2. Moderation Effect of Paternal IPV and RS Anger on Relational Aggression.



Relationship of Psychological Abuse and Rejection Sensitivity to Aggression

Regression analyses using maternal and paternal psychological abuse combined failed to reveal a significant psychological abuse by RS anger interaction with overt aggression (see Table A3 in Appendix). When examining maternal and paternal figures separately, and controlling for age and ethnicity, exposure to maternal psychological abuse was found to be marginally predictive ($p = .076$) of higher levels of overt aggression in these girls. No significant psychological abuse by RS anger interactions were revealed for either maternal or paternal psychological abuse.

Analyses of psychological abuse with relational aggression produced a similar pattern of results to those with overt aggression (see Table A4 in Appendix). No significant psychological abuse by RS anger interactions with

relational aggression were found when examining maternal and paternal psychological abuse combined, or maternal and paternal psychological abuse separately.

Relationship of Physical Abuse and Rejection Sensitivity to Aggression

Regression analyses of maternal and paternal physical abuse, when combined, revealed that increased levels of physical abuse were marginally related ($p = .080$) to higher levels of overt aggression (see Table A5 in Appendix). Controlling for age and ethnicity resulted in a slight change from a significant zero-order correlation to a marginal association between physical abuse and overt aggression. No significant physical abuse by RS anger interaction was found. When maternal and paternal physical abuse were examined separately increased paternal physical abuse was found to marginally predict ($p = .090$) higher levels of overt aggression in these girls. This association changed slightly from a significant zero order correlation to a marginal association after controlling for age and ethnicity. Both regression analyses of maternal and paternal physical abuse separately failed to produce significant abuse by RS anger interactions with overt aggression.

When physical abuse was examined with relational aggression as an outcome (see Table A6 in Appendix), no significant physical abuse by RS anger interactions were revealed both when maternal and paternal physical abuse were combined and when treated separately.

Relationship of Sexual Abuse and Rejection Sensitivity to Aggression

Given the frequency of reports of sexual abuse perpetrated by an adult other than a primary maternal or paternal figure in this sample, regression analyses were performed to examine potential effects of sexual abuse and RS anger on both overt and relational aggression (see Table A7 in Appendix). No significant sexual abuse by RS anger interactions were found with either overt or relational aggression in this sample.

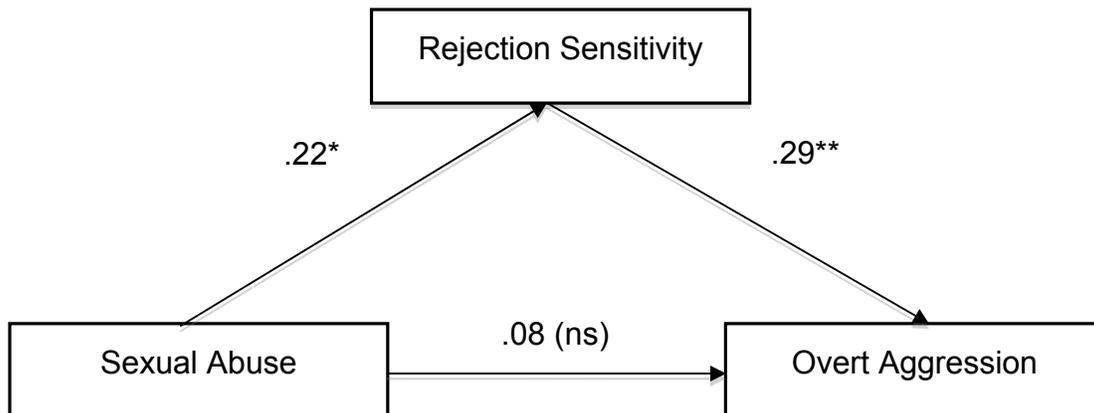
Relationship between Maltreatment and Rejection Sensitivity

In order to test for mediation effects, regressions were completed with each maltreatment subtype (both collapsed across maternal and paternal figures and separately) with RS anger as the outcome variable. Consistent with zero-order correlations, IPV by a maternal figure and other adult perpetrated sexual abuse produced a significant main effect of maltreatment subtype and/or perpetrator on RS anger. A primary requirement for mediation - a significant relationship between the independent and dependent variable (Baron & Kenny, 1986) was not observed in the case of other adult perpetrated sexual abuse. Despite this, numerous researchers have asserted that it is in fact possible for an intervening variable to be causally between a predictor and outcome even if the two are not associated (Hayes, 2009; MacKinnon, Krull, & Lockwood, 2000; Mathieu & Taylor, 2006). This would instead signify the presence of an indirect effect; in this case, that sexual abuse indirectly affects aggression through RS anger. The Sobel test of indirect/mediated effects was used to determine whether these indirect effects were significant for both types of aggressive outcomes. The

point estimate of the indirect effect (“Sobel value”) was significant for overt ($z_{\text{sobel}} = 2.12, p = .034$) aggression (see Figure 3) but not relational aggression ($z_{\text{sobel}} = 1.68, p = .093$).

