

WHEN VICTIMIZATION AND AGGRESSION CO-OCCUR: SOCIAL-COGNITIVE AND
PSYCHOPHYSIOLOGICAL MECHANISMS

by

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ABSTRACT

Aggressive behavior has been identified as both a cause and consequence of peer victimization, but relatively little is known about what might explain this association. The first goal of this study is to examine two social cognitive biases, rejection sensitivity and disrespect sensitivity, which may account for the relationship between victimization and aggression. While there is some support for the longitudinal relationship between victimization and aggression, others have failed to identify such relationships. Moreover, the concurrent relationship between victimization and aggression varies in magnitude. The second goal is to explore two physiological processes underlying emotion processes, RSA and EDA, in response to peer rejection, as moderators of the relationship between victimization and aggression. Participants were 67 (58% male) adolescents between the ages of 12-15 and one parent. Self-reports of victimization and reactive and proactive aggression and parent-reports of aggression were collected. Physiological data were collected during a task designed to simulate peer rejection. Results indicated that victimization was indirectly related to reactive aggression via angry rejection sensitivity and disrespect sensitivity and victimization was indirectly related to parent-reported aggression via angry and anxious rejection sensitivity. RSA moderated the relationship between victimization and reactive aggression and EDA reactivity moderated the relationship between victimization and proactive aggression and parent-reported aggression. The results support the theoretical relationship between victimization, aggression, and social cognition and highlight the role of physiological processes in adolescent adjustment.

LIST OF ABBREVIATIONS AND SYMBOLS

AgCl	Silver Chloride
ANS	Autonomic Nervous System
α	Cronbach's index of internal consistency
β	Standardized regression coefficients
df	Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data
ECG	Electrocardiogram
EDA	Electrodermal activity: measure of the sympathetic nervous system
\bar{M}	Mean: the sum of a set of measurements divided by the number of measurements in the set
p	Probability associated with the occurrence under the null hypothesis of a value as extreme or more extreme than the observed value
PNS	Parasympathetic nervous system
RSA	Respiratory sinus arrhythmia: measure of the parasympathetic nervous system
SIP	Social Information Processing
SNS	Sympathetic Nervous System
t	Computed value of t test
z'	Computed value of Sobel test
<	Less than
=	Equal to

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CHAPTER 1

INTRODUCTION

Peer victimization is a pervasive challenge throughout development. Many children report occasionally being the target of peer victimization and 10% have reported being severely or chronically victimized overtime (Perry, Kusel, & Perry, 1988). Being the target of peer victimization is a distressing experience and has particularly negative consequences on multiple aspects of adjustment, including emotional, behavioral, social, psychological, and academic (Kochenderfer & Ladd, 1997). Victims are more lonely, anxious, and depressed and have lower self-esteem and self-concept compared to non-victimized youth (Hawker & Boulton, 2000). Victimized children and adolescents are also often rejected by their peers and lack friendships (Bukowski & Sippola, 2001; Ladd & Troop-Gordon, 2003).

Aggressive behavior has been identified as both a consequence and as a risk factor for peer victimization (Reijntjes et al., 2011). Peer victimization is associated with both concurrent and subsequent aggression, inattention, and delinquency. For example, chronically victimized youth demonstrate high levels of both internalizing and externalizing problems even years later (Hanish & Guerra, 2002). In addition, peer victimization has been found to predict increases in aggressive behavior from childhood to adolescence and from adolescence to adulthood (Logan-Greene, Nurius, Hooven, & Thompson, 2015).

Support for the opposite pathway has also been found. For instance, teacher- and mother-reported externalizing problems, such as aggression and delinquency, have been found to be predictive of increases in peer victimization during elementary school (Schwartz, McFadyen-

Ketchum, Dodge, Pettit, & Bates, 1999). Similarly, Hanish and Guerra (2000) found that aggression predicted concurrent victimization as well as increases in victimization over time in a sample of at-risk urban youth.

Despite evidence revealing a link between victimization and aggression, more research is needed to uncover the mechanisms that might explain this association. The first goal of this study is to examine social-cognitive biases that may co-occur with and account for the relationship between victimization and aggressive behavior. The current study will explore how angry and anxious rejection sensitivity and disrespect sensitivity account for concurrent victimization and aggression.

A second goal of this study is to explore mechanisms that may strengthen or weaken the relation between victimization and aggression. While there is some evidence supporting the longitudinal association between victimization and aggression, other studies have failed to identify such relationships (e.g. Dhimi, Hoglund, Leadbeater, & Boone, 2005; Ladd & Burgess, 2001). In addition, the concurrent associations between victimization and aggression tend to be small to moderate in magnitude (Graham, Bellmore, & Mize, 2006; Pouwels & Cillessen, 2013; Schwartz, 2000). It is possible that the association between victimization and aggression may depend on whether the aggressive behavior is *proactive* or *reactive*. Whereas proactive aggression is goal-directed and deliberate, reactive aggression is an angry, defensive response to provocation (Crick & Dodge, 1996). Reactively aggressive youth may be at greater risk of victimization compared to proactively aggressive youth. Indeed, a number of studies have identified larger correlations between reactive, but not proactive aggression and victimization (Camodeca, Goossens, Terwogt, & Schuengel, 2002; Lamarche et al., 2007; Poulin & Boivin, 2000; Salmivalli & Nieminen, 2002; Schwartz et al., 1998). Aggressive victims have been

described as “ineffectual aggressors” because they lose emotionally charged conflicts with peers amid anger and frustration (Perry, Perry, & Kennedy, 1992). Moreover, youth who are both aggressive and victimized display greater emotional distress and have poorer emotion regulation skills compared to non-victimized youth or non-aggressive victims (Schwartz, 2000; Toblin, Schwartz, Hopmeyer Gorman, & Abou-ezzeddine, 2005). Together, this suggests that emotional reactivity and emotional regulation processes may moderate how victimization and aggressive behavior are related. Adolescents who are unable to effectively regulate their emotions during social situations may be at increased risk of responding to victimization with angry, ineffective, and reactively aggressive behavior or such angry outbursts may increase the likelihood of being the target of peer victimization. The current study examines two psychophysiological processes, respiratory sinus arrhythmia and electrodermal responding, which underlie emotion regulation and arousal and are hypothesized to moderate the association between victimization and aggression.

Social Information Processing

The current study is guided by Social Information Processing (SIP) Theory (Crick & Dodge, 1994). SIP has been successful in explaining aggressive behavior and has been used more recently to understand cognitive patterns that underlie internalizing behaviors (e.g. Luebke, Bell, Allwood, Early, & Swenson, 2010). SIP contains six steps that children engage in when in a social situation: *encoding* of relevant stimuli; *interpretation* of stimuli; *clarification of goals* for the current situation; *accessing or constructing responses* in order to achieve the goal; *response selection*; and finally the *behavioral enactment* of the selected response. Importantly, all steps of SIP are informed by a mental database consisting of social knowledge and past successes and failures during social interaction. Individuals who display biased processing at

one or more steps are less socially competent than those who skillfully process each step (Crick & Dodge, 1999). More recently Lemerise and Arsenio (2000) suggested that emotion processes, such as emotion regulation and reactivity, influence social information processing. Social knowledge, a component of the database outlined in SIP, is activated by both events and emotional cues, and events may become associated with emotion. Increased or intense emotionality during a social situation serves as an internal cue that preempts processing of relevant cues in the environment. Anger in the presence of an ambiguous threat, for example, may lead to a hostile interpretation of the situation (Lemerise & Arsenio, 2000).

In the SIP model, the “database” is akin to social schema. An individual’s biased processing may be due to a schema that is characterized by negative expectations of peer interaction. Baldwin (1992) proposed that individuals form “relational schemas,” or working models of relationships derived from repeated experiences with others. Relational schemas include knowledge, perceptions, and expectations of the self and others, affective reactions, and outcomes of past interactions. When a similar social interaction is encountered frequently the schema associated with similar experiences becomes more readily accessible and activated. An activated schema then influences information processing by preemptively processing internal and external cues resulting in interpretations and expectations of social interactions congruent with the schema.

When children receive consistent and pervasive negative feedback, such as through peer victimization, it can lead to the development of negative or depressive schema (Cole et al., 1998). Indeed, being victimized is associated with all of the qualities necessary for the development of such schema: victimization focuses attention on the self, generates negative affect, and is often repeated over time (Graham & Juvonen, 1998; Hanish & Guerra, 2004). In a

cross-sectional study, Cole and colleagues found that victimization was associated with negative self-cognitions including viewing the self as a failure, unpopular, unattractive, unlikable, and unpopular. Additionally, victims viewed the social world as threatening and had negative views of the world and the future (Cole et al., 2014). Rosen, Milich, and Harris (2009) proposed that children develop a victim schema, an implicit association of themselves as a victim and their peers as aggressors, as a result of repeated victimization. The victim schema is activated by both affective and environmental cues associated with past victimization. Adolescents who are hypervigilant to signs of victimization and angrily expect victimization may defensively or preemptively act with aggression toward their peers. This study examines two related cognitive biases, rejection sensitivity and disrespect sensitivity, which may explain the relationship between victimization and aggression.

Rejection Sensitivity

Rejection sensitivity is a social-cognitive bias in which individuals tend to readily and anxiously or angrily expect rejection in ambiguous social situations (Downey & Feldman, 1996). Whereas Rosen and colleagues (2009) posited a schema explicitly involving victimization experiences, rejection-sensitivity shares similar foundations with their model. Although conceptually different, rejection and victimization may co-occur; children who are highly victimized are often concurrently rejected (Perry et al., 1988). Examining social-cognitive biases associated with rejection is an appropriate analogue to examine biases associated with victimization.

Rejection-sensitivity is thought to develop from repeated experiences of rejection, resulting in expectations and perceptions of rejection in situations with ambiguous intent. These expectations and perceptions may cause negative affective responses, such as anger or anxiety,

and maladaptive behaviors, such as aggression or social withdrawal, which may reinforce their expectations and lead to actual rejection (Zimmer-Gembeck & Nesdale, 2013). Research on rejection-sensitivity has provided support for this model. Peer rejection has predicted rejection-sensitivity during the transition to high school (Wang, McDonald, Rubin, & Laursen, 2012) and rejection-sensitivity is associated with greater perceptions of being rejected (Zimmer-Gembeck et al., 2013) and greater victimization (Zimmer-Gembeck, Trevaskis, Nesdale, & Downey, 2014). In addition, rejection-sensitivity is associated with both aggression and social withdrawal (London, Downey, Bonica, & Paltin, 2007) and positively correlated with both externalizing and internalizing difficulties during adolescence (Downey, Lebolt, Rincón, & Freitas, 1998; McDonald, Bowker, Rubin, Laursen, & Duchene, 2010). Zimmer-Gembeck et al. (2014) have also provided initial support for the mediating role of rejection-sensitivity between victimization and maladjustment. In a cross-sectional study, relational victimization was indirectly associated with greater loneliness and depressive symptoms via higher levels of rejection-sensitivity (Zimmer-Gembeck, Trevaskis, Nesdale, & Downey 2014).

The rejection-sensitivity model also suggests that anticipatory emotional arousal associated with rejection expectations prepare the self for rejection and the type of affect (i.e. anger or anxiety) associated with rejection differentially predicts the behavioral response (Downey et al., 1998). Indeed, angry expectations of rejection are predictive of increased aggressive, disruptive, and antisocial behaviors over time, while anxious expectations are associated with social anxiety and withdrawal (Downey et al., 1998; Jacobs & Harper, 2013; London et al., 2007; Zimmer-Gembeck & Nesdale, 2013). Adolescents who angrily expect rejection or victimization may be more likely to respond aggressively, which could lead to continued victimization. In contrast, adolescents who become anxious or nervous may seek to

avoid the situation rather than confronting their peers. Behaviors associated with angry expectations of rejection also seem to be more characteristic of reactive aggression, which may place youth at greater risk of victimization compared to proactive aggression (Zimmer-Gembeck & Nesdale, 2013; Jacobs & Harper, 2013). Thus, based on past research (Downey & Feldman, 1996; London et al., 2007; Levy, Ayduk, & Downey, 2001), it was hypothesized that angry rejection sensitivity will account for the relationships between reactive aggression and parent-reported overt aggression with victimization but will not account for the association between proactive aggression and victimization. And, because anxious rejection sensitivity is associated with avoidant motivations, it was hypothesized that anxious rejection sensitivity will not account for the relationship between victimization and forms of aggression.

