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# Do Early Maladaptive Schemas Mediate the Relation Between Significant Life Events, Callous-Unemotional Traits, and Conduct Problems in Adolescence?

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The University of Southern Mississippi

DO EARLY MALADAPTIVE SCHEMAS MEDIATE THE RELATION BETWEEN  
SIGNIFICANT LIFE EVENTS, CALLOUS-UNEMOTIONAL TRAITS, AND  
CONDUCT PROBLEMS IN ADOLESCENTS?

by

Kristy Adler Domnanovich

Abstract of a Dissertation  
Submitted to the Graduate School  
of The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

December 2010

## ABSTRACT

# DO EARLY MALADAPTIVE SCHEMAS MEDIATE THE RELATION BETWEEN SIGNIFICANT LIFE EVENTS, CALLOUS-UNEMOTIONAL TRAITS, AND CONDUCT PROBLEMS IN ADOLESCENTS?

by Kristy Adler Domnanovich

December 2010

Callous-unemotional (CU) traits have been thought to designate a subgroup of children and adolescents who have particularly severe conduct problems (e.g., Frick, Barry, & Bodin, 2000; Kosson, Cyerski, Steuerwald, Neumann, & Walker-Matthews, 2002). A high level of significant (i.e., negative and stressful) life events has also been linked to conduct problems, as well as psychopathology in general among adolescents (e.g., Klocek, Oliver, & Ross, 1997; Windle, 2000). Furthermore, a combination of stable personality characteristics/temperamental factors and significant life events in childhood might correspond to the development of Early Maladaptive Schemas (EMSs), which, in turn, are related to the development of behavior problems (Muris, 2006; Young, 1994; Young, Klosko, Weishaar, 2003). The current study examined a mediated moderational model to determine if EMSs mediate the relation between the interaction of CU traits and significant life events and conduct problems in a sample of 367 at-risk adolescents. Results indicated that EMSs partially mediate the relation between CU traits and aggression. Additionally, significant life events were found to moderate the relation between CU traits and aggression and conduct problems. Current results are consistent with previous research (Frick & Dantagnan, 2005) and highlight the importance of significant life events in the relation between CU traits and problem behaviors.

Additionally, this study indicated the presence of a cognitive component (EMSs) that partially accounts for the relation between CU traits and aggression. Therefore, future intervention programs aimed at decreasing problem behaviors may benefit from targeting individuals who exhibit CU traits as well as EMSs.

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## CHAPTER I

### INTRODUCTION

Some individuals who develop conduct problems early in life also exhibit callous-unemotional (CU) traits (e.g., absence of guilt, lack of empathy, superficial charm; Frick, 1998). These traits have been associated with a subgroup of children and adolescents who have particularly severe conduct problems (Christian, Frick, Hill, Tyler, & Frazer, 1997; Forth, 1995; Frick, Barry, & Bodin, 2000; Frick, O'Brien, Wootton, & McBurnett, 1994; Kosson et al., 2002) and are analogous to psychopathic personality traits discussed in the adult literature (e.g., Hare, 1999). In general, the presence of CU traits is thought to be indicative of children and adolescents who have a unique etiology of behavior problems. Therefore, the study of CU traits may “help to designate distinct developmental pathways to the development of severe antisocial and aggressive behavior” (Frick, Cornell, Bodin et al., 2003, p. 255). Children and adolescents with high levels of both CU traits and conduct problems tend to exhibit more severe behaviors and a wider array of behavior problems than children and adolescents who exhibit conduct problems in the absence of CU traits (Christian et al., 1997; Essau, Sasagawa, & Frick, 2006; Frick, Cornell, Barry, Bodin, & Dane, 2003; Vincent, Vitacco, Grisso, & Corrado, 2003). Additionally, children with CU traits and childhood-onset of antisocial behaviors may be most at risk for developing antisocial behaviors in adulthood, given that they may be more likely to exhibit severe antisocial behaviors at an early age, setting the stage for persistent problems into adulthood (see Frick, Barry, & Bodin, 2000 for discussion).

Significant life events (e.g., death in the immediate family, move to a new neighborhood) are related to externalizing difficulties and may exacerbate conduct

problems among children with CU traits (Domnanovich, 2007; Hastings, Anderson, & Kelley, 1996). Furthermore, experiencing a high number of significant life events has been consistently linked to psychopathology in general, including conduct problems (Frick & Dantagnan, 2005; Klocek et al., 1997; Leong & Vaux, 1991; Windle, 2000). In short, significant life events in childhood may help explain the exacerbation of conduct problems for youth with a propensity toward CU traits; however, this issue and the mechanisms that might explain such a relation have not been extensively studied.

One variable that could play a role in explaining the increased risk of conduct problems following significant life events, particularly among children with CU traits, is the endorsement of Early Maladaptive Schemas (EMSs). EMSs are considered a problematic way of thinking that influences behavior in youth and that can persist into adulthood (Young, 1994; Young et al., 2003). Significant life events (e.g., abuse, overprotection, instability, rejection) in childhood are thought to be associated with the development of EMSs (Young et al.). Furthermore, it has been suggested that a combination of stable personality characteristics (i.e., temperament) and events in childhood lead to EMSs (Young et al.) which, in turn, are related to the development of maladaptive behaviors (Muris, 2006; Young, 1994; Young et al.). Moreover, it is thought that the combination of temperament and life events is more indicative of the development of EMSs than life events alone (Young et al.).

The purpose of the current study was to examine the association between CU traits, significant life events, and problem behaviors (i.e., conduct problems, aggression, delinquency) among adolescents, while considering EMSs as a potential mediating factor in this relation. The current study examined conduct problems (i.e., broad ranging

aggressive and antisocial behaviors tied to symptoms of Conduct Disorder and Oppositional Defiant Disorder) based on the previous literature which has linked CU traits with this form of externalizing behavior. However, other forms of externalizing behaviors such as delinquency (i.e., illegal acts) and overt aggression (i.e., physical) were considered as well. This study also examined the interaction between CU traits and significant life events as a predictor of externalizing behaviors in adolescents. Further, it was expected that this interaction would correspond to the presence of EMSs which, in turn, would mediate the relation between this interaction and externalizing behaviors. CU traits can play a considerable role in the development of externalizing behaviors (Frick, Cornell, Bodin et al., 2003), and recent research has indicated that contextual variables, such as parenting, can influence the relation of CU to externalizing behaviors (Cornell & Frick, 2007; Pardini, Lochman, & Powell, 2007). However, there remains a paucity of knowledge about the mechanisms through which CU traits are related to the development of conduct problems. Therefore, research examining the combination of CU traits and contextual variables—in this case, significant life events—could potentially elucidate one possible pathway through which CU traits may affect the development and maintenance of behavioral problems.

Adolescents were the population of interest for this study, as adolescents who exhibit CU traits may be likely to continue to exhibit these traits during and after the transition into adulthood. Additionally, adolescents may have had the opportunity to engage in more severe externalizing behaviors (e.g., criminal acts) than younger children and are more likely than younger children to have experienced significant life events. Furthermore, although EMSs have been identified in younger children (Stallard, 2007), it

is likely that adolescents display more varied and stable EMSs. Therefore, an adolescent population was also thought to exhibit suitable variability on the variables of interest in this study relative to what would be the case with a younger sample.

#### Callous-Unemotional Traits and Externalizing Behavior Problems

CU traits are one dimension of the construct of psychopathy. In adults, psychopathy has been continually indicative of severe and persistent antisocial behavior (e.g., Gretton, Hare, & Catchpole, 2004; Hare, 1999; Loney, Taylor, Butler, & Iacono, 2007). Adult and adolescent offenders with relatively high levels of psychopathy-linked characteristics, such as CU traits, are more likely to commit violent crimes and to recidivate (Hemphill, Hare, & Wong, 1998; Vincent et al., 2003). The original conceptualization of psychopathy-linked traits in children and adolescents was most consistent with adult conceptualizations of a two-factor model of psychopathy which included CU traits and impulsivity (Brandt, Kennedy, Patrick, & Curtin, 1997; Frick et al., 1994).

Subsequent research has suggested that narcissism, which had previously been included with impulsivity within a behavioral dimension of psychopathy in children, could be separated into an independent factor (Frick, Barry, & Bodin, 2000). Therefore, most current conceptualizations of psychopathy in children and adolescents describe a three-factor model including an affective factor commonly referred to as callousness-unemotionality, an interpersonal factor involving narcissism or grandiosity, and a behavioral factor generally termed impulsivity (Frick, Bodin, & Barry, 2000; Hall, Benning, & Patrick, 2004; Kosson et al., 2002). CU traits, as noted above, are characterized by a lack of empathy, use of others for one's own gain, constricted affect,

and lack of remorse and guilt (Frick, 1998). According to Hawes and Dadds (2005), individuals who exhibit high levels of this affective factor “exhibit temperamental correlates indicative of reward-driven and punishment-insensitive behavior patterns” (p. 737). CU traits, as with narcissism and impulsivity, also appear to be fairly stable (Barry, Barry, Deming, & Lochman, 2008; Frick, Kimonis, Dandreaux, & Farell, 2003), perhaps pointing to a temperamental aspect of this construct. The callous, uncaring, and unemotional nature of individuals characterized as having CU traits may greatly affect the way these individuals interact with others (Frick, 2003). Therefore, children who display such traits may have a difficult time seeking out or inspiring the reciprocation of social support from others. Such a lack of social support may leave these individuals more vulnerable to the effects of significant life events, to the development of EMSs, and to the display of externalizing behaviors.