Possible mediation effects with regards to maternal perpetrated IPV were also tested using the Sobel test. Sobel values were not significant for both overt ($z_{\text{sobel}} = 1.67, p = .096$) and relational aggression ($z_{\text{sobel}} = 1.43, p = .154$), indicating RS anger does not mediate the association between maternal partner abuse and either form of aggression.

Figure 3. Indirect Effect of Sexual Abuse on Overt Aggression Through RS Anger.



DISCUSSION

The current study examined the role of RS in the relationship between exposure to maltreatment and aggressive behaviour in high-risk adolescent girls. The purpose of the study was to gain a greater understanding of the mechanisms involved in this association. Exposure to early maltreatment experiences was predicted to relate to higher levels of both overt and relational aggression in girls. This was generally confirmed, with exposure to IPV, psychological, and physical abuse, when combined across parental figures, associated with higher levels of aggression in this sample. Higher levels of RS anger were also expected to relate to increased levels of aggression, as demonstrated in previous research on RS and externalizing behaviours. RS anger was in fact, found to be associated with increased levels of both overt and relational aggression in this sample. Lastly, the role of RS as a mediator or moderator of the association between maltreatment subtypes, both across and by perpetrators, and aggression was explored. Marginal interactions were found with paternal perpetrated IPV and RS anger for both types of aggressive behaviour. An indirect effect of other adult perpetrated sexual abuse on overt aggression through RS anger was also found.

The Relation of Maltreatment to Aggressive Behaviour

Consistent with predictions, evidence emerged supporting the relationship between child maltreatment and aggressive behaviour. More specifically, each

form of child maltreatment (IPV, psychological, and physical maltreatment) was related to overt and relational aggression when maternal and paternal perpetration was considered together. These findings are in agreement with previous research showing associations between aggression and exposure to IPV (Bauer, Herrenkohl, Lozano, Rivara, Hill, & Hawkins, 2006; Evans, Davies, & DiLillo, 2008; Litrownik, Newton, Hunter, English, & Everson, 2003; McCloskey & Lichter, 2003; Moylan et al., 2010), psychological abuse (Gagne, Drapeau, Melacon, Saint-Jacques, & Lepine, 2007; Teicher, Samson, Polcari, & McGreenery, 2006; Vissing, Straus, Gelles, & Harrop, 1991), and physical abuse (English & Widom, 2002; Fergusson & Lynskey, 1997; Giordano et al., 2004) in childhood. The finding that exposure to IPV is related to aggressive behaviour in this sample fits within a social learning perspective (Bandura, 1973), in that parental modeling of physical aggression between caregivers results in an increase in aggressive behaviour in these girls. As maternal and paternal perpetrated IPV is highly correlated, it is likely the case that girls are watching their fathers being aggressive towards their mothers, and their mothers retaliating (or vice versa). This home environment may then serve to teach them that aggression is a strategy for navigating close relationships.

An association between the other two forms of maltreatment and aggression in these girls appears consistent with prior research on attachment theory. Experiences of abuse by caregivers create a hostile home environment in which threats of abandonment appear frequent. Girls have been found to be particularly vulnerable to such feelings of abandonment from caregivers (Moretti

& Obsuth, 2011) and this attachment anxiety has been found to be associated with higher levels of overt and relational aggression in high-risk girls specifically (Obsuth & Moretti, 2009). Perhaps then, through insecure attachments caused by inconsistent and negative attention from caregivers, these girls learn that aggression can serve as an effective means of gaining their attention. It is also therefore likely that this strategy carries forward to their relationships with others.

Paternal Perpetrated Maltreatment

When examined separately, paternal maltreatment of all forms was related to girls' reports of overt and relational aggressive behaviour. With regards to IPV, differential effects of perpetrator type have already been documented with respect to aggressive behaviour. For example, exposure to paternal perpetrated IPV has been found to result in increased levels of physical aggression directed towards paternal figures (Moretti et al., 2006). These increased levels of aggression directed at paternal figures that have been violent towards girls' maternal figures would suggest that girls are aggressing as a means of retaliation against their fathers. This retaliation could be due to a desire to protect their mothers from further abuse, but could also serve as an attempt to prevent similar violence and rejection from happening to them.

