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The Role of Distress Tolerance in Aggressive Behavior

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THE UNIVERSITY OF SOUTHERN MISSISSIPPI

THE ROLE OF DISTRESS TOLERANCE IN AGGRESSIVE BEHAVIOR

by

Anne Winston McIntyre

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

August 2013
ABSTRACT
THE ROLE OF DISTRESS TOLERANCE IN AGGRESSIVE BEHAVIOR
by Anne Winston McIntyre
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Berkowitz (1989) proposed that the degree of negative affect experienced following a frustrating event determines whether one will respond aggressively, suggesting that one possesses a certain amount of tolerance for distressing emotions. However, little research has been conducted on the relation between distress tolerance and aggression. Moreover, no published study has examined the relation between distress tolerance and behavioral aggression using a multi-modal assessment approach, nor examined the potential mediating role of negative affect in the relation between distress tolerance and aggression. To address this gap in the literature, college students ($N = 87$) aged 18 to 49 years ($M = 20.93, SD = 4.65$) completed self-report measures assessing aggressive behavior and tendencies, general negative affect, and ability to tolerate distressing emotions. In Phase II, participants completed two ostensibly frustrating and difficult laboratory tasks assessing distress tolerance. After completing these tasks, participants completed a measure of negative affect as well as a reaction-time task against a fictitious opponent assessing aggressive behavior in the laboratory. It was predicted that (1) self-reported aggression would be positively related to behavioral aggression, (2) distress tolerance would be inversely related to aggressive behavior, (3) general negative affect would mediate the relation between self-reported distress tolerance and aggression, and (4) pre- to post-task change in negative affect as well as overall post-task negative
affect would mediate the relation between distress tolerance and aggressive behavior observed in the laboratory. Results indicated that most self-report measures of aggression were positively related to behavioral aggression. Distress tolerance was inversely related to most self-report measures of aggression as well as average aggression in the laboratory. Nevertheless, none of the mediational models were significant. Theoretical and clinical implications, limitations, and suggestions for future research are discussed.
THE UNIVERSITY OF SOUTHERN MISSISSIPPI

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AGGRESSIVE BEHAVIOR

by

Anne Winston McIntyre

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

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Researchers and theorists have long been interested in the role of distress tolerance and related constructs, such as frustration, on such impulsive behaviors as aggression and non-suicidal self-injurious behavior. Distress tolerance is defined in the literature as the ability to withstand aversive states, which include physical discomfort, uncertainty, ambiguity, frustration, and negative emotions (Zvolensky, Vujanovic, Bernstein, & Leyro, 2010). However, research on distress tolerance has focused primarily on the relation between distress tolerance and self-injurious and suicidal behaviors (e.g., Anestis, Bagge, Tull, & Joiner, 2011; Gratz et al., 2011; Nock & Mendes, 2008). Consequently, the relation between distress tolerance and aggressive behavior needs further empirical examination. No known study has examined the relation between distress tolerance and aggressive behavior using a multi-method approach to assessing this relation. Thus, the aim of the current study was to provide a more comprehensive examination of this relation by using both self-report measures and laboratory tasks to assess each of these constructs as well as to examine negative affect as a potential mediator between distress tolerance and aggression.

History of the Role of Frustration in Psychology

During the 1930s researchers gained interest in the concept of frustration, including how this construct should be defined and various behavioral responses to frustration. Britt and Janus (1940) summarized the existing literature on frustration in an attempt to develop a tentative set of frustration “criteria” (p. 452). In their review, they concluded that a situation becomes frustrating if it involves a barrier, obstruction, or
interference with one’s goal-attainment and reward-expectation (Britt & Janus, 1940). They suggested that frustration cannot be defined as a mutually exclusive process but that it should instead be defined as an interaction between a stimulus and the organism’s response to that stimulus. Specifically, according to Britt and Janus (1940), frustration is defined as the interaction between a physical, social, personal, or environmental stimulus that involves obstruction of an organism’s activity and an organism’s emotional or primitive response to that stimulus, which is characterized by a “change in tension, disturbance of homeostasis, and maladaptation,” and often manifests into anger, withdrawal, or aggression (p. 453).

This definition of frustration was influenced by the frustration-aggression hypothesis, which was originally formulated in 1939 by researchers Dollard, Doob, Miller, Mowrer, and Sears (Britt & Janus, 1940). The frustration-aggression hypothesis proposes that frustration, which, according to this hypothesis, occurs when an individual perceives that a stimulus is interfering with him or her reaching a desired goal, always leads to aggressive behavior (Dollard et al., 1939). Furthermore, Dollard et al. (1939) suggested that aggressive behavior is always preceded by the experience of frustration.

Frustration and Aggressive Behavior in Humans

Behavioral models of aggression have been developed to determine the relation between frustration and aggression in non-human animals. Azrin, Hutchinson, and Hake (1966) were among the first to demonstrate empirically that inducing frustration in non-human animals, which was achieved by discontinuing a positive reinforcement schedule, produces a significant increase in aggressive behavior toward other animals. As a control condition, pigeons were initially placed in the cage with a response key that did not produce a food reward; thus, this condition did not shape the pigeons to peck the response
key to receive a food reward. During this control condition, an intruder pigeon was placed in the cage along with the resident pigeon and then aggressive behavior toward the intruder pigeon was assessed. The next condition involved shaping the pigeon to peck a response key, which produced a food reward. Once the peck responses were stable the experimenters initiated the extinction condition by discontinuing the reinforcement schedule. During the extinction condition, an intruder pigeon was once again placed in the resident pigeon’s cage (along with the response key) and then aggressive behavior toward the intruder pigeon was assessed. Results showed that aggression toward the intruder pigeon occurred significantly more frequently during the extinction condition than during the control condition. Azrin et al. (1966) suggested that the extinction condition generated a frustrating experience for the pigeons given that their goal of receiving a food reward was thwarted. According to their results, the pigeons’ frustration directly elicited aggressive behavior toward the intruder pigeon, who might have been viewed by the resident pigeon as the obstacle between the peck response and the receipt of food.