In addition to conduct problems, previous studies have shown CU traits to be related to aggression and delinquency in children and adolescents (Frick, Barry et al., 2000; Frick et al., 1994; Hall et al., 2004; Kruh, Frick, & Clements, 2005; Marsee, Silverthorn, & Frick, 2005; Salekin, Leistico, Neumann, DiCicco, & Duros, 2004). Furthermore, research has suggested that CU traits are predictive of the development of both reactive and proactive forms of aggression (Frick, Cornell, Barry et al., 2003) as well as delinquency, particularly violent offenses (Frick, Cornell, Barry et al.). There is also a well-established research link between CU traits and more general forms of conduct problems, as well as a research base examining contextual, temperamental, and interpersonal differences among individuals with CU traits and conduct problems (e.g., Frick, Cornell, Barry et al.; Frick, Kimonis et al., 2003). Taken together, research

suggests that children and adolescents with relatively high levels of CU traits engage in varied forms of externalizing behaviors that are not limited only to those types specifically tapped by measures of conduct problems. Therefore, further examination of the role of CU traits is warranted to examine the heterogeneous forms of child externalizing behavior problems.

In addition to varied behavioral problems, CU traits predict later severe and persistent antisocial behavior in adulthood (Forth & Burke, 1998; Gretton, Hare, & Catchpole, 2004; Loney et al., 2007). Thus, CU traits appear to be important in the development and maintenance of externalizing behaviors (Frick, Cornell, Bodin et al., 2003; Hawes & Dadds, 2005). Furthermore, recent research has noted that youth with CU traits continue to exhibit higher levels of externalizing behaviors after undergoing intervention for such behaviors than those without CU traits (Hawes & Dadds, 2005). Therefore, gaining knowledge regarding the mechanisms through which CU traits may relate to, or lead to, conduct problems, aggression, and delinquency is important for understanding how the concurrent and later behavioral problems associated with CU traits might be prevented (Cornell & Frick, 2007; Pardini et al., 2007).

CU traits have been delineated further into dimensions of callousness, lack of caring, and unemotionality (Essau et al., 2006; Frick, 2003) which appear to have some degree of relevance for externalizing behavior problems. Essau et al. found that the Unemotional dimension was significantly negatively related to aggressive, antisocial, and externalizing behaviors in boys and girls but not with symptoms of Conduct Disorder. Additionally, they noted that callousness may better predict “problematic behavior” overall (Essau et al., p. 463), as callousness was highly related to measures of problem

behaviors (i.e., aggression, antisocial behavior, externalizing, and Conduct Disorder symptoms) in both boys and girls. An Uncaring factor was related to these same behaviors in boys only. Much of the research to date has conceptualized CU traits as comprising a unitary construct, with evidence only beginning to emerge regarding the relevance of considering CU traits as multidimensional. A multidimensional conceptualization, however, may ultimately prove useful for determining the characteristics that are particular risk factors for behavioral problems.

In summary, CU traits appear to be a significant intrapersonal risk factor of youth behavioral problems and also are believed to have predictive utility for determining risk for future problem behaviors (Frick, Cornell, Barry et al., 2003; Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005; Kimonis et al., 2006). However, in further understanding a CU pathway to the development of problem behaviors, other factors related to these behaviors as well as potentially to CU traits, such as significant life events and EMSs, should be considered. Such efforts would extend theory linking these constructs and contribute to the conceptualization of prevention and intervention efforts targeting youth externalizing behavior problems.

#### Significant Life Events and Behavior Problems

As noted above, previous research has shown that significant life events are related to psychopathology, including both internalizing and various forms of externalizing difficulties. For example, conduct problems have been related to events such as failing a class, attending a new school, and even daily stress in adolescents (Hastings et al., 1996; Windle, 2000). Additionally, high levels of significant life events in the form of traumatic experiences, such as being witness to a homicide and being

assaulted, have been found among adolescent offenders (Erwin, Newman, McMackin, Morrissey, & Kaloupek, 2000). The presence and development of aggression has also been linked to significant life events such as violence (e.g., witnessing physical aggression, having a family member attacked) and life transitions (e.g., moving to a new home, changing schools) in children (Attar, Guerra, & Tolan, 1994). Furthermore, Wiesner and Windle (2003) noted that higher, more chronic levels of delinquency are related to higher levels of significant life events.

Significant life events may also be relevant in the connection between CU traits and behavioral problems in that children with both high levels of CU traits and conduct problems have been reported to experience higher numbers of significant life events than children with conduct problems but low levels of CU traits (Domnanovich, 2007). These results appear to be consistent with research by Frick and Dantagnan (2005) in which children with high levels of CU traits who exhibited stable conduct problems over time tended to have experienced more stressful life events than children with CU traits whose level of behavioral problems was less stable. It has been suggested that the presence of CU traits may increase the probability of experiencing negative outcomes due to significant life events because “emotional detachment” hinders the ability to obtain support from others (Frick & Dantagnan, p. 482). Additionally, individuals with CU traits often have family members who exhibit Antisocial Personality Disorder and related antisocial behaviors (Christian et al., 1997), increasing the likelihood that they will be part of a family that experiences a relatively high level of upheaval and related negative events (Frick & Loney, 2002).

Significant life events may promote the development of externalizing behaviors in multiple ways, including through environmental and cognitive influences. It is possible that exposure to significant life events, such as transitioning to a new neighborhood, a caretaker losing his or her job, or being evicted from a home could result in adolescents being exposed to an environment that supports the development of behavior problems (Erwin et al., 2000). For example, an adolescent who moves to a new neighborhood may end up in a neighborhood that offers influences and/or opportunities to engage in aggressive or delinquent acts. Additionally, an adolescent who loses a close family member may lose a system of social support that may have otherwise prevented him or her from engaging in externalizing behaviors. The introduction of a new family member into the family may also result in an adolescent receiving less social support or attention from caretakers. Adolescents who are exposed to a family member or peer who engages in antisocial behaviors also may be more likely to be exposed to significant life events (Christian et al., 1997; Frick & Loney, 2002), such as witnessing violent or illegal activity in addition to potentially engaging in these acts themselves.

Experiencing significant life events may also influence the adolescent's subsequent cognitions, which could promote maladaptive behaviors (Young et al., 2003). For example, an adolescent who has been exposed to violence may feel it necessary to engage in delinquent or aggressive acts in order to protect him or herself (Erwin et al., 2000). Attar and colleagues (1994) noted that significant life events may precipitate a pattern of externalizing behaviors as "children may learn that being tough and aggressive both minimizes the emotional impact of persistent stressors and maximizes their ability to survive under difficult and extreme environmental conditions" (p. 398). Maladaptive

cognitions may be particularly likely to develop from repeated life experiences in the presence of certain personality traits (Young et al.). For example, an adolescent who is repeatedly exposed to violence and has a certain temperamental propensity toward aggressive behaviors may be more likely to develop maladaptive cognitions surrounding these experiences than an adolescent who does not have such a temperamental propensity or has not chronically experienced violence. This study examined a potential cognitive mechanism, the presence of EMSs, which may help explain the interaction between CU traits and significant life events as a correlate of externalizing behaviors.

#### Early Maladaptive Schemas (EMSs)

A schema has been described as a “pattern imposed on reality or experience to help individuals explain it, to mediate perception, and to guide their responses” (Young et al., 2003, p. 6). Young and colleagues regard an EMS in particular as “a broad, pervasive theme or pattern, comprised of memories, emotions, cognitions, and bodily sensations, regarding oneself and one’s relationship with others, developed during childhood or adolescence, elaborated throughout one’s lifetime, and dysfunctional to a significant degree” (p. 7). It has been hypothesized that an individual’s behavior is the result of a schema and that maladaptive behaviors arise as a result of EMSs (Beck, 1976; Young, 1994; Young et al., 2003). The maladaptive behaviors that ultimately develop as a result of EMSs have been related to various forms of psychopathology in adults and adolescents, including significant behavioral problems (Cooper, Rose, & Turner, 2005; Muris, 2006; Rijkeboer, van den Bergh, & van den Bout, 2005; Tremblay & Dozois, 2009; Young, 1998).

The work of Young and colleagues has been very influential in the conceptualization of EMSs and has paid particular attention to how EMSs appear to develop as a result of an interaction between temperament and significant life experiences early in life. Young and colleagues (2003) described several temperamental variables (e.g., being shy, anxious) that they consider to be stable and difficult to change and, therefore, likely to interact with life events to produce EMSs. For example, the cold, affective nature of CU traits suggests that these traits negatively influence the way an individual views and interacts with his or her environment and could be a correlate of EMSs.

McGinn, Cukor, and Sanderson (2005) found that EMSs develop during childhood, noting a mediating effect of children's EMSs on the relation between parenting practices and psychopathology (i.e., anxiety and depression). According to Young and colleagues (2003), EMSs do not require "trauma or mistreatment" to develop (p. 8); however, they may result from various salient childhood experiences, such as being overly "sheltered" (p. 8). Young and colleagues theorized that certain temperaments (e.g., high sociability) can ameliorate the effects of negative life experiences (e.g., abuse) just as positive life experiences may transcend the potentially negative outcomes for a child with a difficult temperament. They also suggested that EMSs result when "emotional temperament interacts with painful childhood events" (Young et al., p.12) and that EMSs develop due to repeated childhood experiences and affect how people "think, feel, and act" (p. 8). Thus, it is important to consider the development of EMSs as the result of an interaction between temperament (i.e., CU traits) and significant life events, rather than either one of these factors alone.

One perspective is that EMSs result in individuals' re-experiencing of their childhood during adulthood, which continually colors the way they view the world and thusly affects their behavior (Young et al., 2003). Young and colleagues propose that schemas emerge as a way of allowing individuals to explain events in their lives but that the cognitions set into place with these schemas remain constant even when the individual's life has changed. They further hypothesize that EMSs and the behaviors they produce are not easily altered. Therefore, the behaviors that resulted from these schemas in childhood may continue into adulthood along with the schema itself (Young et al.).