While perpetrator effects have been looked at in relation to IPV, there was no available literature looking specifically at the role of paternal perpetrated psychological maltreatment. Studies examining psychological maltreatment often oversampled mothers and when substantial proportions of fathers were included in studies, they were collapsed across perpetrators to create a composite score

of maltreatment. Composite scores were also used with regards to measures of physical maltreatment. In general, there appears to be an overemphasis on the role of maternal figures and maltreatment subtype collapsed across perpetrators in the association between maltreatment and maladaptive outcomes, with far less research on the role of father figures in this process (with the exception of research on sexual abuse). An earlier belief was that fathers of high-risk families indirectly affected the risk for child maltreatment through being uninvolved or absent in the child's life, creating single homes and added pressure to mothers (Dubowitz, Hampton, Bithoney, & Newberger, 1987; Gelles, 1989, Schloesser, Pierpoint, & Poertner, 1992). More recent research however, has actually found considerable father involvement in high-risk samples (Mincy, Garfinkel, & Nepomnyaschy, 2005). In light of this, it would be interesting to know the level of involvement of fathers in the current study. Perhaps paternal figures were largely present and highly involved in these girls' lives which could have lead to greater opportunity for maltreatment towards them, as well as a greater chance of conflict between parental figures – producing a hostile home environment.

Maternal Perpetrated Maltreatment

In contrast to findings on paternal perpetration of abuse, maternal perpetrated IPV was the only form of maltreatment significantly associated with aggressive behaviour in these girls. Exposure to maternal perpetrated IPV has been found to be associated with increased levels of aggression towards both peers and romantic partners in girls (Moretti et al., 2006). An association between witnessing maternal perpetrated IPV and dating aggression has also

been found in young women (Milletich, Kelley, Doane, & Pearson, 2010). The relationship between witnessing a same-sex parent commit acts of violence towards a partner and later aggressive behaviour can once again be explained with social learning, as it provides a maladaptive model for girls' behaviour in future romantic relationships.

The finding that the other two forms of maternal perpetrated maltreatment were not significantly associated with aggression in these girls appears inconsistent with the prominent role given to mothers within attachment relationships. As mentioned previously, insecure attachments resulting from maternal maltreatment have been viewed as central in influencing later issues with interpersonal functioning, such as aggressive behaviour (e.g., Bowlby, 1988; Cyr et al., 2010). The failure to find other evidence of the impact of maternal perpetrated maltreatment on aggressive behaviour in these girls could potentially be the result of the measure of aggression used in the particular study; specifically, the use of a self-report measure in a high-risk sample. As the majority of self-report measures have been created on normative samples, it is possible that the items on this measure may not adequately assess the features of both overt and relational aggression that are unique to such high-risk girls. Furthermore, there is also the chance of bias in responding, with girls reporting less aggression than their behaviours would suggest. As such, future research using additional measures of aggressive behaviour, such as observational data or reports from multiple informants, is necessary to examine the association between maternal maltreatment exposure and aggression in high-risk girls.

Sexual Abuse and Aggression in Girls

Sexual abuse perpetrated by adults other than girls' maternal or paternal figures was not found to be related to either form of aggression in this sample. This is contrary to previous research showing an association between girls' sexual abuse histories and levels of aggressive and violent behaviour (Cullerton-Sen et al., 2008; Herrera & McCloskey, 2003). It should be noted however, that the Cullerton-Sen et al. (2008) study did not distinguish between perpetrators of sexual abuse, solely dichotomizing the presence versus absence of sexual abuse. Furthermore, while Herrera & McCloskey (2003) did distinguish between perpetrators of sexual abuse (including adults other than primary caregivers) in their initial descriptives, they did not examine the effects of perpetrator type on outcomes in their final analyses. The current study was unique in that it did focus on the role of perpetrator type, particularly other adult perpetrated abuse, on girls' aggression. Although extrafamilial sexual abuse has been found to be more prevalent than intrafamilial sexual abuse – as in the case of the current study, far less research has examined the impact of this type of abuse (Bolen, 2000). Furthermore, as mentioned previously, some studies combine caregiver perpetrated with other adult perpetrated sexual abuse – making it difficult to distinguish the differential effects of perpetrator type. Further research comparing the behavioural outcomes of intrafamilial versus extrafamilial childhood sexual abuse is needed to gain a greater understanding of the role of sexual abuse on later externalizing behaviours such as aggression.