De Almeida and Miczek (2002) sought to extend the existing animal models of frustration and aggression by examining whether a frustrating event (i.e., omission of scheduled reinforcement) resulted in an escalation of aggressive behavior against an opponent using adult male mice. In this experiment, each mouse learned to poke a sensor with its nose to receive a delivery of sucrose (i.e., table sugar). Before the extinction process began, each nose-poke response was reinforced with sucrose. When nose-poke responses were stable the experimenters initiated twice-per-week extinction sessions for a selected group of mice. During the extinction sessions, nose-poke responses were
reinforced only three times per session. Five minutes following the end of the extinction or non-extinction sessions, an intruder mouse was placed in each mouse’s cage while the response panel used for the nose-poke responses was also kept in the resident mouse’s cage. Aggressive behavior was assessed after the intruder mouse had been placed in the cage. Results of this study showed that the mice who experienced reinforcement extinction attacked and threatened intruder mice more frequently than mice who did not experience reinforcement extinction. Along with Azrin et al.’s (1966) findings, these results are in line with Dollard et al.’s (1939) frustration-aggression hypothesis, as the mice whose goal of attaining sucrose was obstructed (i.e., extinction condition) acted out aggressively toward the intruder mouse, whereas the mice whose goal of attaining sucrose was not obstructed (i.e., control condition) typically did not show aggressive behavior toward the intruder mouse.

Based on these similar findings, de Almeida and Miczek (2002) suggested that organisms with a low threshold for frustration—or low frustration tolerance—may be more likely to engage in aggressive behavior against others. The idea that low frustration tolerance influences the display of aggressive behavior is discussed below.

Human models of the frustration-aggression link have also been examined. For example, Deater-Deckard and colleagues (2010) examined the relation between frustration/anger (FA) and overt aggressive behavior in children. Additionally, they investigated the role of approach/positive anticipation (AP), which is described in their study as sensitivity to potential rewards in the environment. The authors were interested in both AP and FA because both variables can be applied to the frustration-aggression hypothesis given that the authors predicted that AP, FA, and overt aggressive behavior
would be positively related to each other (Deater-Deckard et al., 2010). Specifically, the authors suggested that as reward anticipation increases, frustration increases if the reward is blocked, which then increases the likelihood of overt aggressive behavior (Deater-Deckard et al., 2010). In this study, the researchers asked parents to rate their child or children in terms of FA and AP tendencies, which were assessed using the Child Behavior Questionnaire-Short Form (CBQ-SF). Aggression was assessed using mothers’ ratings of children on the Aggression subscale of the Child Behavior Checklist (CBCL). Results of this study showed that children’s FA tendencies were positively related to children’s overt aggressive behavior. This finding was demonstrated in both boys and girls. In a separate set of analyses, FA acted as a partial mediator in the relation between AP and overt aggressive behavior, suggesting that FA explains a substantial portion of the variance between AP and overt aggression (Deater-Deckard et al., 2010). This particular finding indicates that appetitive, reward-sensitive tendencies in children lead to increased frustration presumably because children with these tendencies become more frustrated when obstacles interfere with their ability to obtain a reward (Deater-Deckard et al., 2010). The authors suggest that this frustration in turn increases the likelihood of overt aggressive behavior (Deater-Deckard et al., 2010). The authors’ findings appear to be consistent with Dollard et al.’s (1939) frustration-aggression hypothesis.

A growing number of researchers have attempted to understand the frustration-aggression link by manipulating frustration using laboratory tasks. For example, a study by Williams (2009) sought to understand the separate and combined effects of frustration and exposure to violent content on feelings of hostility. State hostility, which Williams (2009) used as a dependent variable in his study, has been defined as a negative
emotional state involving feelings of aggravation, discontentment, frustration, irritability, anger, and disgust (Anderson, Deuser, & DeNeve, 1995). Williams (2009) used state hostility as the dependent variable (instead of physical aggression) because hostility consists of the same cognitive and affective components that are typically present when one aggresses against another individual but, unlike aggression, hostility does not involve harming another person. In this study, Williams (2009) assigned participants to one of four groups: a frustrating and violent video game, a frustrating, non-violent video game, a violent, non-frustrating video game, or a non-violent and non-frustrating video game. After each game, participants completed a questionnaire assessing state hostility (State-Trait Anger Expression Inventory-2; STAXI). Williams (2009) hypothesized that participants who were exposed to the frustrating, non-violent video game would score higher on the state hostility subscale of the STAXI than participants who were exposed to the non-frustrating, non-violent video game. Additionally, he expected that frustrating content or violent content would exacerbate ratings on the state hostility subscale of the STAXI. The results of this study supported his first hypothesis that participants who were exposed to a frustrating, non-violent video game would generate stronger feelings of hostility than participants who were exposed to a non-frustrating and non-violent game. Furthermore, comparisons of effect sizes revealed that frustrating content had a substantially greater effect on feelings of hostility than did violent content (Williams, 2009). In fact, the effect size of the frustrating, non-violent video condition was more than double the effect size of the violent, non-frustrating condition. This finding may suggest that frustration could lead to feelings of hostility and anger independent of violent content (Williams, 2009).
Taken together, the frustration-aggression hypothesis is supported by numerous animal and human studies that have examined the resulting behaviors following a frustrating stimulus. These studies have altogether demonstrated that stronger feelings of frustration lead to increased aggressive behavior toward others as well as increased feelings of hostility and anger.