Young (1994) hypothesized the existence of 18 EMSs that may develop in early childhood. Subsequently, further research has indicated empirical support for the existence of 15 of these original schemas within an adult population (Schmidt, Joiner, Young, & Telch, 1995). Stallard and Rayner (2005) noted that adult measures may be too "complex" or "lengthy" and may not be age-appropriate for a younger population (p. 218). However, subsequent research has attempted to extend the concept of EMSs to children and adolescents through the development of an age-appropriate measure of EMSs: the Schema Questionnaire for Children (SQC; Stallard & Rayner). Correlational analyses were conducted with the Schema Questionnaire for Children in a sample of children and adolescents ages 11 to 16 and indicated that 10 of these EMSs (with two additional EMSs nearing significance) were significantly correlated with a measure developed with adults (i.e., Young Schema Questionnaire; Stallard & Rayner). Similar research with children ages 9 to 10 has suggested empirical support—through correlations with the Young Schema Questionnaire (YSQ)—for only eight of these EMSs (i.e., Vulnerability to Harm or Illness, Emotional Deprivation, Failure, Mistrust/Abuse,

Subjugation, Entitlement/Grandiosity, Unrelenting Standards/Hypercriticalness, and Dependency/Incompetence) in this age group (Stallard, 2007). Therefore, this research suggests that some of the EMSs found in adults can also be meaningfully assessed in childhood. However, empirical support emerged for a somewhat higher number of EMSs in adolescence as opposed to childhood.

Furthermore, these schemas may hold more relevance in later adolescence, as opposed to childhood or earlier adolescence (Stallard & Rayner, 2005). Stallard and Rayner suggest that schemas may “become more relevant and activated during the later stages of adolescence, when the young person becomes more developmentally independent” (p. 223). Given that empirical support has been found for more EMSs in adolescents than younger children, it is possible that older adolescents will exhibit more EMSs, reflecting a variety of schemas that they might use, whereas certain schemas may not emerge in children or younger adolescents. Therefore, a sample of older adolescents may show a pattern of EMSs more consistent with that seen in adults. For these reasons, examining the 15 EMSs found in adults within an older adolescent population may offer information about the potential developmental nature of EMSs and whether older adolescents exhibit a pattern of EMSs more similar to that of younger adolescents or to that of adults. The current study used the SQC, rather than the YSQ, to measure EMSs in a sample of older adolescents. As noted above, it is believed that the YSQ may be unnecessarily lengthy and complex, perhaps even for an adolescent population (Stallard & Rayner). In addition, the adolescents in the current sample (see below) likely have a history of academic difficulties; therefore, use of a brief measure designed to be easy to

understand for young children would help ensure that older adolescent participants are able to understand the measure's content and format.

The EMSs discussed from the SQC are divided into conditional and unconditional schemas (Stallard, 2007; Young et al., 2003). Unconditional schemas are considered the strongest and most stable and tend to develop very early in childhood (Stallard; Young et al.). According to Stallard and Rayner (2005), the unconditional schemas from the SQC include: Entitlement/Grandiosity (i.e., "I am more important/special than others"), Social Isolation/Alienation (i.e., "No one understands me"), Mistrust/Abuse (i.e., "Others are out to get or hurt me"), Dependence/Incompetence (i.e., "I need other people to help me get by"), Vulnerability to Harm or Illness (i.e., "Bad things happen to me"), Emotional Deprivation (i.e., "No one loves or cares about me"), Defectiveness/Shame (i.e., "Other people are better than me"), Abandonment/Instability (i.e., "People I love will never be there for me"), Insufficient Self-Control/Self-Discipline (i.e., "I am not responsible for what I do or say"), Enmeshment/Undeveloped Self (i.e., "It is important that my parents/carers are involved in everything I do"), and Failure (i.e., "I am a failure").

Alternatively, EMSs that emerge later, referred to as conditional schemas, are considered less stable and influential (Stallard, 2007; Young et al., 2003). Stallard and Rayner (2005) note that the conditional schemas, as measured by the Schema Questionnaire for Children, include: Self-Sacrifice (i.e., "People will be cross or upset if I say the things I really want to say"), Emotional Inhibition (i.e., "I must not show my feelings to others"), Subjugation (i.e., "It is more important to put other people's wishes and ideas before my own"), and Unrelenting Standards/Hypercriticalness (i.e., "It is important to be better than others at everything I do"). Conditional schemas are thought

to have the potential, through resulting behaviors, to help the individual cope with unconditional schemas; however, the resulting behaviors may also be maladaptive (Stallard, 2007). Behaviors that result from conditional schemas such as Self-Sacrifice or Subjugation may help an individual cope with an unconditional schema, but they likely will only temporarily ameliorate the negative effects of unconditional schemas (Stallard; Young et al.). More specifically, behaviors that result from conditional schemas, such as always putting others ahead of oneself, constantly seeking approval, and setting unrealistically high standards are employed in an attempt to control feelings elicited from an unconditional schema (Stallard; Young et al.) but could have unintended behavioral and emotional consequences.

As noted above, it has been hypothesized that EMSs are related to psychopathology, such as mood disorders and substance abuse, as well as personality disorders (McGinn, Cukor, & Sanderson, 2005; Young, 1994; Young et al., 2003). EMSs, as assessed through the YSQ, have been shown to predict psychopathology (i.e., mood, anxiety, and personality disorders) in clinical and non-clinical samples of adults (Rijkeboer et al., 2005) as well as trait aggression (Tremblay & Dozois, 2009). Research has also found that EMSs are associated with depression in adolescents and that EMSs are able to predict various forms of psychopathology in this age group (Cooper et al., 2005). For example, Cooper and colleagues found that Vulnerability to Harm/Illness, Emotional Inhibition, and Abandonment/Instability, were able to distinguish eating disorder symptoms from symptoms of depression in an adolescent sample. Additionally, the Emotional Inhibition, Social Isolation/Alienation, and Mistrust/Abuse EMSs have been related to sexual offending in adolescents (Richardson, 2005). In a sample of

adolescents, ages 12 to 15 years, Dependence/Incompetence, Social Isolation/Alienation, and Entitlement/Grandiosity predicted disruptive behavior problems (Muris, 2006). The identification of EMSs may be of particular importance given that EMSs appear to be related to various forms of psychopathology in children, adolescents, and adults as well as the possibility that EMSs are theorized to be predictive of stable emotional and behavioral difficulties (Young et al.). In addition, examining EMSs may be important for elucidating the link between CU traits and conduct problems, as well as significant life events and conduct problems, given that youth with both CU traits and significant life events may be especially prone to developing EMSs.

#### The Present Study

The present study focused on the relations among CU traits, significant life events, EMSs, and behavioral problems in a sample of older adolescents ages 16 to 19. This study first examined a model which proposed that the relation between CU traits and conduct problems, a well-established link (e.g., Essau et al., 2006; Frick, 1998), is moderated by the presence of significant life events. That is, this study sought to extend the relevant literature on risk factors for youth behavioral problems in that the model tested involved the interplay between a temperamental (i.e., CU traits) and a contextual risk factor (i.e., significant life events) for behavioral problems. It was expected that this combination would be related to the endorsement of cognitions (i.e., EMSs) that further place the individual at-risk for behavioral problems suggesting that EMSs might indicate a mechanism through which a combination of CU traits and life events would be related to adolescent behavioral problems.

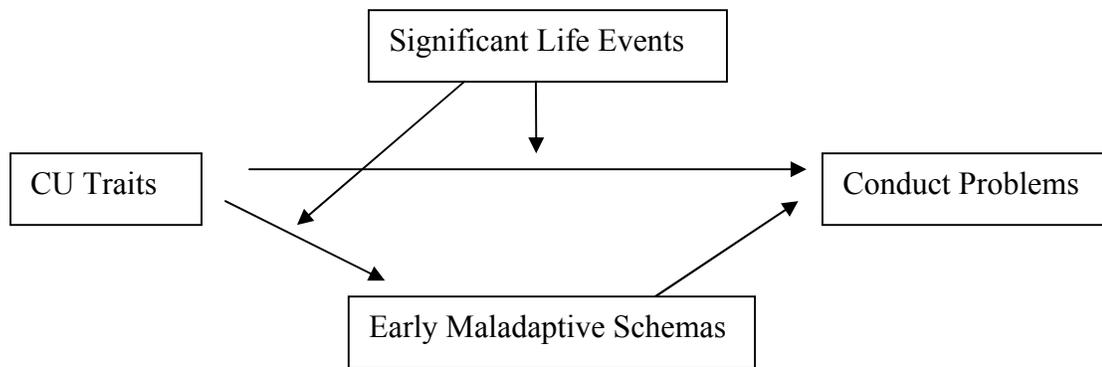
More specifically, EMSs were examined as a potential mediator in the relation between the independent variable (i.e., the interaction of CU traits and significant life events) and externalizing behaviors (i.e., conduct problems, delinquency, or aggression). Therefore, the present study was one of the first to investigate a potential mechanism through which significant life events are related to behavioral problems, particularly in youth with psychopathy-linked characteristics.

Significant life events may be associated with EMSs, as EMSs are thought to develop through repeated exposure to salient experiences (Young et al., 2003). In addition, the link between EMSs and behavioral problems (Muris, 2006) may be particularly apparent for individuals with CU traits who have also experienced a high level of significant life events. No known research has connected CU traits with EMSs. However, CU traits have previously been shown to interact with significant life events to produce negative behavioral outcomes (i.e., conduct problems; Domnanovich, 2007; Frick & Dantagnan, 2005) and are considered to be generally stable (Barry, Barry, Deming, & Lochman, 2008; Frick, Kimonis et al., 2003). Additionally, the affective nature of CU traits suggests that these traits may be related to the way an individual views and interacts with his or her environment. An individual who endorses EMSs and has a predisposing factor, such as CU traits, for problem behaviors could be more likely to exhibit these behaviors than an individual with CU traits who does not endorse EMSs.

### Hypotheses

1. It was hypothesized that significant life events, CU traits, and overall EMSs would be correlated with conduct problems, delinquency, and aggression.