Disrespect Sensitivity

Another schema that may explain why adolescents are concurrently aggressive and victimized is disrespect sensitivity. The concept of disrespect sensitivity emerged from ethnographic research in urban communities. In his 1999 book, *The Code of the Streets*, Elijah Anderson observed that individuals, especially males, growing up in Philadelphia's impoverished, inner-city neighborhoods adopted a code of behavior that dictated certain norms about respect and the appropriate (often aggressive) responses to signs of disrespect from others (Anderson, 1999). This code dictated that maintaining one's reputation and receiving respect from others was of the utmost importance. Respect was often maintained by conveying a violent and tough identity, and if disrespected, retribution was required (Anderson, 1999). Anderson suggested that projecting such an identity was necessary in order to protect one's self from victimization in these neighborhoods and that those who failed to adopt the code risked greater victimization.

Despite Anderson's hypothesis that adopting the code of the street would serve as a protective factor against violent victimization, longitudinal research has found that adopting the code of the street is associated with increased victimization during adolescence, beyond the levels associated with violent communities (Stewart, Schreck, & Simons, 2006). However, much research on the code of the street has been qualitative or has focused on violent and at-risk communities (e.g. Baron, Kennedy, & Forde, 2001; Jacobs, 2004).

Recent empirical work has sought to conceptualize the schema underlying the code as an individual difference characterized by hypervigilance and expectations of disrespect, referred to as "disrespect sensitivity" (McDonald, 2008; McDonald & Asher, under review). Disrespect sensitivity is a cognitive bias that may lead to maladaptive behavioral strategies and increase the risk of victimization due to misperceived intentions or inaccurate interpretations of social situations. Despite evidence showing that interpretations of rejection and disrespect are highly correlated, the two are conceptually unique. Whereas rejection refers to dislike by peers, or the devaluation of a relationship, being disrespected refers to being treated more poorly than one expects, or the devaluation of the person or their status (McDonald & Asher, 2013).

Disrespect sensitive youth may respond to victimization aggressively as an attempt to convey an image that they are a person who is "not to be messed with" and to prevent future victimization by appearing tough and prepared to fight back. Disrespect sensitivity has been found to be related to aggression and revenge responding after provocation. McDonald and Asher (under review) had students respond to provocation situations depicting provocation and minor conflicts of interest with their peers. Cluster analyses were used to group adolescents on their negative interpretations and revenge goals. "Revenge-Seekers" were adolescents who interpreted the situation negatively and pursued revenge goals whereas "Pacifists" were

adolescents who interpreted the situation negatively but did not pursue revenge goals. Disrespect sensitivity predicted membership in the Revenge-Seeker group relative to the Pacifist group, even after controlling for other social-cognitive differences.

Adolescents who experience victimization may come to be sensitive to signs of disrespect from their peers and attempt to protect themselves from future victimization by aggressively retaliating. However, victimized adolescents are often ineffective in their use of aggressive strategies (Perry et al. 1992), which may reinforce their status and lead to future victimization. Thus, we hypothesize disrespect sensitivity will account for the relationship between victimization and reactive and overt aggression, but it will not account for the relation between victimization and proactive aggression.

Psychophysiological Reactivity

As mentioned previously, Lemerise and Arsenio (2000) suggested that in addition to social knowledge, emotional reactivity and emotional regulation also influence each step of the SIP model. Individual differences in physiological processes and reactivity to stress may moderate the association between victimization and aggression by inhibiting or enhancing one's ability to effectively regulate affect, cope with environmental demands, or to process relevant cues in a social situation. In this section I will begin with a brief overview of the Autonomic Nervous System (ANS), followed by a discussion of the parasympathetic and sympathetic branches of the ANS, and how individual differences in psychophysiological processes that reflect parasympathetic and sympathetic functioning may strengthen or weaken the relationship between victimization and aggression.

The ANS controls involuntary visceral functions and is responsible for maintaining homeostasis, or stable and constant internal conditions within an organism. However,

homeostatic conditions are not always optimal, and the ANS adjusts internal conditions to meet environmental demands through a process called allostasis (Bernston, Sarter, & Cacioppo, 2006). The ANS achieves homeostasis and allostasis through the activation and withdrawal of the two separate branches of the ANS, the parasympathetic nervous system (PNS) and the sympathetic Nervous System (SNS). The SNS is responsible for the mobilization of resources, leading to “fight or flight” responses to threat, resulting in increased physiological arousal and has been identified as a marker of emotional arousal and reactivity (Calkins, Graziano, & Keane, 2007). In contrast, the PNS involves restorative functions resulting in reduced physiological arousal and is a marker of emotion regulation and sustained attention (Porges, 2007). Importantly, the SNS and PNS do not always act in isolation from each other. Rather, organ systems may be innervated by reciprocal activation, the coactivation, or uncoupled processes. Incorporating physiological measures that target the SNS *or* the PNS, rather than overall ANS functioning, is important in understanding psychological and behavioral correlates (Murray-Close, 2013).

Parasympathetic Nervous System. A commonly used measure of the PNS is respiratory sinus arrhythmia (RSA). RSA is the high-frequency heart rate variability, or the natural variation in heart rate, associated with respiration. Inhalation causes momentary increases in heart rate followed by decreases in heart rate due to exhalation (Beauchaine, 2001). Measures of RSA effectively remove SNS contributions to cardiac activity, thereby serving as a reliable indicator of PNS functioning (Bernston, Cacioppo, & Quigley, 1993). RSA is interpreted as a measure of social competence, attention, and emotion regulation, with higher levels of baseline RSA indicating better regulatory abilities (Beauchaine, 2001).

RSA at rest reflects a capacity for emotion regulation and sustained attention (Beauchaine, 2001). Poor regulatory abilities have been associated with problematic peer

relationships, including rejection and victimization. Aggressive-dysregulated patterns of behavior during childhood have been shown to be predictive of increased peer difficulties during adolescence, but aggressive children who did not show dysregulated behavior did not develop such problems with their peers (Pope & Bierman, 1999).

Research examining basal RSA has found negative correlations with internalizing symptoms in children (Dietrich et al., 2007) and depression in adults (Rottenberg, 2007). In addition to internalizing problems, basal RSA has been found to be negatively associated with externalizing problems. In one study conducted by Mezzacappa and colleagues comparing a group of aggressive and control adolescents, mother, teacher, and self-reports of aggression were negatively correlated with baseline RSA (Mezzacappa et al., 1997). Baseline levels of RSA have also been found to be negatively associated with peer reports of aggression (Erath, Tu, & El-Sheikh, 2012). Others have found similar relationships between baseline RSA and externalizing problems, but only for boys (Beauchaine, Hong, & Marsh, 2008; Calkins and Dedmon, 2000).

Further, baseline levels of RSA may strengthen the relationship between peer difficulties, like anxiety, and victimization. Young adolescents with low RSA are at increased risk of social anxiety and peer victimization (Erath, Tu, & El-Sheikh, 2012; Gazelle & Druhen, 2009). These results are consistent with findings on aggression and victimization which suggest that youth who are concurrently aggressive and victimized can suffer from both internalizing problems, such as anxiety, in addition to being disruptive and emotionally dysregulated (Schwartz et al., 1998).

Therefore, it is hypothesized that low baseline RSA may place individuals at a greater risk for behavioral problems and victimization due to a decreased ability to adaptively react to and regulate their emotions during social situations. Based on the previous findings, baseline

RSA may moderate the association between victimization and reactive- and overt-aggression such that lower levels of RSA, reflecting poorer regulatory abilities, will strengthen the relationship between victimization and aggression and higher levels of RSA, reflecting greater regulatory abilities, will attenuate the relationship. It is also hypothesized that at high levels of RSA, there will be a negative relationship between victimization and proactive aggression

Sympathetic Nervous System. In contrast to the PNS's regulatory functions, the activation of the SNS is responsible for "fight or flight" responses to threat by mobilizing resources and increasing metabolic output to meet environmental demands. Activation of the SNS may also reflect underlying motivational systems that promote or inhibit approach and avoidance behaviors in the context of reward or punishment (Gray, 1982). SNS activation is conceptualized as a marker of emotional arousal, with greater SNS activity reflecting greater emotional arousal, particularly in regards to emotions such as anger, panic, or anxiety (Murray-Close, 2013).

Electrodermal activity (EDA), the measure of the activity of the sweat glands, is a reliable measure of SNS activity (Fowles, 2008). Low EDA reactivity may reflect insensitivity to perceived negative consequences or the experience of non-normative levels of fear, which may underlie aggressive or antisocial behaviors (Ortiz & Raine, 2004; Scarpa & Raine, 1997). Heightened reactivity may reflect anxiety or sensitivity to environmental challenges and passive avoidant motivations (Beauchaine, 2001; Gregson, Erath, & Tu, 2014). Research provided some support for this view. Individuals who display heightened EDA reactivity report greater internalizing problems such as anxiety and depression (El-Sheikh, 2005; Weems, Zakem, Costa, Cannon, & Watts, 2005). Heightened EDA reactivity has also been identified as a risk-factor for increased internalizing symptoms in stressful family environments (El-Sheikh, Keller, & Erath,

2007; El-Sheik & Erath, 2011). Low EDA reactivity is also positively associated with conduct disorder, sociopathy, psychopathy, and aggression (Erath, El-Sheikh, & Cummings, 2009; Lorber, 2004).

However, contrary to the hypothesized relation of low EDA reactivity with aggression, some researchers have found the positive associations between heightened EDA reactivity and aggression (e.g. Bollmer, Milich, & Harris, 2006; Hubbard et al., 2002; Sijtsema, Shoulberg, Murray-Close, 2011). These apparent discrepant findings may be at least partially due to the type of aggression being studied. Sympathetic underarousal may characterize proactive forms of aggression, antisocial behaviors and conduct disorder, and overarousal may be characteristic of angry and reactively aggressive behaviors (Scarpa & Raine, 1997). In one study examining multiple forms of aggression, high EDA reactivity was associated with reactive, but not proactive aggression (Hubbard et al., 2002). Additionally, one study that measured levels of salivary Alpha-Amylase (sAA), a marker of SNS activity, found that high levels of sAA after a social stressor were related to increased aggression and victimization (Rudolph, Troop-Gordon, & Granger, 2010). As aggressive victims tend to be more reactively than proactively aggressive (Schwartz et al., 1998), high EDA reactivity during social situations may serve as a risk-factor for reactive aggression.

The question of whether high EDA reactivity represents anxiety or general emotional arousal (i.e. anxiety or anger) remains. Despite the inability to identify the valence of emotional arousal associated with EDA reactivity, adolescents who are concurrently victimized and aggressive also tend to have internalizing problems such as anxiety (Schwartz et al., 1998) and therefore may be more likely to exhibit high EDA reactivity compared to nonaggressive victims or non-victimized aggressors. Based on research identifying positive relationships between both

low and high EDA reactivity and aggression, there are separate hypotheses regarding this relationship taking into account proactive and reactive aggression. First, EDA reactivity is hypothesized to be negatively related to proactive aggression but positively related to reactive and overt aggression. Along these lines, low EDA reactivity is hypothesized strengthen the relationship between victimization and proactive aggression, but high levels of EDA reactivity are expected to strengthen the relationship between victimization and reactive and overt aggression.

CHAPTER 2

METHOD

Participants

A total of 67 adolescents between the ages of 12 and 15 years old (58% Male, $M_{age} = 14.18$, $SD = 1.15$) and one parent (89.2% mothers) participated in the study. The ethnic composition of the sample was comprised of European-Americans (47.5%) and African-Americans (52.5%). Approximately 57% of the adolescents' parents were married and adolescents lived with both the mother and the father. Approximately 41% of the adolescents' parents were single, separated, or divorced; of these, 37% of adolescents reported living with their mother. The majority of the parents were educated: 51% reported that they had at least a college degree, approximately 29% reported having at least some college, and approximately 12% had a high school degree.

Participants were recruited from several sources. First, 44.78% of participants ($n = 30$) were recruited from a database compiled by SDR Consulting in Atlanta, GA from publicly available data including birth records, census data, and the white pages. A total of 700 letters were mailed to families describing the study studies and subsequently contacted by phone on evenings and weekend to schedule interested families for a lab visit. Of the families mailed letters, 260 were called but could not be reached, 190 were not interested in participating in the study, 155 phone numbers were disconnected, and 65 families were interested in participating but could not due to limited availability or children being outside of the age range. A total of 61 families were scheduled to participate, but only 30 ended up participating in the study. The 31

families did not participate due to cancellations, scheduling conflicts, or no-shows. The remaining participants were recruited from the Coping Power intervention (5.97%; $n = 4$) and the community (49.25%; $n = 33$), including referrals from the Tuscaloosa YMCA and the 6th grade of a private school in Tuscaloosa.