Maltreatment and Rejection Sensitivity

Two forms of maltreatment were found to be significantly associated with RS anger: exposure to IPV and sexual abuse. Girls who reported exposure to their mother's perpetration of violence toward her partner and those who reported experiencing sexual abuse by an adult other than their primary caregivers were more likely to endorse high levels of RS anger. Perhaps, as in the case of the association between maltreatment and aggression, exposure to these maltreatment subtypes create maladaptive views of the dynamics of interpersonal relationships. If these girls learn that rejection (in the form of aggressive and violent behaviour) is a means of dealing with relationships, they are also likely to become rather sensitive to monitoring cues for this in their own relationships. They may then come to expect rejection in all interpersonal situations, particularly intimate relationships. This could also serve as a possible common pathway to both sensitivity to rejection and aggressive responding - as anger over the possibility of rejection may manifest as aggression in these girls. Further research into the association of both maternal perpetrated domestic abuse and sexual abuse with RS is necessary to gain a clearer picture of their unique contributions to RS.

Rejection Sensitivity and Aggressive Behaviour

Consistent with predictions, higher levels of RS anger were related to increased levels of both overt and relational aggression in this sample. These findings are in agreement with prior research finding an association between high levels of RS and hostility and aggression in girls and women (Ayduk et al., 2008;

Downey et al., 2004; Purdie & Downey, 2000). The present study therefore extends the current knowledge base on RS in girls, providing evidence that angry expectations of rejection are involved in aggressive behaviour not only in normative samples of girls and young women, but in high-risk samples as well. The RS-aggression link found in this study also advances our understanding of the antecedents of aggression expressed by high-risk girls as well as possible avenues for intervention. Future studies are needed however, to examine whether this association is also observed in other samples of high-risk girls.

Moderation and Indirect Effects of Rejection Sensitivity

A trend of a moderating effect of RS anger on the relationship between paternal perpetrated abuse and both forms of aggression was found in the current study. Within this clinical sample, girls who were exposed to high levels of paternal perpetrated IPV were similarly high on overt and relational aggression regardless of their level of RS. At lower levels of exposure, however, only those girls with low RS were less aggressive. Thus, low RS appeared to play a protective role in such adverse contexts. This suggests that being somewhat impervious to adversity and pain inflicted to those who are close to you can serve as an adaptive strategy in some contexts, such as this. RS is considered a cognitive-emotional bias, however, in the case of girls living in high maltreatment contexts it is likely that they are reading the situation somewhat accurately. Therefore, in this case it may not necessarily be a RS bias that would be influencing the use of aggressive behaviour, but rather the reality of a very toxic adversity. The limited evidence for moderation found in the current study could

therefore also be the result of the nature of the sample, with most girls living in contexts of high adversity.

Despite the lack of a direct association between other adult perpetrated sexual abuse and either form of aggression, sexual abuse was found to indirectly influence levels of overt aggression through RS anger. This therefore means that experiences of extrafamilial sexual abuse were related to higher levels of RS anger in these girls, with RS anger associated with higher levels of overt aggression. It is interesting to note that this was the only maltreatment subtype found to indirectly affect levels of aggressive behaviour through RS. This could speak to the unique characteristics of sexual abuse – being more intimate and evoking greater feelings of shame and guilt than other types of abuse (Feiring, Miller-Johnson, & Cleland, 2007). Such feelings could possibly serve to heighten feelings of rejection, leading to subsequent defensive aggression in these girls. This interpretation should be noted with some caution however, as RS may still indirectly affect the relationship between other maltreatment subtypes and aggressive outcomes, and the current study was unable to detect these associations due to the particular aggression measure used. Future studies should however, investigate the association between shame, guilt, and RS in girls with histories of childhood sexual abuse to determine if and how they interact with one another.

Clinical Implications

The present study serves to highlight the detrimental effects of exposure to maltreatment during childhood on later psychosocial functioning. Findings from

this study and numerous others provide substantial evidence of the relationship between maltreatment and aggressive and delinquent behaviour in youth. Furthermore, the current findings provide some evidence of its relation to RS. This therefore points to the need for prevention or risk-reduction programs for families at high-risk for maltreatment. Such families have been found to experience multiple life stressors including poverty, marital discord, a lack of adequate resources and social supports, as well as deficits in social and parenting skills (Azar, Povilaitis, & Lauretti, 1998; Belsky, 1984; Slack, Holl, McDaniel, Yoo, & Bolger, 2004). A number of programs to prevent maltreatment and address these stressors have already been developed, some with positive results. A recent review by MacMillan et al. (2009) for example, concluded that the Nurse-Family Partnership, a US program involving nurse home visitation to low-income first-time mothers both prenatally and during infancy, showed great promise in reducing rates of child physical abuse and neglect, even after a 15-year follow-up. While promising, the authors point to the fact that numerous other home-visitation programs have failed to show similar benefits. Overall, there appears to be a lack of adequate and consistent assessment of existing interventions, speaking to the need for future research in effective approaches to child abuse prevention. Furthermore, for programs that have been found to be promising, there is still a need for more widespread implementation and evaluation of such programs across North America.