2. An interaction between CU traits and significant life events corresponding to the presence of high levels conduct problems, delinquency, and aggression examined separately was expected such that a combination of high levels of CU traits and a higher number of experienced life events would correspond to higher levels of these three indices of behavioral problems. The model hypothesized for the present study is shown in Figure 1, with the models for aggression and delinquency being the same as that depicted for conduct problems.



*Figure 1.* Study Model.

3. Furthermore, it was expected that an overall EMS composite would mediate the relation between the CU trait-life events interaction and behavioral problems (i.e., conduct problems, delinquency, and aggression).

4. Because unconditional schemas are thought to be stronger and more stable than conditional schemas (Stallard, 2007; Young et al., 2003), it was further expected that unconditional EMSs would mediate the relation between the combination of CU traits and significant life events and conduct problems with conditional schemas not showing the same mediational effect. These analyses included aggression and delinquency separately, in addition to conduct problems, with a similar pattern expected across the dependent variables.

5. It was hypothesized that significant life events would moderate relations between the Callousness, Uncaring, and Unemotional dimensions of CU traits and conduct problems. Specifically, the presence of negative life events was expected to strengthen the expected positive associations for Callousness and Uncaring. Negative life events were expected to be predictive of a positive association between ICU Unemotional and conduct problems, even though those variables were expected to be negatively correlated with each other (Essau et al., 2006).

## CHAPTER II

### METHOD

#### Participants

Participants were 367 adolescents aged 16 to 19 years ( $M = 16.76$ ,  $SD = .74$ ) enrolled in a 22-week military-style intervention program for youth who have dropped out of school. Participants were from the Youth Challenge Academy at Camp Shelby in Hattiesburg, MS. Youth involved in this program come from all over Mississippi and voluntarily attend this free program. They are not court- nor state-mandated to attend. Participants were recruited from two consecutive cohorts. This sample includes 315 males and 52 females, with 251 Caucasians, 109 African Americans, and 7 participants reporting their ethnicity as “Other.” Demographic data (i.e., age, race, sex) were collected from the adolescent participants during the main data collection.

#### Materials

##### *Instruments*

*Antisocial Process Screening Device- Self-Report Version (APSD; Frick & Hare, 2001).* The 20-item APSD, previously known as the Psychopathy Screening Device (e.g., Frick, Bodin, & Barry, 2000), was used to assess CU traits unidimensionally. Previous factor analysis of a community sample of children (Frick, Bodin, & Barry) found three underlying dimensions of psychopathy-linked characteristics on the APSD, including CU traits (six items), Impulsive/conduct problems (five items), and Narcissism (seven items). Items are on a 3-point scale ranging from *not at all true* to *definitely true*. The CU traits scale consists of items such as “you feel bad or guilty when you do something wrong” (reverse scored) and “your emotions are shallow and fake.” The APSD was included as a

part of this study given the abundance of research available with this measure.

Falkenbach, Poythress, and Heide (2003) noted an internal consistency of .60 for the self-report version of the CU scale in a sample of “justice-involved” adolescents taking part in a “juvenile arbitration program” (p. 793). This study found the self-report version of the APSD to have concurrent validity (i.e.,  $r = .80$ ) with the Modified Child Psychopathy Scale, a self-report measure of psychopathy-linked features, in a sample of adolescents. Criterion-related validity for the APSD was also noted, as the APSD was significantly correlated with program non-compliance,  $r = .31$ , and recidivism,  $r = .33$ , two factors the authors hypothesized to be related to psychopathy (Falkenbach et al.). Initial internal consistency for the CU scale was unusually low ( $\alpha = .31$ ). One item (“You hide your feelings or emotions from others”) was subsequently dropped, based on negative correlations with all other CU items, resulting in a 5-item CU scale with improved, but still low, internal consistency,  $\alpha = .49$ . Despite the low reliability score of this subscale, the CU scale from the APSD was still included in analyses based on the majority of past literature in this area also having used the APSD CU scale.

*Inventory of Callous-Unemotional Traits (ICU; Frick, 2003)*. The ICU is a 24-item measure of CU traits. Items are rated on a 4-point scale ranging from *not at all true* to *definitely true*. This measure is an expansion of the 6-item CU scale of the APSD (Frick & Hare, 2001). The adolescent self-report version of this measure was used. The ICU taps three dimensions of CU traits including Callousness (11 items; e.g., “I do not care who I hurt to get what I want”), Uncaring (eight items: e.g., “I feel bad or guilty when I do something wrong”), and Unemotional (five items; e.g., “I hide my feelings from others”), as well as a total score for the measure. A factor analysis of the self-report

version of the ICU in an adolescent sample of 13 to 18 year-olds suggested moderate internal consistency,  $\alpha = .77$ , for the measure and its subscales, including Callousness,  $\alpha = .70$ , Uncaring,  $\alpha = .73$ , and Unemotional,  $\alpha = .64$ . This same study found that the subscales of the ICU were moderately positively correlated with each other. The Callousness and Uncaring subscales were both significantly positively correlated with externalizing behaviors; however, the Unemotional subscale was negatively correlated with externalizing behaviors (Essau et al., 2006). Internal consistencies for the current sample were adequate (Callousness  $\alpha = .73$ , Uncaring  $\alpha = .78$ , Unemotional  $\alpha = .63$ , total ICU  $\alpha = .80$ ). Given the low reliability score of the CU scale from the APSD, analyses were extended to include the ICU total score as an alternate measure of CU.

*Life Events Questionnaire (Johnson & McCutcheon, 1980)*. This measure consists of a list of 12 potentially significant life events (e.g., divorce, remarriage, death of immediate family member, caretaker losing a job, moving to a new neighborhood) and typically gathers information about the presence of these life events within the last 12 months. However, the present study was focused on gathering information about a range of childhood experiences, not just events that have occurred in the previous year. Therefore, this measure was modified by asking participants whether any of the significant life events had occurred within the last five years. One point was assigned for every life event a participant endorsed, and these points were summed to obtain a total life events score. Reliability analysis of the current sample indicated an adequate internal consistency coefficient of  $\alpha = .71$ .

*Schema Questionnaire for Children (SQC; Stallard & Rayner, 2005)*. The SQC is a measure of EMSs that is a downward extension to adolescents of the short form of the

Young Schema Questionnaire used with adults (Young, 1998). As noted previously, participants in this sample may have a history of academic difficulties. Therefore, EMSs were assessed via the SQC, a measure that has previously been used with slightly younger samples. Items on this measure have been developed to be easily understood by younger children, so it was expected that the sample of adolescents in the present study would not have difficulty understanding the SQC.

As described above, Young and colleagues (2003) theorized the existence of 18 EMSs. Results of a principal-components analysis of 205 items on the Young Schema Questionnaire indicated empirical support for the existence of 15 of the EMSs, as 15 factors emerged, in a community sample of adults (Schmidt et al., 1995). These schemas are Entitlement/Grandiosity, Social Isolation/Alienation, Mistrust/Abuse, Dependence/Incompetence, Vulnerability to Harm or Illness, Emotional Deprivation, Defectiveness/Shame, Failure, Self Sacrifice, Emotional Inhibition, Subjugation, Unrelenting Standards, Insufficient Self-control/Self-discipline, Enmeshment/Undeveloped Self, and Subjugation. Stallard and Rayner (2005) adapted the Young Schema Questionnaire to create a measure for use with children and adolescents. The SQC has 15-items, one each for each of these schemas. On the SQC, respondents are asked to rate on a 1 to 10 scale how much they agree with a statement reflecting one of the EMSs. In a previous study, internal consistency of this measure in a sample of 11 to 16 year olds was good ( $\alpha = .82$ ), and convergent validity was established by its association with the Young Schema Questionnaire Short Form. More specifically, in a sample of adolescents, significant correlations were found between the total scores of the

measures as well as for 10 of the 15 schemas, with two nearing significance (Stallard & Rayner).

Reliability analyses for the SQC were conducted to help determine how best to evaluate EMSs in the hypothesized model. Internal consistencies for the current sample were moderate for the total score ( $\alpha = .72$ ) and for a composite of the unconditional schemas ( $\alpha = .69$ ) but low for a composite of the conditional schemas ( $\alpha = .32$ ). Thus, in the present study, the 15 EMSs that have been empirically supported in adults (Schmidt et al., 1995) were combined into an overall EMS composite, and the relations of interest involving the composite of unconditional schemas were also examined.

*Behavior Assessment System for Children-Second Edition, Parent Rating Scales (BASC-2, PRS; Reynolds & Kamphaus, 2004)*. The BASC-2 is an omnibus rating scale that broadly samples child and adolescent behavioral and emotional functioning. Parents completed the BASC-2, Parent Rating Scale (BASC-2, PRS) by rating the child's behavior on a 4-point scale ranging from *never* to *almost always*. Nine clinical scales are derived on the BASC-2, PRS in addition to several adaptive scales. The Conduct Problems,  $\alpha = .89$ , scale from the parent report form was used in this study. This parent scale is highly correlated,  $r = .74$ , with the Conduct Problem scale of the Achenbach System of Empirically Based Assessment (ASEBA) Child Behavior Checklist (ASEBA; Achenbach & Rescorla, 2001), supporting the construct validity of this scale (Reynolds & Kamphaus, 2004).

*Self-Report of Delinquency (SRD; Elliott & Ageton, 1980)*. The SRD assesses self-report of 34 illegal juvenile acts (e.g., "Have you ever attacked someone with the idea of seriously hurting or killing him or her?"). The SRD was developed from a list of

all offenses reported in the Uniform Crime Report with a juvenile base rate of greater than 1% at the time of its development (Elliott & Huizinga, 1984). Thus, the scale is thought to have appropriate content for assessing delinquent activity. Consistent with past uses of this scale (e.g., Krueger et al., 1994), a composite measure was created summing the number of delinquent acts committed (with a possible range of 0–34). This measure has demonstrated high internal consistency,  $\alpha = .93$ , when used with a similar sample of adolescents (Barry, Grafeman, Adler, & Pickard, 2007). Krueger et al. found that the scores derived from this measure correlate with real-world outcomes, such as contact with police. In addition, the validity of the SRD has been established by comparing responses on the SRD to official records (Hindelang, Hirschi, & Weis, 1981). Internal consistency of SRD for the current sample was good (i.e.,  $\alpha = .92$ ).