Procedure

Adolescents and one parent visited the lab after 2pm in order to control for diurnal changes in cortisol, a measure that was not used for the present study. Prior to collecting informed consent and assent, adolescents and their parents were separated for the duration of the experiment. Adolescents first completed a questionnaire administered online with the use of Qualtrics (Qualtrics, Provo, Utha). Next, adolescents were told that as a part of their visit they would be playing an interactive game online with other adolescents their age called “Survivor” while their physiology was monitored (the paradigm and physiological measures are described in more detail below). Participants then completed another set of questionnaires administered with Qualtrics. Adolescents first reported aggressive behavior, followed by completion of the rejection sensitivity questionnaire which presented a series of vignettes in randomized order and the disrespect sensitivity questionnaire. Adolescents reported peer victimization in school last. At the end of the study participants were fully debriefed by leading the participants to the conclusion that the peers were fictitious. The participants were asked if they thought anything was unusual with the game, such as not communicating with the other peers, not receiving feedback, or encountering technical difficulties (i.e. the program closing). Once the participants were aware that fictitious peers were used, the participants were asked if they understood why; the participant and research assistant discussed the rationale. None of the participants reported being upset by the deception and all of the participants allowed the use of their data. Five

participants did not believe that the peers were real. Their data was omitted from analyses. Lab visits lasted approximately three and half hours and adolescents and their parent were each compensated with \$30 gift cards.

Measures

Victimization. Participants completed the Adolescent Peer Relations Instrument (APRI) which assesses experiences with bullying and peer victimization in school (Parada, 2000; Appendix D). Of interest in the current study were items pertaining to victimization. The measure includes items that assess verbal victimization (six items; e.g. “I was called names I didn’t like”), physical victimization (six items; e.g. “something was thrown at me to hit me”), and social victimization (six items; e.g. “a student ignored me when they were with their friends”). Adolescents responded to each item on a 5-point Likert Scale (1 = *Never*; 2 = *Sometimes*, 3 = *Once or Twice a Week*; 4 = *Several Times a Week*; 5 = *Everyday*). Items were combined to create an overall score for victimization by taking the average of the responses to all items ($\alpha = .93$).

Aggression. Participants completed a 36-item self-report instrument designed to differentiate both the underlying forms and the functional expressions of aggression, including pure overt aggression, overt-reactive aggression, overt-proactive aggression, pure relational aggression, relational-reactive aggression, and relational-proactive aggression (Little, Jones, Henrich, & Hawley, 2003; Appendix C). Participants rated how true each item was for them on a 4-point scale from “not at all true” to “completely true.” A proactive aggression score was computed by averaging the responses to the items for the overt-proactive and relational-proactive subscales (12 items; $\alpha = .94$). Example items include, “I often start fights to get what I want” and “To get what I want, I often put others down.” A reactive aggression subscale was

computed by averaging the items across the overt-reactive and relational-reactive subscales (12 items; $\alpha = .88$). Example items include “If others have angered me, I often hit, kick, or punch them” and “When I’m hurt by others, I often get back at them by saying mean things to them.”

Parent-reported overt aggression. Parents responded to the behavioral assessment system for children (BASC-2; Reynolds & Kamphaus, 1992) designed to capture a broad range of behaviors, including aggression. Items were rated on a 4-point Likert Scale (1 = *Never*; 2 = *Sometimes*; 3 = *Often*; 4 = *Always*). A 6-item subscale was computed from items reflecting overt aggression. Items included “bullies others,” “calls other children names,” “threatens to hurt others,” “hits other children,” “teases others,” and “breaks other children’s things.” Parent-reported overt aggression was calculated by averaging the responses to the 6 items ($\alpha = .81$).

Rejection Sensitivity. Participants completed a modified version of the Rejection Sensitivity Scale for Children (Ayduk et al., 2000; Appendix A). The measure consisted of eight vignettes describing potential rejection scenarios and was modified from the original so that all vignettes were peer situations (e.g. ‘Imagine you have just moved and you are walking home from school. You wish you had someone to walk home with. You look up and see in front of you another kid from class, and you decide to walk up to this kid and start talking. As you rush to catch up, you wonder if he/she will want to talk to you.’). For each vignette, the participants were asked to rate on a 6-point Likert scale how much they would expect rejection (e.g. ‘Do you think he/she will want to talk to you?’) and how *angry* (e.g. ‘How angry would you feel, right then, about whether or not he/she will want to talk to you?’) and *nervous* (e.g. ‘How *nervous* would you feel, right then, about whether or not he/she will want to talk to you?’) they would feel about possible rejection. Angry rejection sensitivity was computed by multiplying the rejection expectancy by the ratings of anger for each vignette. Anxious rejection sensitivity was computed

by multiplying the rejection expectancy by the ratings for nervousness for each vignette. These ratings were then averaged across vignettes to create separate subscales for angry ($\alpha = .61$) and anxious rejection sensitivity ($\alpha = .72$) (Ayduk et al., 2000).

Disrespect Sensitivity. The Disrespect Sensitivity (McDonald, 2008; Appendix B) scale consists of 8 items designed to measure a tendency to expect disrespect from others. Some items are designed to examine if individuals detect general disrespect cues from others and generally interpret social information to be disrespectful (e.g. “People make you feel like they are better than you.”). Other items measure a hypervigilance toward signs of disrespect from others (e.g. “Signs that others disrespect you are everywhere.”). Items are answered on a scale from “1” (strongly disagree) to “10” (strongly agree). Items were averaged to create a scale ($\alpha = .74$).

Physiological Measures and the Peer Interaction Paradigm

Physiological data were collected using a MindWare mobile impedance cardiograph (Model no: 50-2302-00) and MindWare Technologies’ BioLab acquisition software (Version 3.1.2; MindWare Technologies, Inc., Gahanna, OH). Participants were connected to the equipment described in detail below. Physiological data were collected continuously throughout the baseline period and Survivor paradigm.

After being connected to the physiological equipment, participants’ data were monitored to ensure good data collection. Participants were then instructed to sit quietly while they watched a five minute relaxing video in order to collect baseline physiological data. After the baseline period, participants were told that they were going to participate in a new internet computer-game called ‘Survivor’. This paradigm has been used in numerous studies with children and adolescents (e.g., Reijntjes, Dekovic, Vermande, & Telch, 2008; Reijntjes, Stegge, Terwogt, Kamphuis, & Telch, 2006; Reijntjes et al., 2011). The game is a computer program

written in Visual Basic designed to present the illusion of playing an online game with six other children. Participants were informed that they will be playing against six players of comparable age (other players are actually fictitious) from other schools in the area, and that the objective of the game is to survive each round and become the only remaining player to have not been voted out by the other players. Participants were informed on screen that their picture, along with their answers to the personal questions (e.g. ‘What is your favorite/band singer?’; ‘What do you like to do in your spare time?’; ‘What do you like about yourself the most?’), will be transmitted over the internet and viewed by the other players who will then make decisions about who they would vote out of the game. Subsequently, a screen with pictures and descriptions of each of the six other players was presented one-at-a-time for careful review. Adolescents were reminded that at a later point they would have to vote one of them out of the game.

Participants progressed through the game examining each of the bogus player profiles. After viewing the last profile, the participant was instructed to decide which of the co-players (s)he wished to vote out of the game. Upon voting, a message appeared on the screen indicating that the computer was counting the votes of the other players to determine who would be voted out of the game. A 60 second waiting period followed, and then the name of the participant was displayed. A warning appeared on the computer screen indicating that a technical problem had occurred and that there will be a delay; after 60 seconds the adolescent received an error message on the screen and the program closed.

Respiratory Sinus Arrhythmia. Electrocardiogram (ECG) and respiratory data were collected according to guidelines provided by Mindware Technologies, Inc. Three disposable ECG electrodes with 7% chloride wet gel were placed on the adolescent: one electrode was placed underneath the right clavicle and one electrode was placed below the left and right ribs.

The ECG filter was set with a gain of 1000Hz with a low cutoff of 0.5Hz and a high cutoff of 45Hz. Data were collected at 500 samples per second. A muscle noise band pass filter was also used, with a low- and high-pass filter of .25Hz and .40 Hz, respectively. Respiration was measured with an Ambu Sleepmate (Ambu, Ballerup, DK) chest strain gauge and amplifier placed around the adolescents' sternum. An acquisition sample rate of 50Hz, gain of 10, and low- and high-pass filters of 1Hz and .05Hz, respectively, were used. The chest strain gauge produces voltage when stress is applied via the expansion of the thorax or abdomen which is then amplified and filtered with a gain of 1000Hz and a low cutoff of 5Hz.

Respiratory sinus arrhythmia was calculated using the spectral analysis method (Bernston et al., 1997) with MindWare Technologies' software (HRV version 3.1.1). This program digitizes the ECG signal and derives an interbeat interval (IBI) using an algorithm designed to detect the peak of an R-wave; artifacts are flagged by algorithms allowing visual inspection and editing when necessary. The IBI is converted to a time series and linearly detrended before being cosine tapered and submitted to a Fast-Fourier transformation (Bernston et al., 1997). Respiratory sinus arrhythmia is then quantified as the natural log of the integral power within the high frequency band of respiration (.12Hz to .40Hz).

Baseline RSA was collected during a five minute period during which participants were instructed to sit quietly while watching a relaxing video. The first two minutes were used as an acclimation period, allowing participants to get used to wearing the equipment and relax. RSA during the third and fourth minutes of the baseline period were averaged and used as an indicator of RSA at rest (Baseline RSA; across the third and fourth minutes $\alpha = .90$).

Electrodermal Reactivity. Electrodermal activity was collected according to standards outlined by Fowles et al. (2008) with the MindWare electrodermal activity (EDA) filter and the

MindWare ambulatory mobile unit. The EDA filter is set for a low-cut off of 1Hz and the acquisition rate is 500 samples per second. Two disposable Ag-AgCl electrodes with 1% chloride wet gel were placed on the palmar surface of the adolescents' non-dominant hand. The electrodes were secured with medical tape on the wrist of the participant to prevent the leads from pulling. The adolescents were instructed to keep their hand on their lap for the duration of the data collection to prevent movement artifacts. Electrodermal activity data were assessed with MindWare Technologies' software, EDA version 3.1.1. To ensure valid data, any 60 second segment that contained greater than 30% unusable data or had skin conductance levels that exceeded 50 microSiemens or fell below .12 microSiemens were discarded (Hubbard et al., 2002). Baseline EDA was calculated from the third and fourth minutes of the initial rest period, as described above (across the third and fourth minutes $\alpha = .99$). Electrodermal activity was also measured during the one minute following the Survivor rejection. EDA reactivity was computed as the residualized change score between the baseline and the rejection period. As reactivity may be related to baseline levels of arousal, this method controls for the individual differences at baseline (Gregson et al., 2014).

CHAPTER 3

RESULTS

Descriptive Analyses

Descriptive statistics and correlations amongst the variables were examined in IBM SPSS v.23. Means and standard deviations can be found in Table 1. T-tests were also conducted to compare males and females on our variables of interest (Table 2). Males were significantly higher than females on self-reported reactive aggression, $t(56.65) = 2.18, p = .034$ and proactive aggression, $t(56.65) = 2.18, p = .034$. T-tests were also conducted to compare our variables of interest by racial group. Only one difference was found. African-American adolescents ($M = 1.65, SD = 0.48$) were rated as more aggressive by their parents than were European-American adolescents ($M = 1.40, SD = 0.40; t(56.65) = 2.18, p = .034$).

Next correlational analyses were conducted to explore the relations amongst the variables. As seen in Table 1, age was negatively related to victimization and angry rejection sensitivity. Victimization was positively associated with parent-reported overt aggression, angry rejection sensitivity, and disrespect sensitivity. Self-reported reactive aggression was positively associated with self-reported proactive aggression and disrespect sensitivity. Parent-reported overt aggression was positively associated with angry rejection sensitivity and EDA reactivity. Anxious rejection sensitivity was positively associated with angry rejection sensitivity and disrespect sensitivity.