The finding that RS anger is consistently linked to both overt and relational aggression in the current study also illustrates the importance of addressing RS

in interventions with high-risk girls. With regards to possible targets of intervention for individuals high in RS, there has been some promising evidence for the role of self-regulation in impeding associated maladaptive outcomes. The challenge for those high in RS is believed to be the inhibition of automatic impulses to retaliate in interpersonal situations deemed threatening (Ayduk, Mendoza-Denton, Mischel, & Downey, 2000). Effective self-regulation in the case of those high in RS therefore involves the ability to gain control over the frustration of a stressful interpersonal situation and prevent one's attention from focusing on the arousing emotional aspects of the situation – referred to as strategic attention deployment (Ayduk et al., 2000). Highly rejection sensitive individuals have in fact been found to display a vulnerability to allowing these social threat cues to disrupt goal-directed attention (Berenson et al., 2009).

Strategic attention deployment in individuals high in RS has been examined using a delayed gratification (DG) paradigm. The DG paradigm (Mischel, Shoda, & Rodriguez, 1989) involves presenting an individual a choice between an immediate but smaller reward and a delayed but larger reward. The paradigm, which was initially performed on preschool children, showed that the number of seconds children were able to delay this gratification predicted social and cognitive competence years later (Mischel, Shoda, & Peake, 1988; Shoda, Mischel, & Peake, 1990). The underlying mechanism of this ability to delay gratification is believed to involve distracting or distancing oneself from the “hot” qualities of the reward – in the case of RS, the emotional or physiological reaction of a potential rejection experience, either through distraction or through

focusing on “cool” cognitive cues about the situation (i.e. the physical aspects of the environment) (Ayduk, Mischel, & Downey, 2002). When present in childhood, this ability to delay gratification was found to later buffer both pre-adolescents and adults high in RS from a host of maladaptive outcomes including aggression (Ayduk et al., 2000). Further evidence for this buffering effect was seen in a study by Ayduk et al. (2002); when primed to perceive rejection, individuals who thought about the physical setting in which the rejection occurred were able to attenuate their hostile reactivity, with those instead focusing on the emotional aspects of the experience displaying heightened anger and hostility (Ayduk et al., 2002). These findings provide considerable evidence in support of targeting self-regulation skills in treatment for aggressive girls high in RS. Enhancing these skills hold the potential of significantly reducing hostile and aggressive behaviour in girls such as those in the current study.

Limitations and Future Directions

Several limitations of the present study need to be addressed. First and foremost, analyses in the current study were completed using hierarchical multiple regression. This method of analysis provided valuable information on the associations between forms of maltreatment, RS, and aggressive outcomes but required looking at each association individually. More advanced statistical techniques such as structural equation modeling (SEM) would provide an opportunity to examine an overall model of IPV, psychological, and physical abuse with RS anger and both aggressive outcomes simultaneously. Doing so would provide a clearer picture of the relations between variables, including their

unique and shared effects. In addition, SEM provides a more rigorous approach to data analysis as it provides estimates for measurement error, particularly in independent variables, that are not available in regression analyses (Byrne, 2010). A much more sophisticated technique for dealing with missing data – full information maximum likelihood (FIML; Arbuckle, 1996), which does not involve substituting or imputing missing values, is also part of this method of analysis. Given the strengths of this statistical procedure, plans are currently underway to re-examine the variables in the current study within a SEM framework.

It is important to note that only concurrent associations between maltreatment, aggression, and RS were examined in this study. While determining concurrent associations between these variables is a much needed first step in obtaining a clearer picture of the influence of both maltreatment and RS on aggressive behaviour, it is also necessary to understand how these relationships behave over time. This is especially important as age was found to be significantly associated with aggression in this sample. Although ethnicity was also found to influence aggressive behaviour in these girls (in the case of physical abuse and overt aggression), age appeared to exert a greater influence on aggressive behaviour. In the current study, levels of aggression were higher in the younger girls in the sample, which is consistent with prior research suggesting levels of aggression decrease over the course of development (Tremblay, 2000). This finding points to the need for longitudinal investigation to determine whether the associations between variables observed in the current investigation remain unchanged or if they vary as these girls enter into adulthood.

Given the importance of examining the developmental course of these relations, the analyses of the current study will be extended to Time 2 and Time 3 of data collected as part of the longitudinal study in the near future.