*Peer Conflict Scale (PCS; Marsee, Kimonis, & Frick, 2004).* The PCS, a 40-item self-report questionnaire, assesses both relational (e.g., “If others make me mad, I tell their secrets.”) and overt (e.g., “If others make me mad, I hurt them.”) aggression. On this scale, overt aggression encompasses both proactive and reactive aggression. Responses are made on a 4-point response scale ranging from *not at all true* to *definitely true*. The PCS consists of 20 items each for overt and relational aggression. A factor analysis of the PCS with adolescents has supported the reliability and validity of these subscales (Marsee et al., 2007). The adolescent self-report of overt aggression was used from this measure for the current study ( $\alpha = .90$ ).

### Procedure

Upon their entrance into the program, parents of the participants gave informed consent for the youth to participate and to be informed of the study, with the adolescents

then choosing whether or not to participate following a detailed assent/consent procedure. The present study was part of a larger project that has received IRB approval (see Appendix). Parents completed the parent form of the BASC-2 for use in the present study when they entered their child into the intervention program. Self-report questionnaire data for this study and the larger project were collected in a classroom setting in groups of approximately 12 to 18 participants in three to four 45-minute sessions over approximately ten days. All questionnaires were administered orally with the items also being provided on paper. Participation in this study or refusal to participate in no way affected the adolescents' statuses in their intervention program.

## CHAPTER III

### RESULTS

The present study examined a mediated moderational model corresponding to the presence of conduct problems. The model hypothesized in the present study was evaluated with a combination of moderated multiple regression and path analysis as suggested by Edwards and Lambert (2007). The present study specifically examined a first stage and direct effect moderation model which is described by Edwards and Lambert. That is, significant life events were expected to moderate both the relation between CU traits and conduct problems and the relation between CU traits and EMSs. Using this approach allowed for consideration of how the moderation effect influences more than one path of a mediational model, and it allowed for the examination of the effects of the mediating variable while considering how these effects are altered due to the level of the moderator (Edwards & Lambert).

#### Relations among Study Variables

Descriptive statistics for each variable can be found in Table 1. First, correlational analyses were conducted to evaluate the hypothesized relations among CU traits, significant life events, EMSs, and indicators of behavioral problems (see Table 2). It was hypothesized that all predictor variables (i.e., CU from APSD, ICU total, Callousness, Uncaring, Unemotionality, and significant life events) would be significantly correlated with the outcome variables of interest (i.e., conduct problems, delinquency, aggression), with Unemotionality expected to demonstrate negative relations. Contrary to hypotheses, conduct problems were not related to Callousness,

Unemotionality, or life events, and delinquency and aggression were not correlated with unemotionality from the ICU (see Table 2).

Table 1

*Descriptive Statistics of Study Variables*

Variable (Possible range)	<i>M</i>	<i>SD</i>	Minimum Value	Maximum Value	<i>Skewness</i>
CUAPSD (0-10)	3.51	1.88	0	10	.44
ICU (0-72)	26.18	8.91	2	59	-.06
Callous (0-33)	8.28	4.73	0	30	.99
Uncaring (0-24)	10.13	4.68	0	22	-.09
Unemot (0-15)	7.76	2.95	0	15	.04
LE (0-12)	4.33	2.71	0	12	.37
EMS (15-150)	54.65	18.05	15	128	.65
Uncon (11-110)	34.49	13.77	11	88	.81
Con (4-40)	20.18	6.85	4	40	.06
Overt (0-60)	13.48	10.28	0	52.63	.78
Del (0-34)	13.50	7.72	0	33	.22
CP (0-42)	11.46	6.95	0	32	.66

Note. CUAPSD = CU from APSD, ICU = ICU total, Unemot = Unemotional from ICU, LE = life events, EMS = early maladaptive schemas, Uncon = unconditional early maladaptive schemas, Con = conditional early maladaptive schemas, Overt = overt aggression, Del = Delinquency, CP = conduct problems. The maximum value for Overt Aggression reflects prorated scores due to missing item responses for some participants.

Table 2

*Correlations among Study Variables*

	CUAPSD	ICU	Callous	Uncaring	Unemot	LE	EMS	Overt	Del	CP
CUAPSD	—	.54***	.37***	.53***	.13*	.10*	.05	.24***	.17**	.14*
ICU		—	.78***	.79***	.52***	.17**	.24***	.42***	.29***	.14*
Callous			—	.37***	.16**	.14**	.36***	.54***	.21***	.09
Uncaring				—	.20***	.13*	.04	.25***	.33***	.14*
Unemot					—	.08	.09	.01	.01	.07
LE						—	.08	.18**	.32***	.09
EMS							—	.29***	.10	-.03
Overt								—	.36***	.07
Del									—	.19**
CP										—

Note. CUAPSD = CU from APSD, ICU = ICU total, Unemot = Unemotional from ICU, LE = life events, EMS = early maladaptive schemas, Overt = overt aggression, Del = Delinquency, CP = conduct problems \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Initial correlations indicated that EMS total scores were only correlated with one outcome variable (i.e., aggression,  $r = .29, p < .001$ ) and two predictor variables, ICU total,  $r = .24, p < .001$ , and ICU Callousness,  $r = .36, p < .001$  (see Table 2). Unconditional EMS scores were also only correlated with aggression,  $r = .26, p < .001$ , ICU total,  $r = .24, p < .001$ , and ICU Callousness,  $r = .35, p < .001$ . Unexpectedly, EMSs were not significantly correlated with significant life events.

Multiple regression was used to test for the expected interaction between CU traits and significant life events corresponding to the presence of conduct problems, delinquency, and aggression. Correlations were first conducted to determine which potential covariates were related to the outcome variables. Sex, race, and age emerged as covariates for these regression analyses (see Table 2). Sex was significantly negatively correlated with aggression,  $r = -.11, p < .05$ , and positively correlated with conduct problems,  $r = .12, p < .05$ . Males ( $M = 13.94, SD = 10.48$ ) exhibited higher levels of aggression than females,  $M = 10.70, SD = 8.61, t(365) = 2.11, p < .05$ , but females ( $M = 13.78, SD = 7.82$ ) exhibited higher levels of parent-reported conduct problems than males,  $M = 11.15, SD = 6.78, t(283) = -2.08, p < .05$ . Therefore, sex was controlled for in subsequent analyses with aggression and conduct problems. Race was observed on two levels in that the seven individuals who described their race as “other” were removed from the sample for these analyses, allowing for correlational analyses to be conducted comparing race to the outcome variables of interest. Race was significantly negatively correlated with conduct problems,  $r = -.17, p < .01$ , and delinquency,  $r = -.15, p < .01$ . Caucasians ( $M = 12.18, SD = 7.06$ ) exhibited higher levels of conduct problems than African Americans,  $M = 9.72, SD = 6.13, t(278) = 2.82, p < .01$ , and higher levels of

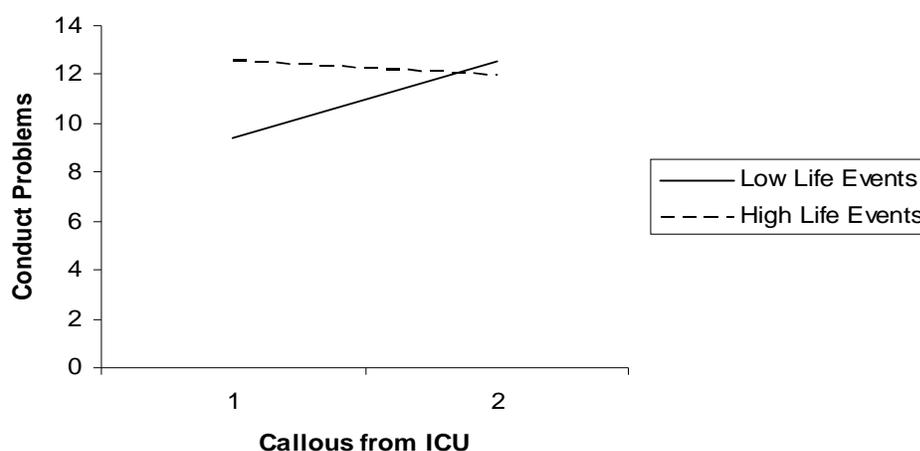
delinquency ( $M = 14.21$ ,  $SD = 7.81$ ) than African Americans,  $M = 11.66$ ,  $SD = 6.99$ ,  $t(358) = 2.94$ ,  $p < .01$ ). Age was significantly negatively correlated with delinquency,  $r = -.13$ ,  $p < .05$ , in that self-reported delinquency tended to be higher for younger participants.

Covariates that were significantly related to the outcome variable of interest were entered in Step 1 of the analyses, followed by centered scores for CU and significant life events in Step 2, and finally the interaction between CU and significant life events in Step 3. Given that conduct problems were not correlated with the other two outcome variables of interest (i.e., delinquency and aggression), structural equation modeling (SEM) to examine a single comprehensive model was not conducted for the current study. CU traits were examined via various methods (i.e., CU traits from the APSD, the total score from the ICU, and the Callousness, Uncaring, and Unemotional scales from the ICU) with the expectation that results might vary according to the method used or dimension of CU in question.