**Theoretical Link Between Frustration and Aggressive Behavior**

The act of aggressive driving on roadways, or “road rage,” has been explained in terms of Dollard et al.’s (1939) frustration-aggression model (Shinar, 1998, p. 137). For example, Shinar (1998) proposed that aggressive driving behavior is simply a manifestation of experiencing the frustrating event of traffic congestion and delays. During rush-hour, for example, traffic congestion and delays are at their peak, which purportedly serves as interference for motorists in terms of their desired goal of arriving at their destination (Shinar, 1998). As suggested by Shinar (1998) and consistent with the frustration-aggression hypothesis, motorists perceive the existence of obstacles (e.g., other automobiles, red lights) as interfering with their goal-attainment, leading motorists to experience frustration, which is followed by acting out aggressively toward other drivers. However, this theory has been challenged by Lajunen, Parker, and Summala (1999), who provided evidence that traffic congestion does not increase driver aggression. They suggested that traffic congestion instead causes an increase in driver stress and frustration, but that these emotions do not necessarily lead to aggressive driving behavior (Lajunen et al., 1999). Hennessy and Wiesenthal (1999) validated Lajunen et al.’s (1999) claims by demonstrating that driver stress and frustration are positively related to traffic congestion. In other words, high-congested areas produce
higher levels of driver stress and frustration than low-congested areas (Hennessy & Wiesenthal, 1999). Furthermore, Hennessy and Wiesenthal’s (1999) results showed that driver stress and frustration were positively related to aggressive driving behavior. These findings suggest that stress and frustration better predict aggressive behavior than whether a person has encountered a frustrating or stressful stimulus. Namely, the higher the driver stress and/or frustration becomes, the more likely motorists will drive aggressively (Hennessy & Wiesenthal, 1999).

Taking these findings into consideration, it seems that Dollard et al.’s (1939) frustration-aggression hypothesis may be insufficient to explain the relation between frustrating environmental events and aggression. Dollard et al.’s (1939) frustration-aggression hypothesis is still being used as a basis for some aggression research (e.g., Shaykhutdinov, 2011; Williams, 2009); however, this hypothesis was criticized theoretically by Berkowitz (1989) and several other researchers, including Albert Bandura (1973; see below). As mentioned previously, Dollard et al. (1939) proposed that all aggression can be traced to a frustrative experience. In contrast, Berkowitz (1989) emphasized that several other processes affect aggressive responses to frustration. Specifically, he suggested that social learning and individual differences influence whether a person responds aggressively to a frustrative event.

Berkowitz’s (1989) ideas stemmed from Bandura, Ross, and Ross’ (1961) Bobo Doll experiment, in which social learning altered the readiness to respond aggressively to certain stimuli. Bandura et al.’s (1961) experiment demonstrated that frustration is not the only factor leading to the display of aggressive behavior. Bandura (1973) later criticized the original frustration-aggression hypothesis, suggesting that frustration simply
generates emotional arousal and that social learning history is what determines how the organism will react to such arousal. Berkowitz (1989) also suggested that attribution style affects one’s response to frustration, as an individual is more likely to display aggressive behavior if he or she perceives that he or she is being frustrated deliberately, or intentionally provoked. Thus, if an individual perceives that someone is interfering with his or her goal-attainment purposefully and unjustifiably, he or she will be more likely to respond aggressively than if he or she perceives that the obstacle to his/her goal-attainment was unintentional or unpreventable (Berkowitz, 1989).

Because of the perceived limitations of Dollard et al.’s (1939) frustration-aggression hypothesis, Berkowitz (1989) reformulated this hypothesis and renamed it the cognitive-neoassociationistic model. This model proposes that frustration is an aversive and unpleasant event, which instigates, or primes, aggressive responses (Berkowitz, 1989). Moreover, the cognitive-neoassociationistic model suggests that frustration produces aggressive behavior only to the extent that the feeling of frustration is aversive to the organism affected (Berkowitz, 1989). As such, Berkowitz (1989) stated that “…all frustrations are not equally bothersome” which implies that the same frustrative event can be experienced differently by different individuals (p. 68). He goes on to suggest that “…it is not the exact nature of the aversive incident that is important but how intense the resulting affect is” (p. 68).

Berkowitz’s (1989) statements can be interpreted to mean that each individual differs in terms of his or her frustration tolerance, suggesting that a lower threshold for frustrative experiences results in stronger negative affect during frustrative experiences. According to Berkowitz’s (1989) model, it is the degree of this negative affect, as
opposed to simply experiencing an environmental event that could be perceived as frustrating, that determines whether an individual responds aggressively. This idea is in line with Hennessy and Wiesenthal’s (1999) findings on aggressive driving behavior, which were discussed previously. Their results demonstrated that stronger negative affect, or higher levels of driver stress and frustration, predicted aggressive driving behavior. Thus, their study showed that it was the degree of negative affect (and not simply experiencing frustration) that predicted whether individuals responded aggressively (Hennessy & Wiesenthal, 1999).