The use of a high-risk sample of adolescent girls is considered a strength of the current study as it fills a gap in the literature on the relation between RS and externalizing behaviours such as aggression. While a strength of the study, it would have also been beneficial to examine an age-matched normative sample alongside the group of high-risk girls. This would provide further information as to whether associations between exposure to maltreatment experiences, RS, and aggression differ in these two samples and if so, how. Future studies should examine both a high-risk sample and age-matched normative sample to further elucidate differences observed in adolescent girls deemed high-risk.

The reliance on self-report measures for maltreatment, RS, and aggression is also problematic due the possibility of response bias. This could be particularly problematic with regards to the FBQ as it is possible that girls would be less likely to report incidences of abuse from maternal or paternal figures, given the nature of the information. It will be important to include alternative means of assessing maltreatment exposure, such as official case records as a supplement to self-report measures, in future studies to ensure greater accuracy in reporting.

Rejection sensitivity was examined solely with regards to feelings of anger over rejection experiences. While the literature has shown a link between RS anger and hostile and aggressive outcomes in previous studies, it would also be

beneficial to examine whether anxiety regarding rejection plays a role in the association between maltreatment and aggressive behaviour. While it would not be predicted to have direct effects on aggressive outcomes, it would be informative to examine whether certain maltreatment experiences exert indirect effects on aggression through the anxious component of RS. In addition, it would be beneficial to investigate whether the different maltreatment subtypes were related uniquely to one form of RS versus another. Further studies should therefore examine the roles of both RS anger and RS anxious in the association between maltreatment and externalizing behaviours.

Aggression in the current study was measured by collapsing the functions of aggression (reactive and instrumental) across forms to create an overall overt and relational aggression subscale. While there has been some support for assessing aggression as a multidimensional construct using the FFAM (Lee et al., in press), this is still an area in need of further measurement development. Researchers have particularly struggled with determining the most appropriate means of capturing both the forms and functions of aggression, particularly in high-risk groups such as the current sample. This is due to the fact that the majority of research has studied aggression in pre-school and school-aged children (Crick, 1996; Dodge & Coie, 1987; Poulin & Boivin, 2000), with most consisting of normative samples. Therefore, it is still unclear as to whether aggression manifests differently in high-risk samples, and particularly with youth approaching adulthood. A greater understanding of how the forms and functions of aggression are expressed in such high-risk samples is paramount to both

adequate assessment of intent in legal proceedings and appropriate targets of intervention and rehabilitation efforts for those already in custody. It might have also been interesting to investigate the function of aggression reported by girls reporting high levels of RS. Given their bias to perceive rejection in ambiguous situations, it would be predicted that rejection sensitive girls would be more likely to display reactive and not instrumental aggressive behaviour. Reactive aggression has already been observed in normative samples with high levels of RS (Ayduk et al., 2008), however, it would be interesting to examine if this association held in high-risk samples as well.

Further, the measure of aggression used in the current study focused on the form of aggression and not the targets of these girls' aggression. Previous research has found that targets of aggressive behaviour in girls vary depending on whether they witness maternal or paternal perpetrated IPV (Moretti et al., 2006). Furthermore, we know that girls are more likely to assault those closest to them – friends, family, and romantic partners (Franke et al., 2003; Snyder & Sickmund, 2006). Future studies using a measure of aggression which assesses aggressive behaviour towards different targets, such as the Conflict Tactics Scale (CTS; Strauss, 1979) would therefore be useful in determining whether certain maltreatment experiences are more closely related to aggression towards parents, peers, or romantic figures.

Conclusion

Despite these limitations, the current study expands the knowledge base on the role of RS in a high-risk sample. In addition to being one of few studies on

RS to utilize high-risk individuals, it was also the first to examine the association between RS and several types of maltreatment by parental figures. Given the considerable focus on the role of maternal figures in previous research, this study was also one of few to look specifically at the association between paternal maltreatment and aggression. The study offers important information on the role of maltreatment on RS, with maternal perpetrated IPV and sexual abuse playing a particular role in sensitivity to rejection, as well as the role of RS in girls' aggressive behaviour. The findings point to the need to address RS in future interventions with high-risk girls.

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APPENDIX

Regression Tables

Note: Tables A1 to A6 consist of three separate regression analyses (maltreatment combined, maternal perpetrated, and paternal perpetrated maltreatment). They were combined for ease of comparison for each maltreatment subtype.