#### Life Events as a Potential Moderator

Based on significant correlations with conduct problems, race and sex were entered in Step 1 of these analyses. The first of the regressions conducted with conduct problems as the outcome variable included APSD CU as the independent variable. The second step showed a main effect for CU,  $\beta = .18$ ,  $p < .01$ . Step 3 revealed no significant interaction effect between APSD CU and significant life events. Next in this series of regressions, the ICU total score was observed as an independent variable. Step 2 of this analysis revealed a main effect for CU,  $\beta = .16$ ,  $p < .01$ , as measured by the ICU total score. Step 3 of this regression indicated no significant interaction effect for CU and significant life events. The ICU Callousness scale was subsequently used as an

independent variable in a regression analysis. No main effects were noted in the second step of this analysis. However, an interaction effect of Callousness and significant life events was noted in Step 3,  $\Delta R^2 = .01$ ,  $\beta = -.12$ ,  $p < .05$ . The significant interaction between Callousness and significant life events was further explored using the procedure recommended by Holmbeck (2002). *Post-hoc* probing was used to determine if the association between conduct problems and Callousness was significant at either of two levels (i.e., 1 *SD* below and above the mean) of life events by computing the simple slopes (i.e., *unstandardized b-weight*) and testing these for significance (Holmbeck, 2002). As shown in Figure 2, and as might be expected, those individuals who experienced low levels of significant life events and who had lower levels of callousness also had lower conduct problems.



*Figure 2.* Interaction between Callousness and Significant Life Events for Predicting Conduct Problems. Low life events line,  $b = .33$ ,  $p < .05$ , high life events line,  $b = -.07$ ,  $p > .05$ .

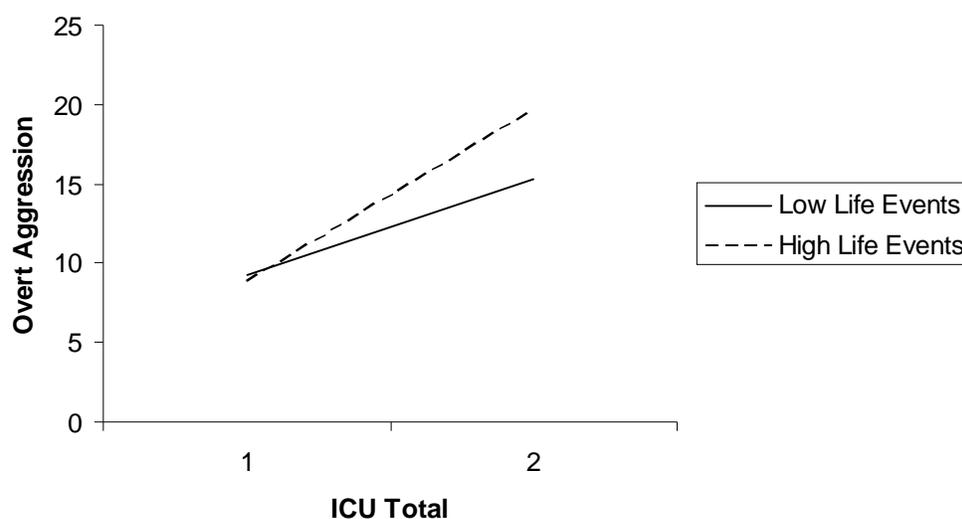
The ICU Uncaring scale was next examined for predicting conduct problems and demonstrated a main effect,  $\beta = .16$ ,  $p < .05$ , in Step 2 of the regression model. No interaction was noted for uncaring and significant life events. Finally, the Unemotional

scale was examined, with this model demonstrating no significant main effects and no significant interaction in the prediction of conduct problems.

A series of regressions were then conducted with delinquency as the dependent variable examining each measure of CU traits separately as well as significant life events. Based on significant correlations with delinquency, age and race were entered into Step 1 of these analyses. A regression employing the APSD CU scale showed main effects for CU,  $\beta = .14, p < .01$ , and significant life events,  $\beta = .30, p < .001$ . No interaction was noted in Step 3. A regression using the ICU total score as the independent variable revealed a main effect for ICU total,  $\beta = .24, p < .001$ , as well as significant life events,  $\beta = .28, p < .001$ . Again, no interaction was noted in Step 3. A regression using the Callousness scale showed main effects for Callousness,  $\beta = .16, p < .01$ , and significant life events,  $\beta = .30, p < .001$ , with no interaction noted in Step 3. A regression analysis examining the ICU Uncaring scale showed a main effect for Uncaring,  $\beta = .28, p < .001$ , and significant life events,  $\beta = .28, p < .001$ , with no interaction noted in Step 3. A final regression examined the Unemotional scale from the ICU as a predictor of delinquency. A main effect for significant life events,  $\beta = .32, p < .001$ , was noted with no significant interaction effect in Step 3.

A final series of regressions was run using significant life events and the measures of CU traits as predictor variables and overt aggression as the dependent variable. Based on correlations with overt aggression, sex was used as a covariate in these analyses. First, an examination of APSD CU showed main effects for CU traits,  $\beta = .20, p < .001$ , and significant life events,  $\beta = .17, p < .01$ , with no interaction noted in Step 3. Next, examining the ICU total score as a predictor variable revealed a main effect for CU traits,

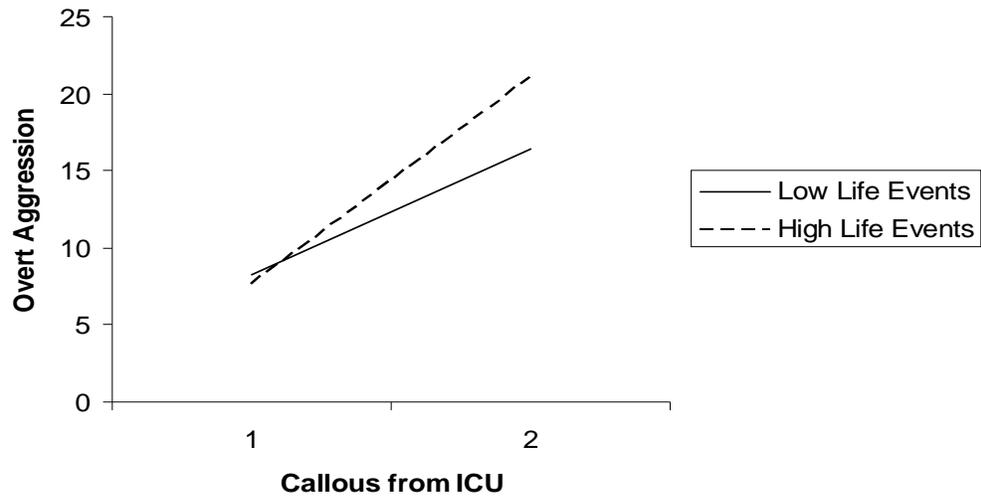
$\beta = .40, p < .001$ , and significant life events,  $\beta = .12, p < .05$  in Step 2, and an interaction between CU traits and significant life events,  $\Delta R^2 = .01, \beta = .10, p < .05$ , in Step 3. *Post-hoc* probing indicated that CU traits were related to high levels of overt aggression, especially for individuals who had experienced a high number of significant life events (see Figure 3).



*Figure 3.* Interaction between ICU Total Scores and Significant Life Events for Predicting Overt Aggression. Low life events line,  $b = .34, p < .001$ , high life events line,  $b = .61, p < .001$ .

An examination of Callousness as a predictor variable revealed main effects for Callousness,  $\beta = .52, p < .001$ , and significant life events,  $\beta = .12, p < .01$ , in Step 2, and an interaction between callousness and significant life events,  $\Delta R^2 = .01, \beta = .12, p < .01$ , in Step 3. *Post-hoc* probing indicated that the highest levels of overt aggression were associated with a combination of high Callousness and a high number of significant life events (see Figure 4), which is consistent with the pattern shown in Figure 3 for the ICU total score. An examination of ICU Uncaring as a predictor variable revealed main effects

for Uncaring,  $\beta = .23, p < .001$ , and significant life events,  $\beta = .16, p < .01$ , in Step 2 and no interaction effect in Step 3.



*Figure 4.* Interaction between Callousness and Significant Life Events for Predicting Overt Aggression. Low life events line,  $b = .86, p < .001$ , high life events line,  $b = 1.42, p < .001$ .

A final regression with the ICU Unemotional scale as a predictor variable showed a main effect for significant life events,  $\beta = .19, p < .001$ , in Step 2 and an interaction of Unemotional and significant life events,  $\Delta R^2 = .01, \beta = -.11, p < .05$ , in Step 3.

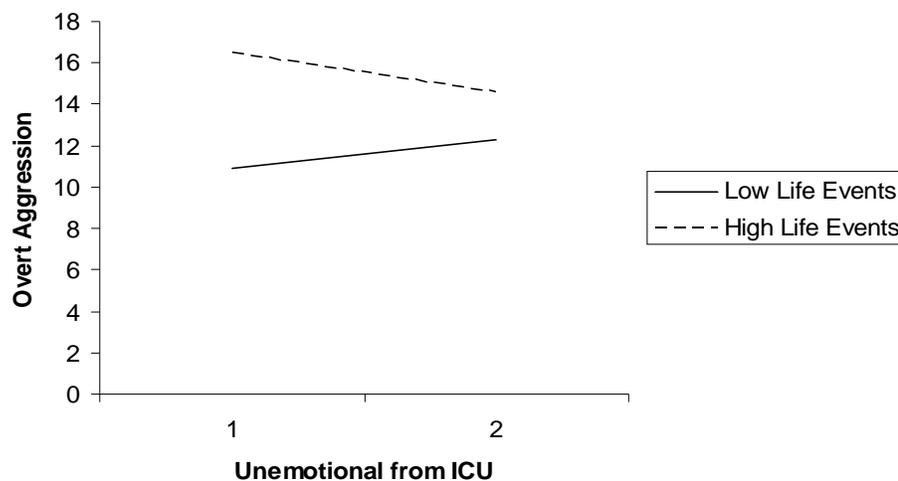


Figure 5. Interaction between Unemotionality and Significant Life Events for Predicting Overt Aggression. Low life events line,  $b = .24$ ,  $p > .05$ , high life events line,  $b = -.32$ ,  $p > .05$ .