Distress Tolerance and Its Correlates

As mentioned previously, the degree of negative affect that one experiences during a frustrative event is, when considered intuitively, determined by one’s tolerance for negative affect. Of course, the lower one’s tolerance for frustration, the more strongly they will experience negative affect in the event of a frustrating experience. Frustration tolerance, which is often referred to more broadly in the extant research as distress tolerance, has gained considerable attention in the literature (Zvolensky et al., 2010). Distress tolerance is defined as the behavioral act of withstanding negative emotional or other aversive states (Zvolensky et al., 2010). It is suggested that distress tolerance, as a construct, comprises several components, including tolerance of uncertainty, tolerance of ambiguity, tolerance of frustration, tolerance of negative emotion, and tolerance of physical discomfort (e.g., immersing one’s hand in ice water; Zvolensky et al., 2010). Distress tolerance has been implicated in various forms of psychopathology (e.g., Anestis, Selby, Fink, & Joiner, 2007; Ellis, Fischer, & Beevers, 2010; Iverson, Follette, Pistorello, & Fruzzetti, 2011) as well as treatment dropout in individuals with substance
use disorders (Daughters et al., 2005). There is growing evidence suggesting that low
distress tolerance is associated with dysregulated eating behaviors, particularly bulimic
symptomatology (Anestis et al., 2007), as well as borderline personality disorder (BPD; Iverson et al., 2011), major depressive disorder (MDD; Ellis et al., 2010), and posttraumatic stress disorder (PTSD; Vujanovic, Marshall-Berenz, & Zvolensky, 2011).

Additionally, a recent examination of distress tolerance revealed that antisocial
personality disorder (ASPD) and psychopathy are characterized by low distress tolerance
and high distress tolerance, respectively (Sargeant, Daughters, Curtin, Schuster, & Lejuez, 2011). Although ASPD and psychopathy are related and sometimes co-occurring constructs, individuals with ASPD who are low on psychopathic traits typically exhibit low distress tolerance (Sargeant et al., 2011). The authors suggested that the emotional hypo-reactivity, diminished physiological arousal, and emotional detachment characteristic of psychopathy altogether explains the reason for higher levels of distress tolerance in psychopathic individuals (Sargeant et al., 2011). Nevertheless, more work is needed in this area to more clearly understand the relation between distress tolerance and antisocial behavior. Given the general relation between aggression and antisocial behavior (American Psychiatric Association, 2000), in addition to examining aggressive behaviors and tendencies, the current study will examine life history of antisocial behavior as an outcome.

Distress tolerance has also been studied as a variable influencing the severity of BPD symptoms (Iverson et al., 2011). Iverson and colleagues (2011) examined the differential effect of self-reported distress tolerance (i.e., the perceived capacity to withstand distress; Zvolensky et al., 2010) and behavioral distress tolerance (i.e., the
behavioral act of withstanding distress) on BPD symptom severity. Distress tolerance has been assessed behaviorally in laboratory settings by measuring how long a participant can withstand exposure to various types of unpleasant stimuli (Zvolensky et al., 2010). Iverson and colleagues (2011) assessed behavioral distress tolerance by exposing participants to a difficult and frustrating serial addition task, called the Computerized Paced Auditory Serial Addition Task (PASAT-C; See Distress Tolerance Measures and Procedure for a description of the PASAT-C), then measuring how long participants were willing to persist in the task before terminating. Contrary to the researchers’ hypotheses, their results indicated that self-reported and behavioral distress tolerance does not predict greater BPD symptom severity (Iverson et al., 2011).

These findings are inconsistent with Bornovalova and colleagues (2008), who also examined the relation between BPD and distress tolerance. They employed two behavioral distress tolerance tasks: the PASAT-C and the Computerized Mirror-Tracking Persistence Task (MTPT-C), both of which have shown good evidence of inducing distress in research participants (Bornovalova et al., 2008). The MTPT-C involves tracing increasingly difficult geometric shapes within two narrow lines using a computer mouse that is programmed to move in the opposite direction than that shown on the screen, as if one is viewing the shape through a mirror (See Distress Tolerance Measures and Procedure for a description of the MTPT-C). In line with the Iverson et al. (2011) study, participants were exposed to these tasks to determine how long each individual would persist in the task before terminating. Bornovalova et al.’s (2008) findings supported their hypothesis that individuals diagnosed with BPD would be less willing to tolerate distress on the laboratory measures of distress tolerance. These individuals demonstrated that they
persisted in the PASAT-C and MTPT-C for significantly less time compared to individuals who had not been diagnosed with BPD (Bornovalova et al., 2008). These findings are important to the current study because BPD often involves acts of self-aggression, including non-suicidal self-injurious behavior (American Psychiatric Association, 2000). However, self-aggression was not specifically assessed in the Bornovalova et al. (2008) study. Thus, the current study extends Bornovalova et al.’s findings by examining the relation between distress tolerance and specific history of self-aggression.