Table A1. Regression Examining the Relation Between IPV - Combined, Maternal, and Paternal, RS Anger, and Overt Aggression

		DV Overt Aggression					
		B	S.E	β	p	ΔR^2	f^2
Step 1	Age	-1.62	.464	-.289	.001	.116	
	Ethnicity	-1.24	.485	-.212	.012		
Step 2	IPV						
	Combined	16.0	3.50	.356	.000	.123	.140
	Maternal	18.4	3.48	.402	.000	.157	.186
	Paternal	9.49	3.05	.252	.002	.062	.066
Step 3	IPV						
	RS Anger						
	Combined	14.3	3.41	.319	.000	.059	
		3.05	.931	.246	.001		
	Maternal	16.3	3.47	.355	.000	.045	
		2.69	.929	.217	.004		
	Paternal	8.74	2.92	.232	.003	.076	
		3.42	.952	.276	.000		
Step 4	IPV						
	RS Anger						
	IPV X RS						
	Combined	15.5	3.47	.345	.000	.013	
		3.12	.927	.251	.001		
		-8.67	5.51	-.120	.118		
	Maternal	17.6	3.65	.385	.000	.008	
		2.72	.928	.219	.004		
		-6.38	5.36	-.092	.236		
	Paternal	9.42	2.93	.250	.002	.017	
	3.51	.946	.283	.000			
	-8.49	4.95	-.132	.089			

Table A2. Regression Examining the Relation Between IPV - Combined, Maternal, and Paternal, RS Anger, and Relational Aggression

		DV Relational Aggression					
		B	S.E	β	p	ΔR^2	f^2
Step 1	Age						
	Combined & Paternal	-.924	.379	-.208	.016	.043	
	Maternal	-.921	.388	-.206	.019	.042	
Step 2	IPV						
	Combined	10.6	2.91	.298	.000	.088	.096
	Maternal	11.3	3.37	.281	.001	.078	.084
	Paternal	7.69	2.47	.257	.002	.066	.071
Step 3	IPV						
	RS Anger						
	Combined	9.73	2.90	.274	.001	.026	
		1.61	.804	.163	.048		
	Maternal	10.1	3.38	.252	.003	.027	
		1.68	.841	.168	.047		
	Paternal	7.30	2.44	.245	.003	.034	
		1.83	.804	.186	.025		
Step 4	IPV						
	RS Anger						
	IPV X RS						
	Combined	10.7	2.96	.302	.000	.015	
		1.66	.801	.169	.041		
		-7.19	4.76	-.125	.133		
	Maternal	10.3	3.53	.258	.004	.000	
		1.69	.844	.169	.048		
		-1.19	5.27	-.020	.822		
	Paternal	7.96	2.44	.267	.001	.022	
	1.90	.798	.194	.018			
	-7.64	4.17	-.150	.069			

Table A3. Regression Examining the Relation Between Psychological Abuse by Perpetrator, RS Anger, and Overt Aggression

		DV Overt Aggression					
		B	S.E	β	p	ΔR^2	f^2
Step 1	Age	-1.64	.459	-.294	.000	.121	
	Ethnicity	-1.25	.483	-.214	.010		
Step 2	Psychological Abuse						
	Combined	2.54	1.02	.202	.015	.040	.042
	Maternal	1.68	.941	.146	.076	.021	.021
	Paternal	1.75	.771	.188	.025	.033	.034
Step 3	Psychological Abuse						
	RS Anger						
	Combined	2.22	.985	.177	.026	.076	
		3.45	.962	.278	.000		
	Maternal	1.23	.912	.107	.179	.075	
		3.45	.980	.278	.001		
Paternal	1.67	.736	.180	.025	.082		
	3.58	.958	.288	.000			
Step 4	Psychological Abuse						
	RS Anger						
	Psychological Abuse						
	X RS						
	Combined	2.18	.989	.174	.029	.002	
		3.45	.964	.278	.000		
	Maternal	-.879	1.51	-.046	.561	.000	
		1.24	.916	.107	.179		
	Paternal	3.46	.983	.278	.001	.007	
		-.299	1.38	-.017	.829		
		1.68	.735	.181	.024	.007	
		3.58	.957	.288	.000		
	-1.40	1.28	-.085	.275			

Table A4. Regression Examining the Relation Between Psychological Abuse by Perpetrator, RS Anger, and Relational Aggression

		DV Relational Aggression					
		B	S.E	β	p	ΔR^2	f^2
Step 1	Age	-.936	.375	-.212	.014	.045	
Step 2	Psychological Abuse						
	Combined	2.09	.834	.210	.014	.044	.046
	Maternal	1.16	.774	.127	.138	.016	.016
	Paternal	1.50	.615	.205	.016	.042	.044
Step 3	Psychological Abuse RS Anger						
	Combined	1.92	.824	.193	.021	.035	
		1.84	.811	.187	.025		
	Maternal	.912	.770	.100	.239	.035	
		1.86	.829	.190	.026		
	Paternal	1.46	.604	.199	.017	.039	
		1.95	.807	.198	.017		
Step 4	Psychological Abuse RS Anger Psychological Abuse X RS						
	Combined	1.90	.827	.191	.023	.004	
		1.84	.813	.187	.026		
	Maternal	-.924	1.25	-.061	.462		
		.923	.773	.101	.235	.001	
		1.87	.832	.190	.026		
	Paternal	-.486	1.15	-.035	.674		
		1.50	.603	.204	.015	.011	
		1.94	.805	.198	.017		
		-1.35	1.07	-.103	.209		