*Post-hoc* probing indicated that low levels of unemotionality were associated with relatively high levels of overt aggression in the presence of a high number of significant life events, whereas low levels of unemotionality were associated with relatively low levels of aggression in individuals who had not experienced a high number of significant life events (see Figure 5).

#### EMSs as a Potential Mediator

As noted above and shown in Table 2, the total EMS and unconditional EMS scores were only related to the ICU total score, ICU Callousness, and aggression. Regressions were conducted with these variables, as described by Baron and Kenny (1986), to identify possible mediating effects of EMSs on the relationship between CU traits—as assessed by ICU total and ICU Callousness—and aggression. Both ICU total,  $\beta = .24$ ,  $p < .001$ , and Callousness,  $\beta = .36$ ,  $p < .001$ , significantly predicted total EMSs. Unconditional EMSs were also significantly predicted by ICU total,  $\beta = .24$ ,  $p < .001$ ,

and Callousness,  $\beta = .35, p < .001$ . Likewise, ICU total,  $\beta = .42, p < .001$ , and Callousness,  $\beta = .54, p < .001$ , significantly predicted aggression. When aggression was regressed onto both ICU total and EMS total simultaneously, the effect of ICU total,  $\beta = .37, p < .001$ , was reduced. A Sobel test of this effect indicated significant partial mediation,  $z = 3.11, p < .01$ . The same pattern was noted when aggression was regressed onto ICU total and unconditional EMSs,  $\beta = .38, p < .001$  (Sobel test,  $z = 2.85, p < .01$ ).

Aggression was also regressed onto Callousness and EMS total simultaneously with the effect of Callousness also being somewhat reduced,  $\beta = .50, p < .001$ . A Sobel test,  $z = 2.19, p < .05$ , indicated that EMS total partially mediated the relation between Callousness and aggression. Alternatively, when aggression was regressed onto Callousness and unconditional EMSs simultaneously, the effect of Callousness on aggression was not significantly reduced,  $\beta = .51, p < .001$ , (Sobel test,  $z = 1.71, p > .05$ ). Correlational and regression analyses indicated that EMSs do not mediate any main effects of significant life events and did not play a mediational role in the prediction of conduct problems or delinquency.

#### Analyses of Mediated Moderational Model

This study employed a first degree and direct effect mediated moderational model to determine if EMSs mediate the relation between the interaction of CU traits (i.e., ICU total and callousness) and significant life events and aggression. This hypothesis was tested via a moderated path analysis as described by Edwards and Lambert (2007). Specifically, this method tested whether the effect of CU traits on EMSs was moderated by significant life events (first stage simple effect) and whether the effect on aggression by CU traits was moderated by significant life events (direct effect). Examination of the

model involving ICU total consisted of two regressions. The first included ICU total, life events, and an interaction term of ICU total and life events to predict EMSs. The second included ICU total, life events, EMSs, and the ICU total and life events interaction term to predict aggression. This second regression was also employed to determine whether EMSs were a mediator in this model. Standard error coefficients from these regressions were then used to calculate first stage and direct simple effects. In this procedure, simple effects are reported based on low and high levels of life events (one standard deviation below or above the mean, respectively), and differences in simple effects are based on these scores. The analyses of differences in simple effects indicated that significant life events did not moderate the relationship between ICU total and EMSs (High Life Events,  $b = .22$ , Low Life Events,  $b = -.01$ , Differences,  $b = .23$ ,  $p > .05$ ). However, life events did moderate the relation between ICU total (High Life Events,  $b = .11$ , Low Life Events,  $b = -.001$ , Differences,  $b = .11$ ,  $p < .05$ ) and aggression (see Table 3).

Table 3

*Analysis of Simple Effects for ICU Total on Aggression*

Moderator (Life Events)	First Stage	Direct Effect
Low	-.01	-.001
High	.22	.11
Differences	.23	.11*

*Note.* Rows labeled Low and High are simple effects computed using regression equation standard error coefficients. First stage effects are computed using EMSs as the outcome variable. The direct effect is computed using aggression as the outcome variable. Simple effect equation: ICU total coefficient + (interaction term \*  $\pm 1$  SD of Life Events). Differences in the simple effects are computed via subtracting the effects of Low from High Life Events. Differences in first stage effects indicate the moderation of Life Events on the relation between ICU total and EMSs. Direct effect differences indicate the moderation of Life Events on the relation between ICU total and aggression. \* $p < .05$

The second regression indicated that EMSs did not mediate the relation between the interaction of ICU total and life events and aggression, as the effect of the interaction term on the outcome variable,  $\beta = .11, p < .05$ , was not significantly reduced in this regression when EMSs were included (Sobel test:  $z = .24, p > .05$ ). The same pattern was noted for unconditional EMSs,  $\beta = .11, p < .05$  (Sobel test:  $z = .32, p > .05$ ).

A second set of analyses examined whether EMSs mediate the relation of the interaction between ICU Callousness and life events in the prediction of aggression. These analyses indicated that significant life events did not moderate the relation between Callousness and EMSs (High Life Events,  $b = .38$ , Low Life Events,  $b = -.003$ , Differences,  $b = .38, p > .05$ ), but did moderate the relation between Callousness (High Life Events,  $b = .20, p < .05$ , Low Life Events,  $b = .01, p < .05$ , Differences,  $b = .19, p < .01$ ) and aggression (see Table 4).

Table 4

*Analysis of Simple Effects for Callousness on Aggression*

Moderator (Life Events)	First Stage	Direct Effect
Low	-.003	.006*
High	.38	.20*
Differences	.383	.194**

*Note.* Rows labeled Low and High are simple effects computed using regression equation standard error coefficients. First stage effects are computed using EMSs as the outcome variable. The direct effect is computed using aggression as the outcome variable. Simple effect equation: Callousness coefficient + (interaction term\*  $\pm 1$  SD of Life Events). Differences in the simple effects are computed via subtracting the effects of Low from High Life Events. Differences in first stage effects indicate the moderation of Life Events on the relation between Callousness and EMSs. Direct effect differences indicate the moderation of Life Events on the relation between Callousness and aggression.

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

It was also noted that EMSs did not mediate the relation between the interaction of Callousness and life events and aggression, as the effect of the interaction term on aggression,  $\beta = .13, p < .01$ , was not significantly reduced when EMSs were included,  $z = -.47, p > .05$ . Likewise, unconditional EMSs did not appear to mediate this relation,  $\beta = .13, p < .01, z = -.11, p > .05$ .

## CHAPTER IV

## DISCUSSION

## CU Traits, Life Events, and Problem Behaviors

First, the present study replicated previous findings on the association between CU traits and youth conduct problems, as there were main effects for APSD CU, ICU total, and ICU Uncaring in the prediction of parent-reported conduct problems (e.g., Christian et al., 1997; Forth, 1995; Frick, Barry, & Bodin, 2000; Frick et al., 1994; Kosson et al., 2002). The main effects found for life events and various indicators of CU traits in the prediction of delinquency also replicate previous research (Frick, Barry, et al., 2000; Frick et al., 1994; Frick, Cornell, Barry, Bodin, & Dane, 2003; Hall et al., 2004; Kruh et al., 2005; Marsee, Silverthorn, & Frick, 2005; Salekin et al., 2004; Wiesner & Windle, 2003). However, given the low internal consistency of the APSD CU scale in this study, interpretations of results involving this scale should be made cautiously. Regarding the measurement of CU traits, the current study suggests that the unique measurement of CU traits offered by the ICU may add valuable information to research involving such traits, specifically when the individual domains (i.e., Uncaring, Unemotional, Callousness) are considered.

Contrary to expectations, ICU Callousness was not correlated with conduct problems. In addition, the Unemotional scale from the ICU was not correlated with any of the three behavioral outcome variables of interest. This lack of association was not hypothesized and is contrary to other research (Essau et al., 2006) which found a significant negative correlation between the Unemotional scale from the ICU and externalizing behaviors. However, Essau et al. also noted that the Unemotional scale

produced the weakest correlation, compared to the Uncaring and Callousness scales, with symptoms of Conduct Disorder. Taken together, the present study and past research suggests that the Unemotional dimension of CU traits may not be the best indicator of problem behaviors.

In contrast, the lack of main effect for life events with regard to conduct problems was unexpected based on previous research (Hastings et al., 1996; Windle, 2000). In the present study, ratings of conduct problems were provided by parents, rather than the adolescents themselves, which may offer an explanation for some findings. Simply, the lack of expected correlations involving conduct problems may be due to source variance. In essence, many adolescents' ratings of their own behavior and life experiences tended toward one direction (i.e., consistently positive or negative), whereas parents' ratings of an adolescent's behavior did not necessarily correspond to adolescent self-reports on the variables of interest.

In the present study, and not surprisingly, those who experienced low levels of significant life events and who were lower in callousness had lower levels of parent-reported conduct problems (see Figure 2). That is, the absence of either risk factor was tied to relatively low parental reports of conduct problems. Additional findings suggest that the presence of life stressors could increase the risk of behavioral problems for individuals with CU traits (see Figure 3) and callousness in particular (see Figure 4). Past research has indicated that individuals who exhibit high levels of CU traits in the presence of stable conduct problems tend to experience more significant life events (Frick & Dantagnan, 2005). Thus, the combination of CU traits and life events appears to be more predictive of conduct problems than either factor individually. As suggested by

Frick and Dantagnan, individuals with higher levels of CU traits may be more easily affected by the experience of significant life events due to a lack of social support stemming from their interpersonal style (e.g., cold demeanor, socially withdrawn). Individuals with high levels of CU traits have been described as exhibiting “deficits in social skills” and being “rejected by peers” (Frick and Dantagnan, p. 482). Given such a lack of social proficiency, those with high levels of CU traits may be less likely to associate with an appropriate peer group (Dandreaux & Frick, 2009; Kimonis, Frick, & Barry, 2004) and are therefore more likely to experience both a deficit in social support after experiencing significant life events and a higher probability of experiencing problem behaviors.