A similar study by Ellis et al. (2010) examined the unique effect of depressed mood on level of distress tolerance. The researchers in this study were interested in whether depressed individuals (i.e., participants who scored above a twenty on the Beck Depression Inventory – II; BDI-II) exhibited lower levels of distress tolerance during two frustrating laboratory tasks compared to non-depressed individuals (i.e., participants who scored twelve or below on the BDI-II). In line with previous studies, Ellis et al. (2010) used the PASAT-C and MTPT-C to assess behavioral distress tolerance, or willingness to persist in a frustrating or distressing laboratory task, and operationally defined distress tolerance as the amount of time participants persisted in each task. Participants completed the Profile of Mood States (POMS) self-report questionnaire before and after completing the PASAT-C and MTPT-C to assess any change in mood state caused by the tasks. Ellis et al.’s (2010) results provided evidence that depressed individuals are less willing to tolerate stressful tasks and thus exhibit lower distress tolerance. Specifically, the depressed group terminated the MTPT-C (although not the PASAT-C) sooner than non-depressed individuals, suggesting that dysphoric mood can reduce one’s tolerance for
distress (Ellis et al., 2010). Depressed individuals also showed a significantly larger increase in anger following the PASAT-C and MTPT-C compared to non-depressed individuals. Although depressed individuals did not differ in post-task sadness or anxiety compared to non-depressed individuals (Ellis et al., 2010), the findings that depressed individuals had lower distress tolerance and that anger among depressed individuals increased in response to the frustrating tasks underscores the importance of negative affect in relation to distress tolerance. The relation between distress tolerance and negative affect, as well as the role negative affect may further play in aggressive outcomes, are further examined in the current study.

As mentioned earlier, previous research demonstrates that individuals with a low tolerance for distress are more prone to engage in self-injurious behavior (e.g., Anestis et al., 2011; Gratz et al., 2011; Nock & Mendes, 2008). Certain individuals may respond to stress-inducing events with higher levels of emotional reactivity and, thus, experience more aversive thoughts, emotions, and physiological states (e.g., due to low distress tolerance), which may lead to the use of self-injurious behavior presumably because it leads to a reduction (albeit temporarily) in the physiological arousal and emotional reactivity brought about by the distress (Najmi, Wegner, & Nock, 2007). Nock and Mendes (2008) found that adolescents reporting a history of self-injurious behavior had significantly lower distress tolerance measured behaviorally in the laboratory (i.e., how long they persisted on a frustrating card sorting task measured by how many cards they attempted to sort before quitting) than adolescents who did not have a history of engaging in self-injury. Notably, the self-injurious group also showed greater changes in skin conductance across the frustrating task—consistent with having higher physiological
arousal to a frustrating event (Nock & Mendes, 2008). Such findings are relevant in the context of the current study in that self-injury is a form of aggression (i.e., toward the self). The link between self-injury and negative affect is also pertinent in the context of the current study. For example, individuals higher in emotional reactivity have been shown to demonstrate larger decreases in negative affect in a laboratory setting following a pain induction compared to individuals lower in emotional reactivity, which may explain the use of self-injurious behavior to regulate affect (Bresin, Gordon, Bender, Gordon, & Joiner, 2010). Such findings further highlight the potential for self-aggression, particularly non-suicidal self-injurious behavior, to result from the negative affect brought about by low distress tolerance. As such, the current study will examine life history of self-aggression as one of the outcomes in the conceptual model.

Distress tolerance relates to other behavioral outcomes that could be self-destructive as well. For example, there is evidence that individuals with low distress tolerance often cope with feelings of distress using alcohol and/or other substances (Vujanovic et al., 2011). As such, distress tolerance has been implicated as having a role in substance use disorders and treatment dropout for substance-dependent individuals (Brown et al., 2009; Daughters et al., 2005). A recent study by Vujanovic et al. (2011) examined the relation between alcohol use and PTSD symptom severity (with both of which low distress tolerance is shown to be associated). Prior to Vujanovic et al.’s (2011) study, it had been suggested, but not confirmed empirically, that individuals with PTSD have a low tolerance for distressing emotions given the nature of the disorder, which then contributes to the motivation to cope with negative affect using alcohol and/or related substances (Vujanovic et al., 2011). Thus, Vujanovic and colleagues (2011) sought to
clarify the relation between distress tolerance, trauma history, and alcohol use. They recruited individuals who met criteria for PTSD and who had consumed alcohol within the past month. Participants completed the Distress Tolerance Scale (DTS), which is a self-report measure designed to assess perceived capacity to withstand emotional distress, and self-report measures assessing emotion dysregulation, frequency and quantity of alcohol use, and motivation for alcohol use (e.g., to have more fun, to cope with anxiety; Vujanovic et al., 2011). Their findings confirmed that individuals with PTSD have a low tolerance for emotional distress, which contributes to their motivation to use alcohol to cope with distressing emotions (Vujanovic et al., 2011). This finding was above and beyond the effect of other variables associated with alcohol use problems and posttraumatic stress (e.g., difficulties in regulating emotion). Moreover, their results showed that distress tolerance partially mediated the relation between posttraumatic stress and the motivation to use alcohol for coping reasons.

Taken together, distress tolerance and resulting negative affect have been implicated as playing a role in various forms of psychopathology and emotion regulation strategies, such as aggression, self-aggression, and substance abuse. These findings are relevant as the current study seeks to extend the previous research by specifically assessing the relations among distress tolerance, negative affect, and various forms of aggression using a multi-measure approach.