The correlations were also examined separately for gender and compared using Fischer's r to z test (see Table 3). Correlations were significantly larger for females compared to males for

the association between victimization and parent-reported overt aggression ($z = 2.32, p = .01$), victimization and angry rejection sensitivity ($z = 2.18, p = .01$), victimization and EDA reactivity ($z = 2.08, p = .019$), EDA reactivity and age ($z = 1.99, p = .023$), EDA reactivity and angry rejection sensitivity ($z = -2.43, p = .008$) and parent-reported overt aggression and angry rejection sensitivity ($z = 1.96, p = .03$). Fischer's r to z test was also used to compare correlations between European- and African-Americans. The correlation between victimization and reactive aggression ($z = 1.93, p = .03$) was significantly larger for European-Americans ($r = .43, p = .034$) than African-Americans ($r = -.16, p = .424$) and the correlation between victimization and anxious rejection sensitivity was significantly smaller for European-Americans ($r = -.13, p = .539$) than African-Americans ($r = .50, p = .008; z = -2.89, p < .01$).

Data Analysis Plan

In order to examine the study hypotheses, first, analyses examined how victimization was related to aggression. Second, a series of regression analyses were conducted according to the guidelines outlined by Baron and Kenny (1986) in order to test the hypotheses that social cognitions may mediate the relationship between victimization and aggression. Regression analyses were also conducted to examine how physiological responding may moderate the relation between victimization and aggression. Because preliminary analyses revealed differences in the magnitude of correlations for males and females and African- and European-Americans, gender and ethnicity were explored as potential moderators for the hypothesized mediation and moderation models using PROCESS (Hayes, 2012), an SPSS macro that implements moderation and conditional process analysis using bootstrapped confidence intervals. These exploratory analyses revealed that gender and ethnicity did not act as a moderator of any of the social cognition mediation models. Preliminary analyses also revealed

that there were not three-way interactions with gender or ethnicity for the physiological analyses. As a result, gender and ethnicity were only retained in the analyses as covariates, in addition to age.

Missing Data

Prior to proceeding with analyses, data were examined for missing data. Data were randomly missing on the self-report measures: eight participants did not complete the victimization measure, five did not complete the self-report of aggression, three did not complete the rejection-sensitivity questionnaire, and two did not complete the disrespect sensitivity questionnaire. There were no missing data for parent-reported overt aggression. For RSA, five participants' data were excluded or missing due to data collection issues, including no physiological data and inaccurate event keys which resulted in unknown baseline time periods. There was a significantly larger portion of data missing for baseline EDA and EDA reactivity. A total of 33 participants' data were excluded due to participants not believing the paradigm ($n = 5$), no physiological data collection ($n = 2$), and data collection issues ($n = 26$), including measurement artifacts or a lost signal from electrodes to the physiological equipment during either the baseline or reactivity time periods.

Addressing missing data with list-wise deletion for the self-report measures and baseline RSA would result in a final sample of 56 rather than 67 participants. In order to capture the full sample and maximize power, maximum likelihood estimation was used to handle missing data in mPlus version 7 (Muthen & Muthen, 2012). Maximum likelihood handles missing data by estimating the value of an unknown parameter (i.e. missing value) that is the most consistent with other observed variables; that is, makes the observed data most probable. The standard errors and variance of the estimates can be reduced with the addition of auxiliary variables that

are not included in the primary analysis. Victimization, self-reported reactive and proactive and parent-reported overt aggression, angry and anxious rejection sensitivity, and disrespect sensitivity were used as auxiliary variables when not present in the primary analysis.

Victimization and Aggression

First, victimization was regressed onto the three control variables. Age was a significant negative predictor of victimization, $\beta = -0.32$, $p < .01$, but ethnicity, $\beta = 0.09$, $p = .48$, and gender, $\beta = -0.03$, $p = .82$, were not. Second, control variables were used to predict aggression (see Table 4). Age was significant predictor of reactive aggression and being male was a significant predictor of proactive aggression. There were no other significant associations between the control variables and the aggression variables. The three aggression variables were then regressed on victimization, controlling for age, gender, and ethnicity (Table 4). Victimization was not a significant predictor of reactive aggression, or proactive aggression, but was a significant predictor of parent-reported overt aggression.

Social Cognition

The hypotheses that victimization is indirectly related to aggression via angry and anxious rejection sensitivity and disrespect sensitivity were tested using a total of nine mediation models (see Figure 1) according to the procedures outlined by Baron and Kenny (1986). According to this approach, mediation is supported if the regression coefficient associated with victimization and aggression is reduced to non-significance with the addition of the mediating variable (i.e. social cognitions). In addition, this traditional approach of testing mediation requires that there is an effect to be mediated, or that victimization is causally (and significantly) related to aggression; if it is not, testing stops. More recently, however, researchers have argued that this need not be the case. Rather, testing the significance of the *indirect* effect (the product

of the regression coefficient between victimization and social cognitions and social cognitions and aggression) also addresses the hypothesized relationships amongst the variables (Preacher & Hayes, 2004). Therefore, the indirect effect between victimization and aggression via social cognitions was tested using a Sobel test (Sobel, 1982) regardless of the significance of the direct effect between victimization and aggression.

Angry Rejection Sensitivity. Angry rejection sensitivity was first regressed on victimization, controlling for age, gender and ethnicity. Age was significantly negatively related to angry rejection sensitivity, $\beta = -0.31, p < .01$, but ethnicity, $\beta = 0.17, p = .16$, and gender, $\beta = -0.05, p = .66$, were not. Victimization was a significant predictor of angry rejection sensitivity, $\beta = 0.34, p < .01$.

Next, reactive aggression was regressed on angry rejection sensitivity, controlling for age, gender, and ethnicity (Table 4). Angry rejection sensitivity was a significant predictor of reactive aggression, $\beta = 0.30, p = .014$. However, as victimization was not a significant predictor of reactive aggression, the total effect of victimization and angry rejection sensitivity on reactive aggression was not tested. Instead, the indirect effect of victimization on reactive aggression was tested with a Sobel test. The Sobel test indicated that the indirect effect of victimization through angry rejection sensitivity was marginally significant ($z' = 1.93, p = .053$).

Next, analyses considered the indirect effect of victimization through angry rejection sensitivity for proactive aggression. Angry rejection sensitivity was not a significant predictor of proactive aggression, $\beta = 0.21, p = .10$. Furthermore, the indirect effect of victimization on proactive aggression through angry rejection sensitivity was not significant ($z' = 1.43, p = .15$).

Finally, analyses examined if angry rejection sensitivity would mediate the relation between victimization and parent-reported overt aggression. As mentioned above, victimization

was positively related to parent-reported overt aggression. Next, analyses revealed that angry rejection sensitivity was a significant predictor of parent-reported overt aggression, $\beta = 0.48, p < .001$. Next, parent-reported overt aggression was regressed on victimization and angry rejection sensitivity simultaneously. The regression coefficient associated with victimization was reduced to non-significance, $\beta = 0.21, p = .103$, while the regression coefficient associated with angry rejection sensitivity remained significant, $\beta = 0.41, p < .001$, indicating that angry rejection sensitivity accounted for the relationship between victimization and parent-reported overt aggression. A Sobel test indicated that the indirect effect of victimization through angry rejection sensitivity was significant ($z' = 2.41, p = .015$).

Anxious Rejection Sensitivity. Next, analyses examined if anxious rejection sensitivity would mediate associations between victimization and aggression (Table 4). Anxious rejection sensitivity was regressed on victimization controlling for age, gender, and ethnicity. Age was not a significant predictor, $\beta = -0.16, p = .016$, but ethnicity was a marginally significant predictor, $\beta = -0.26, p = .053$, and gender, $\beta = -0.26, p = .024$, was a significant predictor. Victimization was a marginally significant predictor of anxious rejection sensitivity, $\beta = 0.235, p = .056$.

The indirect effect of victimization on reactive aggression through anxious rejection sensitivity was first tested. Anxious rejection sensitivity was not a significant predictor of reactive aggression, $\beta = 0.12, p = .369$. Further, the Sobel test indicated that there was not a significant indirect effect ($z' = 0.84, p = .40$).

Next, the indirect effect of victimization on proactive aggression through anxious rejection sensitivity was tested. Anxious rejection sensitivity was not a significant predictor of

proactive aggression, $\beta = -0.11$, $p = .428$. Additionally, the Sobel test indicated that there was not a significant indirect effect ($z' = -.78$, $p = .44$).

Lastly, anxious rejection sensitivity was tested as a mediator of the relationship between victimization and parent-reported aggression. Analyses revealed that anxious rejection sensitivity was a significant predictor of parent-reported overt aggression, $\beta = 0.33$, $p = .006$. Next, parent-reported overt aggression was regressed on victimization and angry rejection sensitivity simultaneously. The regression coefficient associated with victimization, $\beta = 0.29$, $p = .026$, and anxious rejection sensitivity, $\beta = 0.26$, $p < .035$, were both reduced but remained significant. A Sobel test indicated that there was a significant indirect effect between victimization and parent-reported overt aggression via anxious rejection sensitivity ($z' = 3.00$, $p = .002$).

Disrespect Sensitivity. The hypotheses that victimization is indirectly related to aggression via disrespect sensitivity was tested next. First, disrespect sensitivity was regressed on victimization controlling for age, gender, and ethnicity. Age, $\beta = 0.03$, $p = .94$, ethnicity, $\beta = -0.15$, $p = .27$, and gender, $\beta = -0.04$, $p = .75$, were not significant predictors of disrespect sensitivity. Victimization was significant predictor of disrespect sensitivity, $\beta = 0.42$, $p < .001$ (Table 4).

Next, analyses examined how disrespect sensitivity would mediate the relation between victimization and reactive aggression. Disrespect sensitivity was a significant predictor of reactive aggression, $\beta = 0.26$, $p = .022$. Because victimization did not predict reactive aggression, the indirect effect of victimization and reactive aggression via disrespect sensitivity was tested. A Sobel test indicated that there was a marginally significant indirect effect between victimization and reactive aggression via disrespect sensitivity ($z' = 1.87$, $p = .06$).

The indirect effect of victimization on proactive aggression through disrespect sensitivity was also tested. Disrespect sensitivity was not a significant predictor of proactive aggression, $\beta = 0.02, p = .862$. The Sobel test also indicated that the indirect effect was not significant ($z' = 0.17, p = .86$).

Lastly, the indirect effect of victimization on parent-reported overt aggression through disrespect sensitivity was tested. Disrespect sensitivity was not a significant predictor of parent-reported overt aggression, $\beta = 0.03, p = .826$. Additionally, the indirect effect of victimization through disrespect sensitivity was also not significant ($z' = 21, p = .84$).

Psychophysiology

Respiratory Sinus Arrhythmia. The hypothesis that basal RSA moderates the relationship between victimization and aggression was tested with a series of regression analyses. Gender, age, and ethnicity were entered as covariates in each analysis. Each aggression variable was regressed on victimization, RSA, and the victimization x RSA interaction.

Respiratory sinus arrhythmia was first tested as a moderator between victimization and reactive aggression (Table 5). Both victimization and RSA were significant predictors of reactive aggression but were qualified by a significant victimization x RSA interaction. In order to probe the interaction, simple slopes analyses were conducted (Aiken & West, 1991) at the mean and one standard deviation above and below the mean of RSA. As shown in Figure 2, at the mean of RSA, victimization was marginally positively associated with reactive aggression, $\beta = 0.05, t = 2.00, p = .052$ and at one standard deviation below the mean of RSA, victimization was significantly and positively associated with reactive aggression, $\beta = -0.95, t = 2.62, p = .012$.

The relationship between victimization and reactive aggression was not significant at one standard deviation above the mean of RSA, $\beta = 1.05$, $t = -0.06$, $p = .96$.

The moderating effect of RSA between victimization and proactive aggression was next tested (Table 5). Neither victimization nor RSA were significant predictors of proactive aggression. The victimization x RSA interaction was also not significant.

Lastly, parent-reported overt aggression was regressed on victimization, RSA, and the victimization x RSA interaction (Table 5). Neither victimization, RSA, nor the victimization x RSA interaction were significant predictors of parent-reported overt aggression.

Electrodermal Activity. The moderating effect of EDA reactivity was next tested. Due to issues arising during data collection, there was a large amount of missing data in electrodermal activity that prevented the use of maximum likelihood in a small sample. Mplus failed to converge on parameter estimates and successful models were not reliable due to the large amount of missing data. As a result, analyses were run in Preacher and Hayes (2004) SPSS macro PROCESS. Caution should be used when interpreting these results as they are considered exploratory and should be replicated. For all analyses, age, gender, and ethnicity were entered as control variables (Table 5). The aggression variables were then regressed on victimization, EDA reactivity, and the victimization x EDA reactivity interaction. Significant interactions were probed at the mean and at one standard deviation above and below the mean of EDA reactivity according to the procedures outlined by Aiken and West (1991).