A somewhat different pattern emerged for unemotionality (see Figure 5) in that in the presence of a high number of significant life events, unemotionality appears to have a negative relation with aggression. It may be that unemotionality in the presence of significant life events slightly lessens the risk of exhibiting aggressive behavior due to the individual’s lack of “emotional expression” (Essau et al., 2006, p. 466). That is, some individuals who experience high levels of significant life events may be less likely to react aggressively if they are emotionally inhibited or at least less reactive in general than others. It is thought that reacting aggressively for some individuals is the result of a lack of regulation of “hot-blooded, angry, and hostile” emotions (Muñoz, Frick, Kimonis, & Aucoin, 2008, p. 15). It is possible that individuals high on unemotionality are either emotionally inhibited and lack such emotional expression or are better able to regulate their emotions. Moreover, such individuals may be unlikely to react impulsively based on uncontrolled emotions and therefore at a low risk of behaving aggressively (see Dodge &

Coie, 1987). Of course, reactions to negative life events may manifest in other maladaptive ways, such as internalizing problems (e.g., Klocek et al., 1997; Leong & Vaux, 1991) for individuals who do not respond aggressively.

It should be noted that significant life events did not moderate the relation between any measure of CU traits and delinquency. Delinquency is characterized by engaging in illegal activity. It may be that significant life events actually do not influence the relation between CU traits and illegal activity in the form of violent crime, substance abuse, and status offenses, as they appear to do with other forms of problematic behavior (i.e., conduct problems, overt aggression). In short, the CU traits and life events may each influence adolescent delinquency through different pathways such that their combination does not necessarily heighten a young person's risk for delinquency. For example, the relation between life events and delinquency could be better explained by the presence of associated variables, such as significant economic difficulties (Agnew, Matthews, Bucher, Welcher, & Keyes, 2008) or exposure to others who engage in antisocial behaviors (Christian et al., 1997; Frick & Loney, 2002) rather than individual difference characteristics such as CU traits. Similarly, individuals with CU traits may be at higher risk for delinquency; however, the presence of negative life events may not necessarily strengthen this relation. Other factors may be more important. For example, individuals with CU traits who engage in high levels of delinquent behaviors are more likely to be associated with a delinquent peer group (Kimonis et al., 2004). However, adolescents high in CU traits who engage in aggressive or conduct problem behaviors could also be socially rejected by peers, which could constitute a significant stressor for them (Deandreux & Frick, 2009). Associating with a delinquent peer group may yield enough

social support to shelter such individuals from the effects of stressful life events while still leaving them at risk for exhibiting delinquent behaviors.

### The Role of EMSs

Contrary to expectations, life events were uncorrelated with EMSs. This unexpected finding could be an artifact of the manner in which life events were assessed. The measure of life events in the current study assessed a broad spectrum of experiences, ranging from common childhood events (e.g., moving to a new neighborhood) to potentially more traumatizing experiences (e.g., death of an immediate family member). Many questions were largely based on events that involved the adolescent's immediate family but that may not have directly affected the adolescent (e.g., "Was a close family member a victim of a violent crime?"). It is possible that EMSs are related to life events that directly affect the adolescent (e.g., the adolescent him or herself is held in jail or detention), rather than those close to him or her. It may also be that more extreme life events (e.g., being the victim of or witnessing a violent crime, experiencing a serious physical illness) have more impact than those assessed in the current study and, consequently, are more relevant to the development and presence of EMSs. Both of these possibilities deserve attention in further research.

EMSs were related to aggression in this adolescent sample, as has previously been found with adults (Tremblay & Dozois, 2009); however, they were not related to conduct problems or delinquency in this sample. Thus, the results suggest that EMSs are relevant for problematic behavior directed toward others but not necessarily for more varied forms of problem behaviors. In addition, it appears that some of the relation between CU traits and aggression can be accounted for by the presence of overall EMSs. In particular,

unconditional EMSs partially mediated the relation between ICU total and aggression in this study. These results suggest that the pathway from CU traits to aggression has a cognitive component, particularly in regards to how the individual perceives the world and how he or she reacts to it. Specifically, individuals with CU traits appear to have maladaptive ways of viewing themselves, others, and events in their lives that can lead to problematic behaviors, such as aggression toward others.

In addition and contrary to expectations, EMSs did not mediate the relation between the interaction of life events and CU traits (i.e., ICU total and Callousness) and aggression. This finding may have been largely due to the unexpected lack of association between life events and EMSs. Because EMSs exhibited a mediating effect on the relation between CU traits and aggression, poor comprehension or socially desirable response patterns on the part of some participants probably does not explain these results. Instead, the findings could indicate a developmental influence on EMSs. That is, although no known studies have examined this issue, EMSs may mediate the relation between this interaction and aggression in adults, but not in adolescents or younger children. More specifically, the presence of significant life events over a longer duration of time could result in a relation between life events and EMSs that is not present in younger individuals who likely have fewer life experiences and may have less entrenched beliefs about the world around them. Such a developmental view suggests that adolescents—or at least the present sample of adolescents—may exhibit more similar patterns to younger children with regards to life events and EMSs than to adults.

### Gender Differences on Behavioral Problems

Briefly, an unexpected finding concerning demographic variables was the higher level of parent-reported conduct problems for females than males in the current sample. Ratings of aggression were higher for males than for females. The gender difference on conduct problems is surprising perhaps until the circumstances surrounding the current sample are considered. The level of aggression in the current sample was gathered via self-report (i.e., Peer Conflict Scale), indicating that males rated themselves higher on aggression than did females. However, conduct problems in this study were parent-reported. Females in the general population are likely rated lower on conduct problems than males (Frick, 1998); however, females who enroll in the program from which the current sample was recruited may be viewed by their parents much more negatively simply due to the factors that led to their involvement in the program. Females engaged in such intervention may be perceived by their parents to be behaviorally deviant compared to their female peers, and therefore, their ratings may be thusly influenced.

### Limitations

In addition to the measurement issues noted above, several additional limitations of the current study should be noted. This study was conducted with an at-risk sample of adolescents in an attempt to attain a sample more likely to have engaged in problem behaviors and more likely to have experienced significant life events than the general population of adolescents. However, the use of an at-risk sample may make these results difficult to generalize to a community sample. In addition, given the large number of analyses and the low effect sizes noted, it is possible that some of the findings were due to chance. The use of the analytic model described by Edwards and Lambert (2007)

should reduce this risk for the full model. However, to further account for this possibility in the reduced models, regressions were only conducted with variables that were theoretically predicted to be related or that were significantly correlated; nevertheless, the findings should be interpreted with the magnitude of effects in mind. Additionally, this study was cross-sectional in nature. The examination of the hypothesized model in a longitudinal design may offer clarification with regards to the temporal relation between CU traits, EMSs, and aggression. Specifically, such research could gain additional information regarding the developmental nature of EMSs and their relation to CU traits and aggression, as well as the experience of negative life events.

#### Conclusions and Future Directions

Consistent with previous research (Domnanovich, 2007; Frick & Dantagnan, 2005), results of the current study indicate that a lack of both callousness and significant life events may reduce the risk of exhibiting a broad range of antisocial behaviors (i.e., conduct problems). Additionally, experiencing a lower level of significant life events may somewhat lessen the risk for exhibiting aggressive behaviors in those who have psychopathy-linked personality features, such as CU traits.

The results also highlight that, in adolescents, EMSs are one mechanism through which CU traits might lead to problem behaviors. Making EMSs the focus of intervention may be useful for youth exhibiting aggression as well as for adolescents who exhibit CU traits but who have not yet engaged in significant problem behaviors. In short, interventions aimed at decreasing current or future problem behaviors may be able to target individuals with a personality style (i.e., CU traits) that is associated with these behaviors and endeavor to alter maladaptive ways of thinking (i.e., EMSs) that may drive

such behaviors in these individuals. Specifically, it may be reasonable to identify individuals who exhibit EMSs such as Entitlement/Grandiosity (i.e., “I am more important/special than others”) or Abandonment/Instability (i.e., “People I love will never be there for me”) and employ techniques aimed at changing these perceptions of the world rather than simply targeting externalizing behaviors. Future research in this area with children and adults may also be able to clarify the relation between the variables of interest in this study across the life span. Longitudinal research would be of particular use to determine exactly how EMSs develop and change during the course of childhood, adolescence, and adulthood. Information regarding the developmental course of CU traits, EMSs, and life events and their relation to poor behavioral outcomes could play a critical role in the development of programs that can identify those at risk for such behaviors.

## APPENDIX

## IRB APPROVAL FORM



The University of  
Southern Mississippi

Institutional Review Board

115 College Drive #5147  
Hattiesburg, MS 39426-0001  
Tel: 601.266.6820  
Fax: 601.266.3509  
www.usm.edu/irb

**HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE  
NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.  
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **C24111802**

PROJECT TITLE: **Personality Predictors of Behavioral Outcomes in a Group of At-Risk Adolescents**

PROPOSED PROJECT DATES: **02/01/07 to 02/28/08**

PROJECT TYPE: **Change in Previously Approved Project**

PRINCIPAL INVESTIGATORS: **Chris Barry**

COLLEGE/DIVISION: **College of Education & Psychology**

DEPARTMENT: **Psychology**

FUNDING AGENCY: **N/A**

HSPRC COMMITTEE ACTION: **Change to a Previously Approved Project**

PERIOD OF APPROVAL: **02/12/07 to 02/11/08**

  
Lawrence A. Hosman, Ph.D.  
HSPRC Chair

2-12-07  
Date

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