Current Study

If Berkowitz’s theory that the degree of negative affect determines whether aggression ensues is correct, and if distress tolerance affects the degree to which one experiences negative affect (Ellis et al., 2010), then it can be argued that distress tolerance is the underlying process that connects a frustrating event to the display of
aggressive behavior and determines the likelihood of an individual acting aggressively. That is, in the face of a seemingly frustrating environmental stimulus, an individual’s level of distress tolerance for that stimulus will relate to their level of aggressive behavior through the negative affect produced by the distress. It is this idea on which the proposed study is based. Given that distress tolerance affects the degree to which one experiences negative affect (Ellis et al., 2010), then, if Berkowitz’s theory is accurate, individuals with lower distress tolerance should have a greater life history of aggression and act more aggressively in the laboratory, and negative affect should mediate this relation. However, to our knowledge this relation has not been examined, as previous research on distress tolerance has primarily focused on its relation to substance use and other forms of psychopathology (Anestis et al., 2007; Brown et al., 2009; Daughters et al., 2005; Ellis et al., 2010; Iverson et al., 2011; Sargeant et al., 2011; Vujanovic et al., 2011). Thus, research on distress tolerance as it relates to the construct of aggression is limited. Furthermore, research involving behavioral assessments of distress tolerance, such as the PASAT-C and MTPT-C, is also relatively limited. To date, no known study has employed a behavioral distress tolerance task to assess the relation between distress tolerance and overt aggressive behavior. Moreover, no known study has employed both self-report measures and laboratory measures of distress tolerance and aggressive behavior to elucidate the relation between these variables. Thus, the current study seeks to provide further insight into the relation between distress tolerance and aggression by employing a multi-method approach to assessing each of these constructs and by examining the potential mediating role of negative affect in this relation.
Hypotheses

It was expected that life history of aggression, life history of self-aggression, life history of antisocial behavior, aggressive ideations and tendencies, average aggression in the laboratory, and use of extreme aggressive responses in the laboratory would all be positively related (Hypothesis One). It was also expected that self-reported distress tolerance, as well as distress tolerance in the laboratory, would be inversely related to self-reported aggression (i.e., life history of aggression, life history of self-aggression, life history of antisocial behavior, and aggressive ideations and tendencies), average aggression in the laboratory, and use of extreme aggressive responses in the laboratory (Hypothesis Two). Furthermore, it was predicted that general negative affect would mediate the relation between self-reported distress tolerance and self-reported aggression (i.e., life history of aggression, life history of self-aggression, life history of antisocial behavior, and aggressive ideations and tendencies; Hypothesis Three). Finally, it was expected that pre- to post-task change in negative affect as well as overall post-task negative affect would each (separately) mediate the relation between distress tolerance and aggressive behavior (average aggression and use of extreme aggressive responses) observed in the laboratory (Hypothesis Four).
CHAPTER II

METHODOLOGY

Participants

For Phase One, the experimenter collected data from 861 college students at least eighteen years of age through an online recruitment system. For Phase Two—the focus of the current study—eighty-seven participants were recruited from the Phase One sample. Participants were seventy-six women (87.4%) and eleven men (12.6%) ages eighteen to forty-nine years ($M = 20.93, SD = 4.65$). Racial composition of this sample was 51.7% Caucasian, 39.1% African American, 4.6% Asian, 1.1% American Indian, and 3.4% Other. Most participants were never married (90.8%). Average income was less than $10,000. Approximately one-fourth of participants reported no income.

Exclusionary criteria included a hearing or visual impairment that is not corrected, neurological or cognitive deficits (e.g., epilepsy or significant closed head injury), alcohol or drug dependence, current major depression, life history of bipolar disorder or psychosis, or use of psychiatric medication within the past two months.

Measures

Aggression Measures

Laboratory aggression was assessed using the Taylor Reaction-Time Task (TRT), a behavioral measure of aggression designed for use in a controlled laboratory setting. In addition to the TRT, two self-report measures, including the Life History of Aggression (LHA; Appendix A) inventory and the Buss-Perry Aggression Questionnaire (BPAQ; Appendix B), were used to assess the frequency and intensity of past aggression as well as aggressive ideations and tendencies.
The TRT, also referred to as the Taylor aggression paradigm (TAP; Taylor, 1967), is a well-validated (e.g., Giancola & Chermack, 1998) behavioral measure of aggression in which the participant interacts with an increasingly provocative fictitious opponent during a reaction-time task involving the receipt and delivery of electric shock. During the TRT, the experimenter presents participants with a fictitious story that they are competing against an individual in the adjoining room (a fictitious opponent) in a reaction-time game. A more detailed description of the TRT appears in the Procedures section.

The LHA is an eleven-item self-report measure designed to assess the frequency and intensity of aggressive, self-aggressive, and antisocial behavior during one’s lifetime. Items are rated on a five-point scale based on the number of occurrences of the behavior [0 = never happened; 1 = only happened once; 2 = happened a couple of times (2-3); 3 = happened several times (4-9); 4 = happened many times (10+); 5 = happened so many times I couldn’t give a number]. Note that for the current study, the LHA scale was administered in online self-report questionnaire form rather than in semi-structured interview form (as it is typically administered). However, items on the questionnaire were worded exactly as they appear in the semi-structured interview format. The LHA consists of three subscales: the Aggression (AG) subscale, the Self-Aggression (SA) subscale, and the Antisocial Behaviors (AB) subscale. To obtain the total LHA score, if desired, the three subscales are summed. The AG subscale was used to assess history of other-directed aggressive behavior. The AG subscale consists of five items: (a) verbal aggression, (b) aggression toward objects or animals, (c) physical fighting, (d) physical
assaults against people, and (e) temper tantrums. The Self-Aggression (SA) subscale consists of two items that assess history of self-aggressive behavior: (a) non-suicidal self-injurious behavior, and (b) suicide attempts. The AB subscale assesses history of antisocial behavior, and it consists of four items: (a) school disciplinary problems, (b) problems with vocational supervisors (e.g., firings), (c) antisocial behavior not involving the police (e.g., selling drugs, driving under the influence of drugs and/or alcohol), and (d) antisocial behavior involving the police (e.g., being arrested or convicted). The AG, SA, and AB subscales were each used as aggression outcome variables for the proposed study.