The moderating effect of EDA reactivity was first tested for reactive aggression (Table 5). Victimization and EDA reactivity were not significant predictors of reactive aggression. The victimization x EDA reactivity interaction was also not a significant predictor of reactive aggression.

Proactive aggression was next tested (Table 5). Victimization, but not EDA reactivity was a significant predictor of proactive aggression. However, the effect of victimization was qualified by a significant victimization x EDA reactivity interaction. Simple slopes analyses were conducted at the mean and one standard deviation above and below the mean of EDA reactivity. Figure 3 shows that at the mean, $\beta = -0.01$, $t = 3.57$, $p = .002$, and one standard deviation above the mean of EDA reactivity, $\beta = 0.80$, $t = 3.78$, $p = .001$, victimization was positively associated with proactive aggression. However, at one standard deviation below the mean of EDA reactivity, $\beta = -0.83$, $t = 1.55$, $p = .138$, victimization was not significantly associated with proactive aggression.

Lastly, the moderating effect of EDA reactivity on the relationship between victimization and parent-reported overt aggression was tested (Table 5). Victimization was not a significant predictor of parent-reported overt aggression, but EDA reactivity was a marginally significant predictor. In addition, the victimization x EDA reactivity interaction was marginally significant. The interaction was probed according to the procedures described above. As seen in Figure 4, at one standard deviation below the mean of EDA reactivity, victimization was significantly negatively related to parent-reported overt aggression, $\beta = -0.83$, $t = 2.34$, $p = .03$, but not at the mean, $\beta = -0.01$, $t = 0.78$, $p = .444$, or one standard deviation above the mean of EDA reactivity, $\beta = 0.80$, $t = -0.40$, $p = .697$.

CHAPTER 4

DISCUSSION

Aggression has been identified as both a cause and consequence of peer victimization, with some research demonstrating that victimization arises from disruptive and aggressive behavior, while others have found that aggression increases as a result of victimization over time (for a meta-analysis, see Reijntjes et al., 2011). Moreover, inconsistent relationships have been found between victimization and aggression, with some finding an orthogonal relationship between the constructs (Perry et al., 1992; Little et al., 2003) and others finding small to moderate relationships (Graham et al., 2006; Schwartz, 2000). Thus, the first goal of this study was to examine the concurrent relationships between victimization and three measures of aggression: self-reported reactive- and proactive aggression and parent-reported overt aggression. Next, guided by Social Information Processing theory (Crick & Dodge, 1994), the primary aims of this study were to: 1) test whether two social cognitive biases, rejection sensitivity and disrespect sensitivity, accounted for the relationship between victimization and aggression; and 2) test whether two psychophysiological processes underlying emotion regulation and arousal, RSA and EDA reactivity, strengthened or weakened the relationship between victimization and aggression.

Although inconsistent relationships have been identified between victimization and aggression, larger correlations have been found between victimization and reactive aggression than between victimization and proactive aggression (e.g. Camodeca et al., 2002; Graham, Bellmore, & Mize, 2006; Schwartz et al., 1998). Consequently, it was hypothesized that

victimization would be positively associated with self-reported reactive aggression but unrelated with self-reported proactive aggression. It was also hypothesized that overt aggression would be positively associated with victimization, because overt aggression often overlaps with angry, reactive forms of aggression and antisocial behavior (Little et al., 2003).

Results indicated that victimization was unrelated to self-reported reactive and proactive aggression. However, self-reported victimization was significantly related to parent-reported overt aggression, especially for girls. Parent-reports of aggression are valid. Parent-reported aggression has been found to predict child delinquency, callous-unemotional traits, and emotion regulation. Parents have also been shown to be reliable predictors of more covert and relational forms of aggression (Marsee, Lau, & Lapre, 2014). The parent-report measure in the present study included salient behaviors, such as hitting or threatening others. The significant correlation between victimization and parent-reported aggression for girls, but not boys, may be due to gender differences in behavioral norms. Aggression is viewed as more normative for boys than it is girls (Huessman & Guerra, 1997) which may make overtly aggressive girls more at-risk for victimization compared to overtly-aggressive boys.

Self-reports of aggression were not related to self-reported victimization nor were they related to parent-reported overt aggression. There are some methodological points that may explain these results. The absence of a relationship between self- and parent-reported aggression in the present study suggests that the way adolescents and parents view aggressive behavior might differ. For parents to have reported their children as being aggressive, the behavior is likely to be highly salient. The adolescent may be defiant with his or her parent, disruptive at home or with friends, or the parents may hear reports that their child is aggressive at school. On the other hand, victimized adolescents who are aggressive may not necessarily view their

behavior as aggressive. Perhaps they view their aggression as defensive behavior, which could result in a perception of the self as being less aggressive than they really are. Furthermore, there is evidence that some aggressive adolescents may underestimate the amount that they are victimized by peers (De Los Reyes & Prinstein, 2004), which may contribute to the lack of association found in our study.

As predicted, self-reported proactive aggression was unrelated to victimization, supporting previous research which has found no relationship between the two (Camodeca et al., 2002; Lamarche et al., 2007). Proactively aggressive adolescents are often popular, dominant, and desired as friends (Sijstema et al., 2009), which may protect them from negative peer experiences such as victimization. Moreover, in contrast to reactive aggression which is motivated by anger and frustration, proactive aggression is considered to be goal-directed and motivated by expectations of reward (Crick & Dodge, 1996), suggesting that, compared to reactive aggression, proactive aggression is less likely to characterize victimized youth.

Furthermore, we did not find that self-reported reactive aggression was related to victimization. This finding may reflect that not all victimized youth are reactively aggressive (Little et al., 2003; Schwartz, 2000). In fact, many victimized adolescents may be more withdrawn or submissive (Hawker & Boulton, 2000). Further, others may be better regulated and may have the resources to react to victimization in a non-aggressive way. Indeed, results demonstrated that RSA, an indicator of individual capacity for emotion regulation, moderated the relationship between victimization and self-reported reactive aggression. Specifically, victimization was positively associated with reactive aggression at low and average levels of RSA, but was unrelated to reactive aggression at high levels of RSA. These findings align with

the existing literature that has found a negative relationship between resting RSA and externalizing problems (Erath et al., 2001; Mezzacappa et al., 1997).

Low levels of RSA have also been linked with high levels of social anxiety (Erath et al., 2012) which may indicate a susceptibility to emotional arousal during even minor conflict with peers. For example, Gazelle and Druhen (2009) found that children who were both socially anxious and excluded had lower levels of resting RSA compared to socially anxious non-excluded children. The present study found a similar pattern. Low levels of RSA may lead to a diminished ability to regulate emotions when confronted with a difficult situation or conflict with a peer which may lead to anger or anxiety. Subsequent studies should examine the moderating role of RSA in relation to both anxiety and aggression with victimization in order to better understand under what contexts youth are at the greatest risk for adjustment difficulties.

The present study adds additional evidence that low resting levels of RSA could be a risk factor for concurrent victimization and aggression, regardless of the parasympathetic response to evocative stimuli. Our research also suggests that RSA could be used as a means to identify children who are most in need of interventions focused on teaching regulatory strategies. Teaching coping skills or emotion regulation techniques may equip these youth with the skills and the self-efficacy to handle difficult peer situations. Perhaps it is even possible to change RSA with these interventions. Aerobic exercise, for example, has been shown to affect levels of RSA (Hatfield et al., 1998) and improve cardiovascular health (Myers, 2003) which could, in turn, lead to improvements in emotion regulation. It will be interesting to see if social skills intervention programs may also increase RSA and improve individual regulatory abilities.

In contrast to hypotheses, EDA reactivity did not moderate how reactive aggression was related to victimization. Instead, EDA reactivity moderated the relationship between

victimization and proactive aggression and victimization and parent-reported overt aggression. Victimization was positively associated with proactive aggression at the average and high levels of EDA reactivity but victimization was not significantly related to proactive aggression at low levels EDA reactivity. Further, victimization was positively related to parent-reported aggression at low levels of EDA reactivity but was not related at average or high levels of reactivity. The findings are inconsistent with the past literature which finds negative relationships between EDA reactivity and proactive aggression, conduct disorder, and psychopathy, suggesting that physiological underarousal may lead to aggressive or sensation-seeking behaviors (Scarpa & Raine, 1997). However, our findings should be interpreted with caution for several reasons. First, due to equipment malfunction the sample size for EDA analyses was very small. Second, despite the significant relationship that emerged between victimization and proactive aggression at high levels of EDA reactivity, there were only two adolescents who were actually 1 SD above the mean on both victimization and EDA reactivity. Thus, the significant relationships that were identified may not be interpretable due to the small sample size and lack of adolescents who actually met criteria at high levels of victimization and EDA reactivity.

Although the results are difficult to interpret due to a reduced sample size, the findings regarding EDA reactivity provide direction for subsequent research. Namely, how does EDA reactivity differentially relate to a range of emotional responses? Sympathetic arousal indicates emotional arousal, but not necessarily the type or valence of emotion experienced (Cacioppo et al., 1993). An adolescent who demonstrated high EDA reactivity to a stressor may experience anger or anxiety; the type of emotion experienced in conjunction with sympathetic arousal may better predict behavioral responses. The highly reactive adolescents in this study may have

experienced anxiety, rather than anger, in response to rejection which may be associated with avoidant rather than aggressive behaviors. Nevertheless, the findings are difficult to interpret and may not be meaningful due to the very small sample size caused by issues that arose during data collection.

Despite these issues, the EDA data collected indicated that some adolescents found the Survivor task to be arousing, whereas others did not. The Survivor task was chosen because it more closely simulated social rejection that adolescents may encounter with peers compared to traditionally used star-tracing (Rudolph et al., 2010), recall of victimization experiences (Lafko, Murray-Close, & Shoulberg, 2015), or public speaking tasks (Gregson et al., 2014). It also mimics online social interactions, which are common for adolescents today. However, the lack of physical interaction with peers during the task may have relieved anxiety and reduced arousal for some. There is some evidence that demonstrates differences in reactivity of specific physiological markers based on whether the task is performance or rejection oriented (Stroud et al., 2009). Future research should continue to utilize a variety of tasks and compare them at the intra-individual level to see if there are within-person differences in how adolescents react to stressors and how these differences are associated with adjustment.

The current study also examined social cognitions that may explain associations between victimization and aggression. Social information processing theory (Crick & Dodge, 1994) suggests that during social situations youth engage in a series of cognitive steps, including interpreting cues in the environment, establishing their desired outcome, and responding to the situation in a way that will likely achieve that outcome. Biased processing may develop as a result of repeated negative outcomes of peer interaction, such as rejection or victimization, which may in turn lead youth to expect similar outcomes in subsequent situations or lead to self-

fulfilling prophecies, in which inaccurate interpretations lead youth to behave in ways that lead to further rejection or victimization (Rosen et al. 2009; Zimmer-Gembeck & Nesdale, 2013).

Two such biases examined in the present study are rejection sensitivity and disrespect sensitivity.

Rejection sensitive youth misinterpret cues and come to expect rejection by their peers in ambiguous social situations. These expectations may be accompanied by feelings of anger or anxiety which may motivate aggression, hostile behaviors or avoidant behaviors, respectively (Downey et al., 1998; London et al., 2007). It was hypothesized that victimization would be indirectly related to reactive aggression and parent-reported overt aggression (but not proactive aggression) via angry rejection sensitivity. It was also hypothesized that anxious rejection sensitivity would not indirectly relate victimization and any of the aggression measures. The results partially supported these hypotheses. Angry rejection sensitivity accounted for the relationship between victimization and parent-reported overt aggression. In addition, there was a significant indirect effect between victimization and reactive aggression via angry rejection sensitivity. No significant indirect effect between victimization and proactive aggression emerged. Regarding anxious rejection sensitivity, there was no indirect effect between victimization and reactive- or proactive-aggression via anxious rejection sensitivity, but there was for parent-reported overt aggression.

Despite being a cross-sectional design, these findings support the theoretical relationships between victimization, aggression, and rejection sensitivity (Zimmer-Gembeck, et al., 2013). It is also possible that aggressive or anxious behaviors are the initial cause of victimization. Adolescents may continue to behave aggressively or with avoidance because they believe that it will prevent victimization or cease it from continuing, when in reality those same behaviors

result in further victimization. Additional longitudinal research will be required in order to disentangle the direction of the relationships.