Table A5. Regression Examining the Relation Between Physical Abuse by Perpetrator, RS Anger, and Overt Aggression

		DV Overt Aggression					
		B	S.E	β	<i>p</i>	ΔR^2	<i>f</i> ²
Step 1	Age	-1.64	.459	-.294	.000	.121	
	Ethnicity	-1.25	.483	-.214	.010		
Step 2	Physical Abuse						
	Combined	1.65	.934	.145	.080	.021	.021
	Maternal	.977	.835	.097	.244	.009	.009
	Paternal	1.21	.706	.144	.090	.019	.019
Step 3	Physical Abuse						
	RS Anger						
	Combined	1.45	.894	.127	.107	.081	
		3.54	.969	.285	.000		
	Maternal	.655	.803	.065	.416	.080	
		3.55	.980	.286	.000		
Paternal	1.22	.672	.145	.073	.086		
	3.65	.965	.294	.000			
Step 4	Physical Abuse						
	RS Anger						
	Physical Abuse						
	X RS						
	Combined	1.42	.896	.124	.116	.005	
		3.55	.970	.286	.000		
	Maternal	-1.37	1.56	-.070	.381	.012	
		.647	.800	.064	.420		
	Paternal	3.54	.976	.285	.000	.001	
		-2.08	1.47	-.112	.161		
		1.22	.675	.145	.074	.001	
		3.65	.968	.294	.000		
		-.397	1.21	-.026	.743		

Table A6. Regression Examining the Relation Between Physical Abuse by Perpetrator, RS Anger, and Relational Aggression

		DV Relational Aggression					
		B	S.E	β	p	ΔR^2	f^2
Step 1	Age						
	Combined & Paternal	-.933	.384	-.210	.016	.044	
	Maternal	-.936	.375	-.212	.014	.045	
Step 2	Physical Abuse						
	Combined	1.79	.859	.180	.039	.032	.033
	Maternal	.744	.677	.093	.274	.009	.009
	Paternal	1.28	.617	.181	.040	.031	.032
Step 3	Physical Abuse RS Anger						
	Combined	1.79	.841	.181	.035	.045	
		2.12	.837	.213	.012		
	Maternal	.573	.670	.072	.394	.038	
		1.93	.828	.196	.022		
	Paternal	1.36	.604	.193	.026	.049	
		2.22	.837	.222	.009		
Step 4	Physical Abuse RS Anger Physical Abuse X RS						
	Combined	1.79	.863	.181	.040	.000	
		2.12	.842	.213	.013		
		.010	1.58	.001	.995		
	Maternal	.560	.671	.070	.406	.004	
		1.92	.829	.196	.022		
		-.936	1.24	-.064	.453		
	Paternal	1.36	.608	.193	.027	.000	
		2.22	.840	.222	.009		
		-.028	1.16	-.002	.981		

Table A7. Regression Examining the Relation Between Other Adult Perpetrated Sexual Abuse, RS Anger, and Aggression

		DV Overt Aggression					
		B	S.E.	β	p	ΔR^2	f^2
Step 1	Age	-1.64	.459	-.294	.000	.121	
	Ethnicity	-1.25	.483	-.214	.010		
Step 2	Sexual Abuse	2.98	3.06	.080	.333	.006	.006
Step 3	Sexual Abuse	.598	3.01	.016	.843	.079	
	RS Anger	3.60	1.00	.290	.000		
Step 4	Sexual Abuse	.034	3.16	.001	.991	.002	
	RS Anger	3.65	1.01	.294	.000		
	Sexual Abuse X RS Anger	3.38	5.80	.048	.561		
		DV Relational Aggression					
Step 1	Age	-.936	.375	-.212	.014	.045	
Step 2	Sexual Abuse	3.42	2.50	.116	.174	.013	.013
Step 3	Sexual Abuse	2.20	2.53	.075	.386	.033	
	RS Anger	1.84	.843	.188	.031		
Step 4	Sexual Abuse	2.62	2.67	.089	.328	.002	
	RS Anger	1.80	.849	.184	.035		
	Sexual Abuse X RS Anger	-2.49	4.87	-.045	.612		