Coccaro et al. (1997) demonstrated that the AG subscale has shown good interrater agreement (intraclass correlation = .94), internal consistency (\(\alpha = .87\)), and test-retest reliability (\(r = .80\)). The AB subscale has demonstrated good interrater agreement (intraclass correlation = .88) and test-retest reliability (\(r = .89\)), and adequate internal consistency (\(\alpha = .74\)). The SA subscale has shown good interrater agreement (intraclass correlation = .84) and test-retest reliability (\(r = .97\)). Overall, the LHA has shown good test-retest stability, interrater agreement, and internal consistency for the total LHA total score and for the AG and AB subscores. In the current study, the LHA total score demonstrated good internal consistency (\(\alpha = .88\)). The AG (\(\alpha = .80\)), SA (\(\alpha = .78\)), and AB (\(\alpha = .85\)) subscales also showed acceptable to good internal consistency.

Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992). The BPAQ is a twenty-nine-item self-report measure that is widely used to assess aggressive ideations and likelihood of committing various aggressive acts. Items are rated using a five-point Likert scale, ranging from one (not like me at all) to five (very much like me).
The BPAQ consists of four subscales, established on the basis of factor analyses:
Physical Aggression (PA, nine items), Verbal Aggression (VA, five items), Anger (AN, seven items), and Hostility (HS, eight items). Higher subscale and total scores indicate a greater likelihood of engaging in an aggressive act. For the current study, the verbal and physical aggression scales were standardized (z-scored) and averaged to form a composite that measured aggressive ideations and tendencies but that excluded hostility and anger due to their relation to the hypothesized mediator (i.e., negative affect). The BPAQ has shown good internal consistency for the total BPAQ score ($\alpha = .89$; Buss & Perry, 1992). For the current sample, the BPAQ verbal and physical aggression composite demonstrated good internal consistency ($\alpha = .88$).

**Distress Tolerance Measures**

The experimenter assessed behavioral distress tolerance using two validated laboratory measures designed to induce frustration in all participants: the PASAT-C and the MTPT-C. Additionally, a self-report measure of distress tolerance (Distress Tolerance Scale; Appendix C) was used to assess history of one’s ability to cope with distress.

*Computerized Paced Auditory Serial Addition Task* (PASAT-C; Lejuez, Kahler, & Brown, 2003). The Paced Auditory Serial Addition Task (PASAT) was originally developed as a measure of cognitive functioning designed to assess auditory information processing speed as well as the ability to perform mental calculations (Gronwall, 1977). More recently, a modified computer version (PASAT-C; Lejuez et al., 2003) has been used as a behavioral measure of distress tolerance given that the task becomes increasingly difficult and frustrating (Ferguson & Rueda, 2010). Specifically, the PASAT-C is a three-level auditory and visual stimulus that is presented to subjects on a
computer screen using a computer program. The task involves adding a series of digits and providing the correct answer using a keyboard on a computer screen. In the current study, a series of digits were presented at a titrated rate based on the speed and accuracy of each participant, controlling for skill and proficiency. Ferguson and Rueda (2010) reported in a debriefing with their sample that the original version of the PASAT was “unpleasant” and “frustrating” (p. 101). The results of a second study by MacPherson, Stipelman, Duplinsky, Brown, and Lejuez (2008) demonstrated that the computerized version of the PASAT significantly increased participants’ psychological distress. A more detailed description of the PASAT-C appears in the Procedures section.

*Computerized Mirror-Tracing Persistence Task (MTPT-C; Strong et al., 2003).* The MTPT-C is a modified computer version of the mirror-tracing persistence task (MTPT), which was originally developed by Quinn, Brandon, and Copeland (1996), that has been used as a behavioral measure of distress tolerance (Schloss & Haaga, 2011). The original task involves tracing increasingly difficult geometric figures while viewing them through a mirror, which has been shown to be difficult and frustrating for participants (Quinn et al., 1996). Additionally, researchers have used the original version of the MTPT to increase subjects’ heart rate, blood pressure, and stress level (Matthews & Stoney, 1988). The modified computer version involves tracing a dot along lines of increasingly difficulty geometric shapes using a computer mouse. To make the task similar to the original version, the computer mouse is programmed to move the dot in the opposite direction than that shown on the screen (i.e., like a mirror). Thus, if the participant moves the mouse down, the dot will move up, and so forth. Both the original version of the MTPT (Brandon et al., 2003) and the computerized version (MacPherson
et al., 2008) have been shown to increase participants’ psychological distress significantly. A more detailed description of the MTPT-C appears in the Procedures section.