The indirect effect of victimization on self-reported reactive aggression and parent-reported overt aggression via angry rejection sensitivity extends previous findings demonstrating that feelings of anger accompanying rejection are related to aggressive behavior (Downey et al., 1998). It was unexpected that victimization would be related to parent-reported overt aggression via anxious rejection sensitivity because previous research has shown that anxious expectations are associated with avoidant behaviors (e.g. London et al., 2007). However, anxiety and anger are not mutually exclusive and some research has shown that a small portion of socially anxious youth also exhibit aggressive behavior (Gazelle & Druhen, 2008). Together, these findings further support the idea, at least partially, that the emotions associated with perceived rejection result in different behavioral responses. In the future it will be useful to measure both approach and avoidant behaviors in order to better understand how feelings of anger and anxiety accompanying rejection expectations relate to behavior.

Considerably less research has examined disrespect sensitivity, a hypervigilance towards signs of disrespect that is associated with retribution and revenge goals (McDonald, 2008; McDonald & Asher, under review). Conceived from ethnographic research, disrespect sensitivity was thought to develop in contexts where youth were highly likely to be victimized. Theoretically, hypervigilance to signs of disrespect in these dangerous contexts could be adaptive in that it may protect youth from missing the signs of potential victimization (Anderson, 1999). However, if disrespect sensitivity leads to aggressive behavior, it may actually increase the likelihood that youth will be victimized, particularly if the behavior is ineffective in stopping or preventing victimization (Stewart et al., 2006). Thus, it was hypothesized that disrespect

sensitivity would account for the relationship between victimization and reactive and parent-reported overt aggression, but not proactive aggression.

Results indicated that victimization was indirectly related to reactive aggression and parent-reported overt aggression, but not proactive aggression, via disrespect sensitivity. These results support previous research suggesting that a hypervigilance towards signs of disrespect may result in further victimization and evidence linking disrespect sensitivity with a desire for revenge (McDonald, 2008; McDonald & Asher, under review; Stewart et al., 2006).

Longitudinal research has not yet been conducted with disrespect sensitivity and thus the direction of the relationships are still unknown. The cross-sectional design prohibited tests of causality, but existing research on such biases (e.g. Bollmer et al., 2012; Zimmer-Gembeck et al., 2013) suggests that victimization precedes the development of biased thinking and maladaptive behavioral responses. Similarly, Anderson's (1999) "code of the street" suggests that this schema develops out of experiences in a context where there is high risk for victimization. It is possible that experience with victimization leads adolescents to be sensitive to signs of disrespect and aggressive attempts to prevent or punish disrespect are ineffective and contribute to a cycle of victimization. There is a need for longitudinal research to examine the development of cognitive biases in the context of aggression and victimization.

Rejection sensitivity and disrespect sensitivity were thought to similarly reflect schema as conceptualized by Baldwin (1992) and fit within the central database of the SIP model (Crick & Dodge, 1994). Although the cross-sectional design prohibited the ability to examine the formation of these biases, they are theorized to be the result of repeated experiences of rejection, disrespect, or victimization (Downey & Feldman, 1996; Rosen, Milich, & Harris, 2006). Adolescents who are rejection- or disrespect-sensitive may act aggressively due to deficits in

accurately interpreting social situations. In turn, this deficit may inform maladaptive goals or behavioral responses. Future research examining the development of such biases is necessary in order to better understand how and at which step of social information processing are being affected. This knowledge can subsequently be used to develop interventions designs to correct biased cognitions and lead to better adjustment for youth who are otherwise at risk.

In conclusion, this study makes several contributions to the understanding of the relationship between victimization and aggression. First, it provides additional evidence regarding the direct, concurrent relationship between victimization and three different measures of aggression. Second, the study found that physiological processes may moderate the relationship between victimization and aggression. In particular, victimized youth with low levels of resting RSA are at the greatest risk for reactively aggressive behavior. Analyses also indicated that angry rejections sensitivity and disrespect sensitivity may explain how victimization and aggression are related. These findings support a growing literature on the schema of victimized youth which may perpetuate cycles of negative interpersonal interactions.

Future research should examine the interactive effect of parasympathetic and sympathetic functioning. The SNS and PNS do not always act in opposition and can instead be simultaneously activated or inhibited (Murray-Close, 2013). Growing evidence suggests that patterns of physiological responding are jointly related to adjustment (Wagner & Abaied, 2015). An adolescent with low levels of RSA and heightened EDA reactivity may be more likely to respond to negative peer experiences with aggression or avoidance compared to an adolescent with low levels of RSA but blunted EDA reactivity. Moreover, context may also moderate how patterns of physiological reactivity are related to adjustment (Del Giudice, Ellis, & Shirtcliff,

2011). For example, a highly reactive adolescent may be well-adjusted in a predictable and warm environment but suffer in harsh, stressful environments.

Furthermore, cognition, physiology, and emotion are interrelated processes, but there is a lack of research examining how these processes are related. Emotional arousal and regulation are important components of social information processing (Lemerise & Arsenio, 2000). Emotional arousal can influence interpretations of events and poor emotion regulation can inhibit effective, competent responding. Alternatively, biased schema, such as disrespect sensitivity or rejection sensitivity, can elicit negative emotions which may further influence the interpretation of the situation and result in inappropriate behavioral responses. Moreover, parasympathetic and sympathetic nervous system functioning are both implicated in emotion processes (Murray-Close, 2013), but indicate emotional arousal more generally rather than valence (Cacioppo et al., 1993). The manner in which physiological cues are interpreted could influence the cognitive interpretation of the situation and predict the type of emotion experienced.

Examining the interrelations between the SNS and PNS in a variety of contexts will advance our understanding of the ANS' role in behavioral and emotional adjustment. Additional research examining the overlapping influence of cognition, physiology, and emotion will allow researchers to better understand how physiological processes relate to specific emotions, such as anger and anxiety. Recognizing the dynamic relationship between cognition and physiology could also improve interventions by targeting adolescents who suffer from problematic peer relationships or behavior due to deficits in their social cognitive processing or emotional arousal and regulation.

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Table 1.

Means, Standard Deviations, and Correlations Amongst Variables

	n	Mean	SD	Age	Vic	Re Agg	Pro Agg	PR Agg	Anx RS	Ang RS	DS	B RSA	B EDA
Age	67	14.19	1.15	1	-	-	-	-	-	-	-	-	-
Vic	59	1.71	0.90	-.34**	1	-	-	-	-	-	-	-	-
Re Agg	62	1.80	0.61	.22	.05	1	-	-	-	-	-	-	-
Pro Agg	62	1.22	0.37	.12	.11	.58**	1	-	-	-	-	-	-
PR Agg	67	1.51	0.44	.03	.30*	.17	.11	1	-	-	-	-	-
Anx RS	64	9.4	4.41	-.20	.24	.04	-.16	.20	1	-	-	-	-
Ang RS	64	6.86	3.49	-.31*	.42**	.16	.15	.45**	.51**	1	-	-	-
DS	65	4.98	1.58	.01	.37**	.28*	.03	-.01	.38**	.22	1	-	-
B RSA	61	7.06	1.11	-.13	.10	-.01	.08	.02	-.10	-.11	-.18	1	-
B EDA	34	5.12	3.89	.34	-.12	.03	.04	.13	-.38*	-.14	-.26	-.18	1
R EDA	34	0.00	3.58	.01	-.35	.03	.12	-.39*	-.04	-.23	.07	.24	.00

Note. AA = African American; Vic = Victimization; Re Agg = Reactive Aggression; Pro Agg = Proactive Aggression; PR Agg = Parent-reported overt aggression; Anx RS = Anxious Rejection Sensitivity; Ang RS = Angry Rejection Sensitivity; DS = Disrespect Sensitivity; B RSA = Baseline RSA; B EDA = Baseline EDA; R EDA = EDA Reactivity.

Table 2.

Means, Standard Deviations, and Differences Amongst Variables by Gender

Variable	Male			Female			t	df
	Mean	SD	n	Mean	SD	n		
Age	14.30	0.99	39	14.04	1.35	28	0.86	65
Vic	1.64	0.62	34	1.82	1.19	25	-0.7	33.4
Re Agg	1.93	0.63	37	1.60	0.52	25	2.14*	60
Pro Agg	1.30	0.42	37	1.10	0.25	25	2.01*	59.1
PR Agg	1.54	0.39	39	1.48	0.51	28	0.57	65
Anx RS	8.46	4.43	36	10.62	4.14	28	-1.99	62
Ang RS	6.55	2.97	36	7.25	4.09	28	-0.80	62
DS	4.95	1.57	37	5.02	1.62	28	-0.17	63
RSA	7.15	1.12	37	6.92	1.09	24	0.80	59
B EDA	5.76	4.40	20	4.21	2.91	14	1.15	32
R EDA	0.66	3.82	20	-.94	3.11	14	1.30	32

Note. Degrees of freedom with decimals indicate heterogeneity of variance between genders.

* $p < .05$

Table 3.

Correlations Amongst Variables by Gender

	Age	Vic	Re Agg	Pro Agg	PR Agg	Anx RS	Ang RS	DS	RSA	B EDA	R EDA
Age	1	-.35	-.06	-.08	-.15	-.27	-.43*	-.04	-.01	-.02	.39
Vic	-.30	1	.00	.09	.55**	.42*	.59**	.40*	.23	-.10	-.67*
Re Agg	.38*	.17	1	.33	.34	-.02	.28	.17	.02	.03	-.32
Pro Agg	.18	.23	.62**	1	.37	-.05	.26	-.33	.14	-.09	-.32
PR AGG	.25	-.03	.04	-.04	1	.28	.65**	-.01	.15	.22	-.62*
Anx RS	-.10	.01	.16	-.13	.18	1	.61**	.39*	.11	-.42	-.01
Ang RS	-.11	.06	.15	.17	.21	.42*	1	.16	.07	-.04	-.63*
DS	.08	.39*	.37*	.19	-.01	.38*	.28	1	.03	-.35	.34
RSA	-.27	-.04	-.08	.02	-.09	-.18	-.26	-.33	1	-.26	.10
B EDA	.50*	-.09	-.11	.03	.08	-.31	-.24	-.19	-.18	1	.26*
R EDA	-.34	-.09	-.05	.20	-.28	.16	.23	-.06	.27	.03	1

Note. Correlations between variables for males are presented below the diagonal and correlations amongst the variables for females are presented above the diagonal. Bolded correlations are significantly different between gender.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4.

Standardized Regression Coefficients for Victimization and Social Cognition Predicting to Forms of Aggression

		Re Agg	Pro Agg	PR Agg
Step 1				
	Age	0.24*	0.13	0.12
	AA	-0.17	0.03	0.2
	Male	0.22	0.27*	0.11
Step 2				
	Vic	0.18	0.183	0.36***
<i>Angry RS</i>				
Step 2a				
	Ang RS	0.30*	0.30	0.48***
Step 3a				
	Vic	-	-	0.21
	Ang RS	-	-	0.41***
	Sobel Test	1.93 [†]	1.43	2.41*
<i>Anx RS</i>				
Step 2b				
	Anx RS	0.13	-0.11	0.33**
Step 3b				
	Vic	-	-	0.29*
	Anx RS	-	-	0.26*
	Sobel Test	0.84	-0.78	3.00**
<i>DS</i>				
Step 2c				
	DS	0.27*	0.03	0.03
	Sobel Test	1.87*	0.17	0.21

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 5.

Standardized Regression Coefficients Associated with Psychophysiological Models

	Re Agg	Pro Agg	PR Agg
Control Variables			
Age	0.249*	0.14	0.08
AA	-0.238 [†]	-0.03	0.16
Male	0.153	0.24*	0.10
RSA			
Victimization	2.51***	1.02	1.03
RSA	0.62**	0.22	0.06
Vic x RSA	-2.48**	-0.84	-0.75
EDA			
Victimization	0.42	0.91**	0.17
R EDA	-0.39	0.05	-0.41 [†]
Vic x EDA	-0.04	0.66*	-0.37 [†]

Note. Vic x RSA = victimization x RSA interaction; Vic x EDA = victimization x EDA reactivity interaction.

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

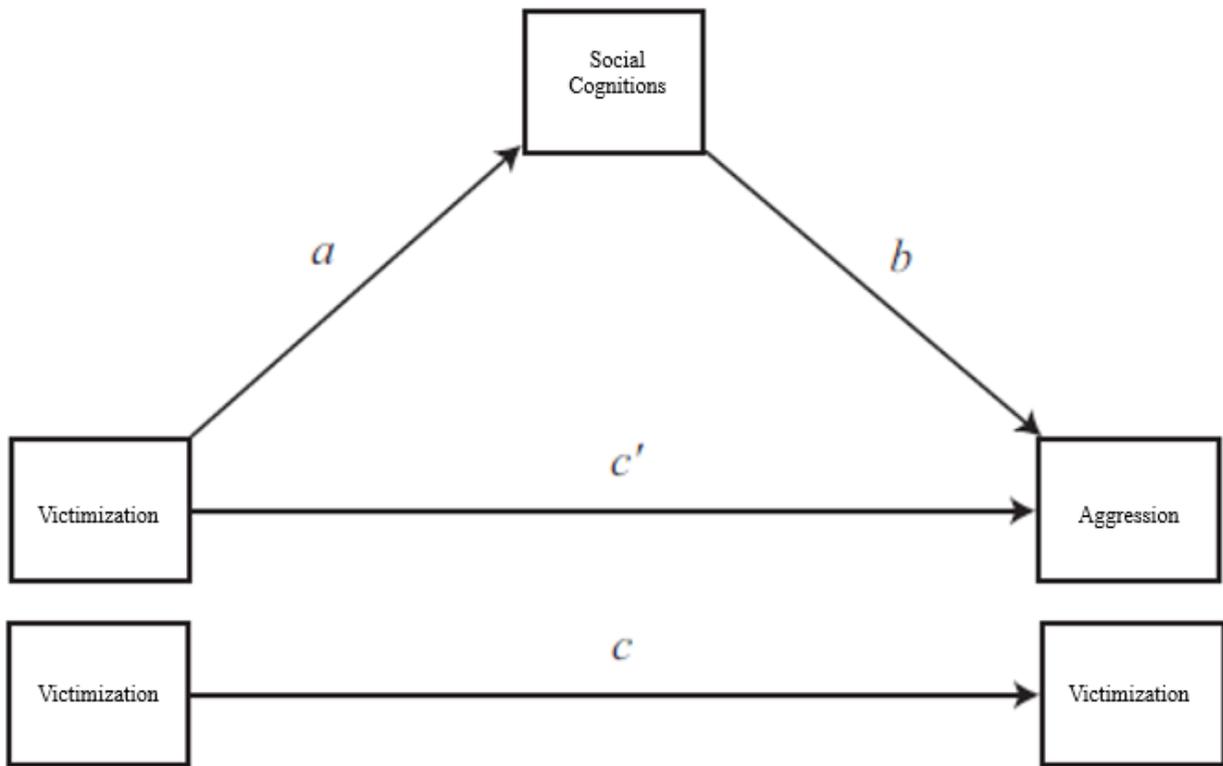


Figure 1. Indirect Effect of Victimization on Aggression through Social Cognitions.

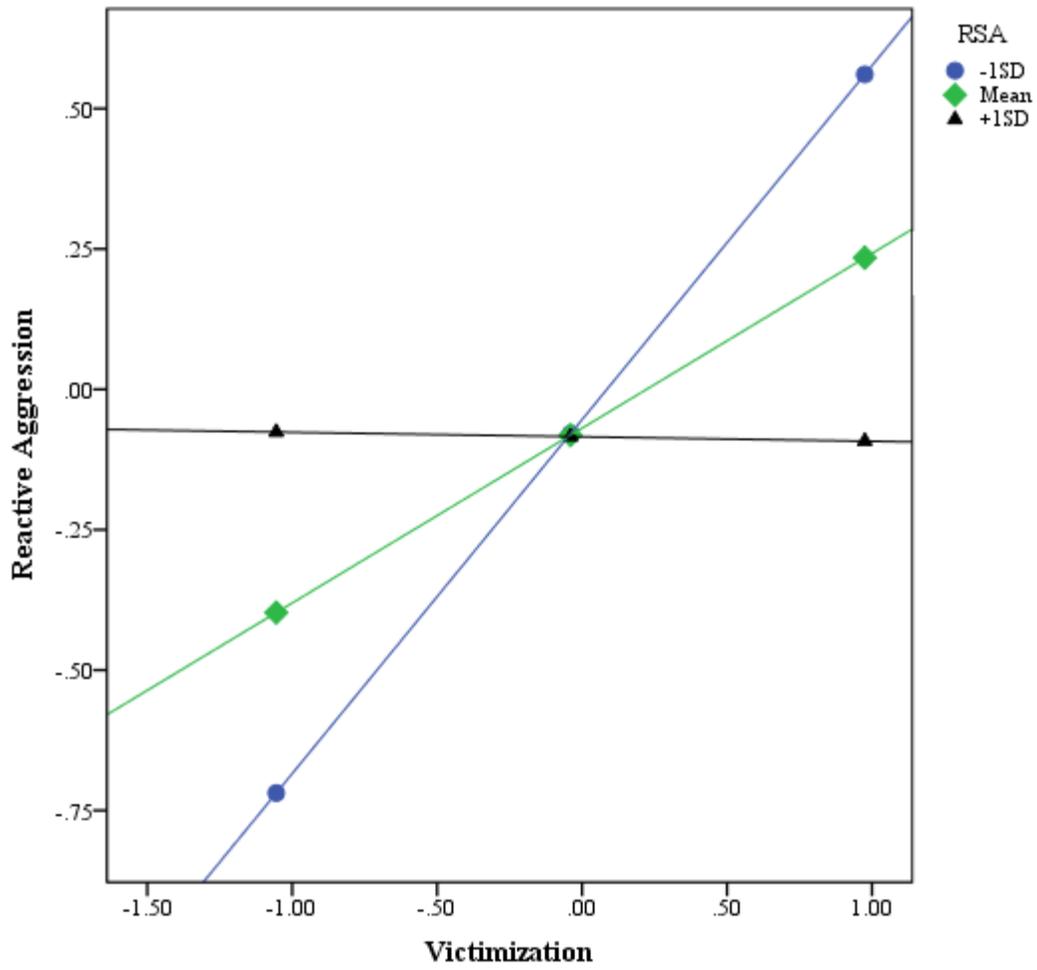


Figure 2. Moderating Effect of RSA on the Relation between Victimization and Reactive Aggression.

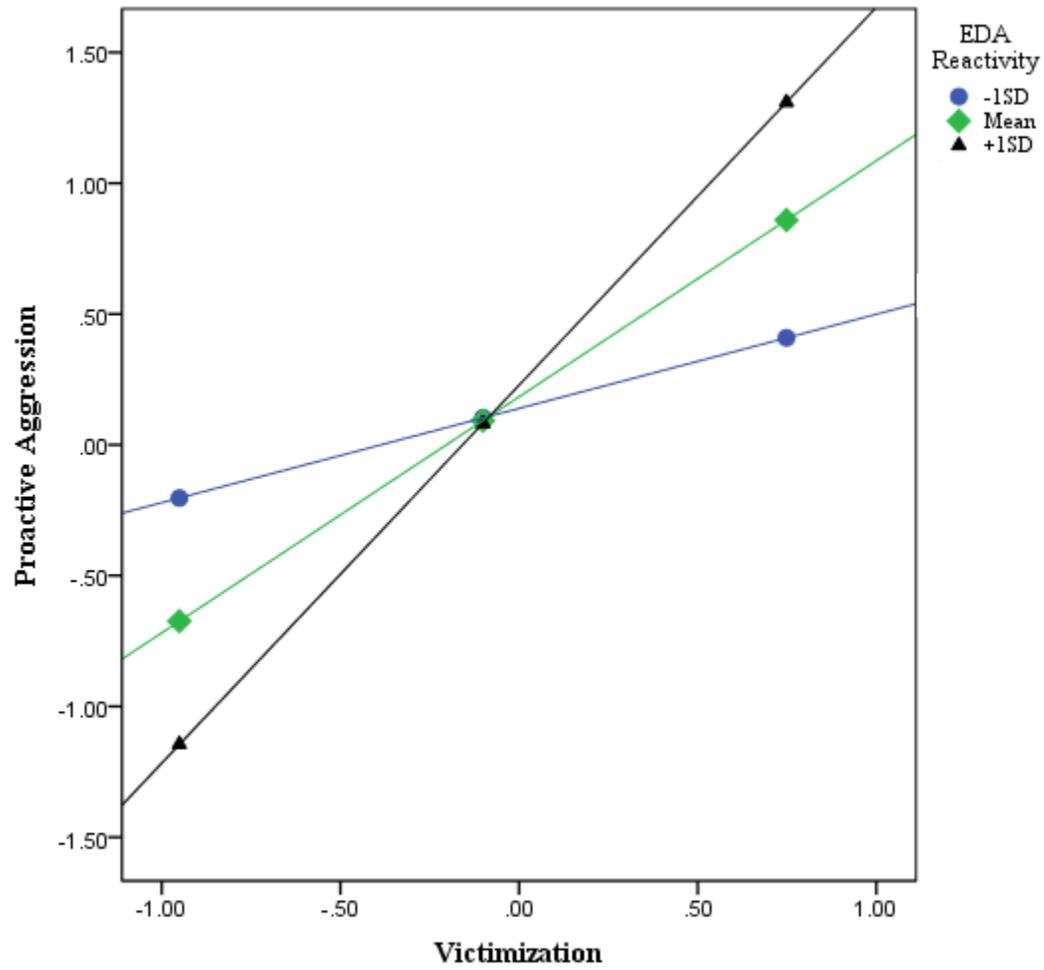


Figure 3. Moderating Effect of EDA Reactivity on the Relation between Victimization and Proactive Aggression.

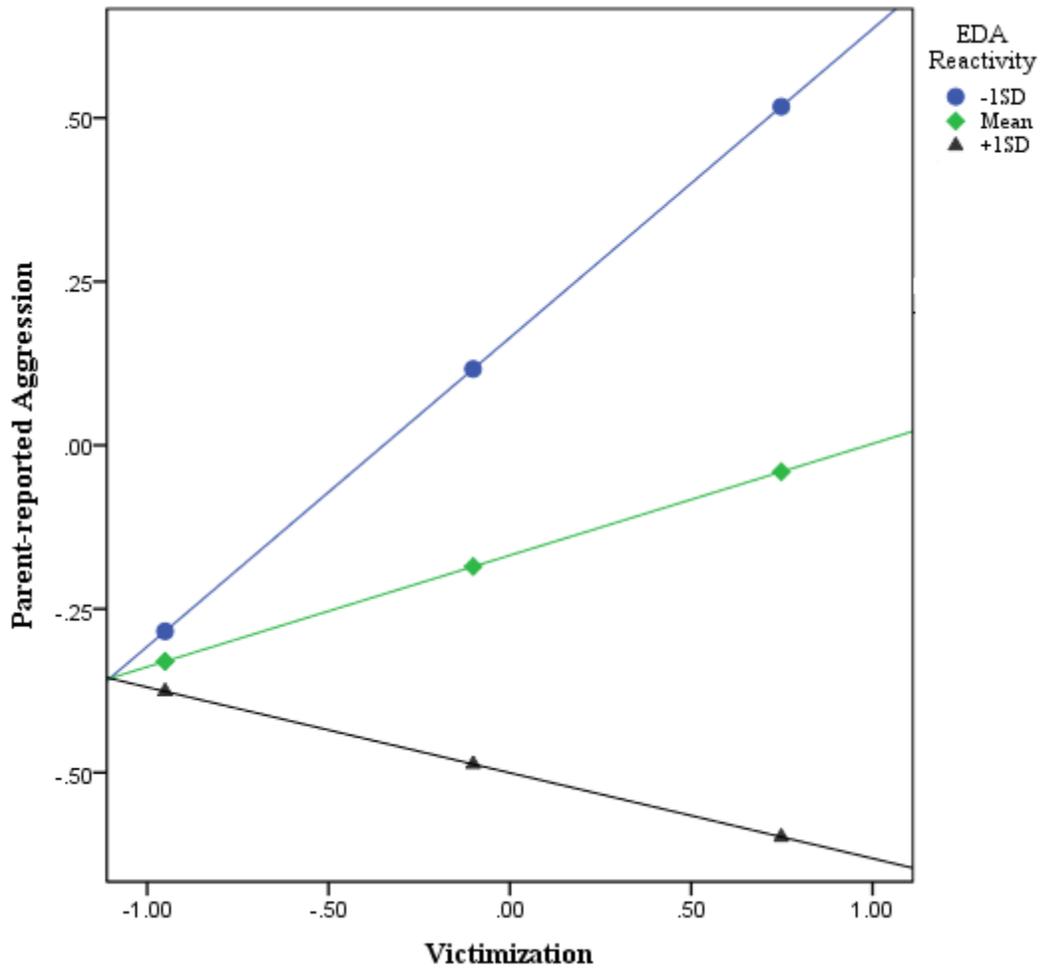


Figure 4. Moderating Effect of EDA Reactivity on the Relation between Victimization and Parent-reported Aggression.

Appendix A

REJECTION SENSITIVITY MEASURE

“In School”

The following questionnaire describes different situations that you may encounter in your school life. We would like you to read each story and imagine that these things are really happening to you. After each story, you will be asked two questions. One question will ask about how nervous you would be in each situation. Another question asks about what you expect the other person to do. Circle the number on the line indicating your responses to each of the questions.

<i>1. Imagine you are the last to leave your classroom for lunch one day. As you're running down the stairs to get to the cafeteria, you hear some kids whispering on the stairs below you. You wonder if they are talking about YOU.</i>						
How NERVOUS would you feel, RIGHT THEN, about whether or not those kids were badmouthing you?						
Not Nervous						Very, Very Nervous
1	2	3	4	5	6	
How ANGRY would you feel, RIGHT THEN, about whether or not those kids were badmouthing you?						
Not Angry						Very, Very Angry
1	2	3	4	5	6	
Do you think they were saying bad things about you?						
NO!!						YES!!
1	2	3	4	5	6	

2. Imagine you had a really bad fight the other day with a friend. Now you have a serious problem and you wish you had your friend to talk to. You decide to wait for your friend after class and talk with him/her. You wonder if your friend will want to talk to you.

How NERVOUS would you feel, RIGHT THEN, about whether or not your friend will want to talk to you and listen to your problem?

Not Nervous						Very, Very Nervous
1	2	3	4	5		6

How ANGRY would you feel, RIGHT THEN, about whether or not your friend will want to talk to you and listen to your problem?

Not Angry						Very, Very Angry
1	2	3	4	5		6

Do you think he/she will want to talk to you and listen to your problem?

NO!!						YES!!
1	2	3	4	5		6

3. Imagine you have just moved and you are walking home from school. You wish you had someone to walk home with. You look up and see in front of you another kid from class, and you decide to walk up to this kid and start talking. As you rush to catch up, you wonder if he/she will want to talk to you.

How NERVOUS would you feel, RIGHT THEN, about whether or not he/she will want to talk to you?

Not Nervous						Very, Very Nervous
1	2	3	4	5		6

How ANGRY would you feel, RIGHT THEN, about whether or not he/she will want to talk to you?

Not Angry						Very, Very Angry
1	2	3	4	5		6

Do you think he/she will want to talk to you?

NO!!						YES!!
1	2	3	4	5		6

4. Now imagine that you're back in class. Your teacher asks for a volunteer to help plan a party for your class. She selects another child to pick three other children to help plan the party. Most of your classmates want to help and they all raise their hands to be picked. You wonder if your classmate will choose YOU.

How NERVOUS would you feel, RIGHT THEN, about whether or not the classmate will choose you?

Not						Very, Very
Nervous						Nervous
1	2	3	4	5		6

How ANGRY would you feel, RIGHT THEN, about whether or not the classmate will choose you?

Not						Very, Very
Angry						Angry
1	2	3	4	5		6

Do you think the classmate will choose YOU?

NO!!						YES!!
1	2	3	4	5		6

5. Imagine you're back in your classroom, and everyone is splitting up into six groups to work on a special project together. You sit there and watch lots of other kids getting picked. As you wait, you wonder if the kids will want you for their group.

How NERVOUS would you feel, RIGHT THEN, about whether or not they will choose you?

Not						Very, Very
Nervous						Nervous
1	2	3	4	5		6

How ANGRY would you feel, RIGHT THEN, about whether or not they will choose you?

Not						Very, Very
Angry						Angry
1	2	3	4	5		6

Do you think the kids in your class will choose you for their group?

NO!!						YES!!
1	2	3	4	5		6

6. *Imagine that your family has moved to a different neighborhood, and you're going to a new school. Tomorrow is a big math test, and you are really worried because you don't understand this math at all! You decide to ask another student in the class for help. You wonder if the classmate will offer to help you.*

How NERVOUS would you feel, RIGHT THEN, about whether or not the classmate will offer to help you?

Not Nervous						Very, Very Nervous
1	2	3	4	5		6

How ANGRY would you feel, RIGHT THEN, about whether or not the classmate will offer to help you?

Not Angry						Very, Very Angry
1	2	3	4	5		6

Do you think the classmate will offer to help you?

NO!!						YES!!
1	2	3	4	5		6

7. *Imagine you're in the bathroom at school and you hear some classmates in the hallway outside talking about someone. You hear them say that they don't like this person being in their class. You wonder if the kids could be talking about YOU.*

How NERVOUS would you feel, RIGHT THEN, about whether or not the classmate was talking about you?

Not Nervous						Very, Very Nervous
1	2	3	4	5		6

How ANGRY would you feel, RIGHT THEN, about whether or not the classmate was talking about you?

Not Angry						Very, Very Angry
1	2	3	4	5		6

Do you think the classmate probably meant YOU when she said there was a kid she didn't like having in the class?

NO!!						YES!!
1	2	3	4	5		6

8. You hear that a few of the kids are organizing a party and that about half the class will be invited to the party. After you hear that, you wonder if you will be one of the kids invited to the party.

How NERVOUS would you feel, RIGHT THEN, about whether or not YOU would be invited to the party?

Not Nervous						Very, Very Nervous
1	2	3	4	5		6

How ANGRY would you feel, RIGHT THEN, about whether or not YOU would be invited to the party?

Not Angry						Very, Very Angry
1	2	3	4	5		6

Do you think that you would be invited to the party?

NO!!						YES!!
1	2	3	4	5		6

Appendix B

DISRESPECT SENSITIVITY MEASURE

Directions: The following questions ask you about what you think other people are like and what you think about how they act. Please respond by circling the appropriate number under each sentence indicating how much you disagree or agree with each statement. Each item is answered on a scale from 1 (strongly disagree) to 10 (strongly agree).

Practice Item:

People like to go swimming.

1										10
Strongly	2	3	4	5	6	7	8	9		Strongly
Disagree										Agree

1. People are always trying to make themselves look like they are better than you.

1										10
Strongly	2	3	4	5	6	7	8	9		Strongly
Disagree										Agree

3. Lots of people will treat you badly if you are not careful.

1										10
Strongly	2	3	4	5	6	7	8	9		Strongly
Disagree										Agree

4. People tend to respect you as much as you deserve to be respected.

1										10
Strongly	2	3	4	5	6	7	8	9		Strongly
Disagree										Agree

6. People want to make you feel like they are better than you.

1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

7. Signs that others disrespect you are everywhere.

1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

8. People tend to treat others in a kind and respectful way.

1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

12. A lot of people can be very disrespectful.

1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

18. If you are not careful, people will make you feel like you are no good.

1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

Appendix C

SELF-REPORT AGGRESSION

Instructions: The statements below describe how you may or may not behave with your classmates and friends. Please read each statement and rate how much they are true of you.

		Not at all true			Completely true
1	I'm the kind of person who often fights with others.	1	2	3	4
2	I'm the kind of person who hits, kicks, or punches others.	1	2	3	4
3	I'm the kind of person who says mean things to others.	1	2	3	4
4	I'm the kind of person who puts others down.	1	2	3	4
5	I'm the kind of person who threatens others.	1	2	3	4
6	I'm the kind of person who takes things from others.	1	2	3	4
7	When I'm hurt by someone, I often fight back.	1	2	3	4
8	When I'm threatened by someone, I often threaten back.	1	2	3	4
9	When I'm hurt by others, I often get back at them by saying mean things to them.	1	2	3	4
10	If others make me upset or hurt me, I often put them down.	1	2	3	4
11	If others have angered me, I often hit, kick or punch them.	1	2	3	4
12	If others make me mad or upset, I often hurt them.	1	2	3	4
13	I often start fights to get what I want.	1	2	3	4

14	I often threaten others to get what I want.	1	2	3	4
15	I often hit, kick, or punch others to get what I want.	1	2	3	4
16	To get what I want, I often put others down.	1	2	3	4
17	To get what I want, I often say mean things to others.	1	2	3	4
18	To get what I want, I often hurt others.	1	2	3	4
19	I'm the kind of person who tells my friends to stop liking someone.	1	2	3	4
20	I'm the kind of person who tells others I won't be their friend anymore.	1	2	3	4
21	I'm the kind of person who keeps others from being in my group of friends.	1	2	3	4
22	I'm the kind of person who says mean things about others.	1	2	3	4
23	I'm the kind of person who ignores others or stops talking to them.	1	2	3	4
24	I'm the kind of person who gossips or spreads rumors.	1	2	3	4
25	If others upset or hurt me, I often tell my friends to stop liking them.	1	2	3	4
26	If others have threatened me, I often say mean things about them.	1	2	3	4
27	If others have hurt me, I often keep them from being in my group of friends.	1	2	3	4
28	When I am angry at others, I often tell them I won't be their friend anymore.	1	2	3	4
29	When I am upset with others, I often ignore or stop talking to them.	1	2	3	4
30	When I am mad at others, I often gossip or spread rumors about them.	1	2	3	4
31	I often tell my friends to stop liking someone to get what I want.	1	2	3	4

32	I often say mean things about others to my friends to get what I want.	1	2	3	4
33	I often keep others from being in my group of friends to get what I want.	1	2	3	4
34	To get what I want, I often tell others I won't be their friend anymore.	1	2	3	4
35	To get what I want, I often ignore or stop talking to others.	1	2	3	4
36	To get what I want, I often gossip or spread rumors about others.	1	2	3	4

Appendix D

SELF-REPORT VICTIMIZATION

Please indicate how often a student (or students) at school has done the following things TO YOU this year at school. CIRCLE THE NUMBER THAT IS CLOSEST TO YOUR ANSWER (1 = Never, 2 = Sometimes, 3 = Once or Twice a Month, 4 = Once a Week, 5 = Several Times a Week, 6 = Every Day).

In the past year at school...	Never	Sometimes	Once or twice a month	Once a week	Several times a week	Every day
19) I was pushed or shoved	1	2	3	4	5	6
20) I was hit or kicked hard	1	2	3	4	5	6
21) Students crashed into me on purpose as they walked by	1	2	3	4	5	6
22) My property was damaged on purpose	1	2	3	4	5	6
23) Something was thrown at a me to hit me	1	2	3	4	5	6
24) I was threatened to be physically hurt or harmed	1	2	3	4	5	6
25) I was teased by students saying things to me	1	2	3	4	5	6
26) A student made rude remarks at me	1	2	3	4	5	6
27) Jokes were made about me	1	2	3	4	5	6
28) Things were said about my looks I didn't like	1	2	3	4	5	6

29) I was embarrassed by students saying things to me	1	2	3	4	5	6
30) I was called names I didn't like	1	2	3	4	5	6
31) A student wouldn't be friends with me because other people didn't like me	1	2	3	4	5	6
32) A student ignored me when they were with their friends	1	2	3	4	5	6
33) A student got other students not to have anything to do with me	1	2	3	4	5	6
34) A student ignored me by turning his or her back on me	1	2	3	4	5	6
35) A student got their friends to turn against me	1	2	3	4	5	6
36) I wasn't invited to a student's place because other people didn't like me	1	2	3	4	5	6



February 16, 2016

Kristina L. McDonald, Ph.D.
Assistant Professor
Department of Psychology
College of Arts & Sciences
The University of Alabama
Box 870348

Re: IRB Protocol # 14-004-ME-R2 "Adolescent Social Interactions"

Dr. McDonald:

The University of Alabama Institutional Review Board has granted approval for your proposed research

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 8 as outlined below:

- (8) Continuing review of research previously approved by the convened IRB as follows:
(a) where (i) the research is permanently closed to the enrollment of new subjects; (ii) all subjects have completed all research-related interventions; and (iii) the research remains active only for long-term follow-up of subjects; or
(b) where no subjects have been enrolled and no additional risks have been identified; or
(c) where the remaining research activities are limited to data analysis.

Your application will expire on February 15, 2017. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol Form. When the study closes, complete the appropriate portions of FORM: Continuing Review and Closure.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,



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