Distress Tolerance Scale (DTS; Simons & Gaher, 2005). The DTS is a fifteen-item self-report questionnaire assessing the degree to which individuals experience negative emotions as intolerable. Items are rated on a five-point Likert scale ranging from one (Strongly Agree) to five (Strongly Disagree). The DTS is comprised of four subscales: Tolerance (ability to tolerate negative emotions), Absorption (degree of attentional resources absorbed by the negative emotion and relevant interference with functioning), Appraisal (assessment of the emotional situation as acceptable), and Regulation (ability to regulate emotion). Subscale scores are formed by averaging the response scores for each item in each subscale. These subscales are then used to form the total DTS score. Lower total scores correspond to a tendency to experience psychological distress as intolerable, with higher total scores corresponding to greater levels of distress tolerance. The DTS has demonstrated good convergent validity and discriminant validity (Leyro, Bernstein, Vujanovic, McLeish, & Zvolensky, 2011). In the current study, the DTS total score demonstrated excellent internal consistency (α = .92).

Negative Affect Measures

General negative affect was measured by two self-report measures, which included the Positive and Negative Affect Schedule – Expanded Form [one with directions measuring negative affect on average (Appendix D) and one with directions measuring negative affect at the present moment (Appendix E)] as well as a Dysphoria Scale (Appendix F).
Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson, Clark, & Tellegren, 1988). The PANAS-X is a sixty-item self-report questionnaire assessing degree of positive and negative affective states. The PANAS-X involves assigning a rating to each of sixty different affective states (e.g., happy, timid, alert) describing the extent to which the individual is currently experiencing, or has experienced, these affective states. The PANAS-X comprises two general dimension scales (Positive Affect and Negative Affect) and eleven lower-order scales (Fear, Hostility, Guilt, Sadness, Joviality, Self-Assurance, Attentiveness, Shyness, Fatigue, Serenity, and Surprise). For this study, only the General Negative Affect scale was used to assess the degree to which participants are experiencing negative affect both on average and in the present moment. More specifically, participants rated how afraid, nervous, distressed, hostile, jittery, irritable, ashamed, scared, upset, and guilty they feel both “on average” (Phase One) and “right now”—the latter was administered twice during Phase Two, once before the distress tolerance tasks in the laboratory (pre-task) and once after these tasks (post-task). Ratings were made using a five-point Likert scale format ranging from one (Very Slightly or Not At All) to five (Extremely). Item responses are summed to form the total PANAS-X score. Higher total scores correspond to increased negative affect and lower total scores correspond to decreased negative affect. The General Negative Affect scale of the PANAS-X has demonstrated good convergent and divergent validity and good internal consistency (α = .91; Watson, Clark, & Carey, 1988). For the current sample, alpha coefficients estimating internal consistency of the PANAS-X General Negative Affect Scale total score on all three administrations of this measure were good (general: α = .86; pre-task: α = .71; post-task: α = .73).
Dysphoria Scale (DS; Brown, Lejuez, Kahler, & Strong, 2002). The four-item DS assessed anxiety, irritability, discomfort, and frustration using a Likert scale format ranging from one (Not At All or Very Slightly) to five (Extremely), with a total score derived by summing the scores of each item (Brown et al., 2002). Reliability of this scale from the original study (Brown et al., 2002) was acceptable (α = .77). For the current sample, the DS demonstrated moderate internal consistency on the pre-task administration (α = .62) and good internal consistency on the post-task administration (α = .81).

Demographic and Health History Questionnaire

A demographic and health history form created for the proposed study included the participants’ age, gender, race, marital status, level of education, and socioeconomic status (SES). Along with this demographic information, questions regarding general cognitive and academic ability, visual and hearing impairments, neurological impairments, and details about psychological disorder diagnoses (if applicable) were included (Appendix G).

Procedure

The current study consisted of two phases. All participants provided informed consent prior to participating in both phases of the study (Appendixes H and I). The procedures used in both phases of the study were reviewed by the Institutional Review Board for the Protection of Human Subjects at The University of Southern Mississippi.

In Phase One, which took place in the Fall 2011 and Spring 2012 semesters, students enrolled at The University of Southern Mississippi voluntarily completed five questionnaires [Demographics and Health Information Form, LHA, BPAQ, DTS, and
PANAS-X General Negative Affect Scale (general)] through an online research participation system to earn required course credit or extra credit for one or more psychology courses. In this phase, students indicated whether they were willing to be contacted about completing Phase Two of the study, which they were told would involve a 60-minute laboratory session consisting of two computer tasks and a reaction-time task against an opponent. If the volunteer consented to be contacted about completing Phase Two, the experimenter used the Demographic and Health Information form to screen the volunteer for exclusionary criteria, including visual and/or hearing impairments that are not corrected, neurological or cognitive deficits (e.g., epilepsy or significant closed head injury), alcohol or drug dependence, current major depression, life history of bipolar disorder or psychosis, or use of psychotropic medication within the past two months. If the volunteer was not otherwise excluded based on these criteria, the experimenter contacted the volunteer via email asking whether he or she was interested in completing Phase Two of the study. If the participant agreed to participate in Phase Two, the experimenter scheduled him or her for testing. The experimenter informed the participants that they would earn additional extra credit for participating in the second phase of the study. The date and time of the experiment were confirmed with each participant. The experimenter then asked participants to abstain from alcohol for at least twenty-four hours prior to testing.

Phase Two of the study was conducted in the Clinical Studies Laboratory at The University of Southern Mississippi and took place in the Spring and Summer 2012 semesters. The time lapse between completing Phase One and Phase Two varied by participant. Some participants completed Phase One during the Fall 2011 semester, a
maximum of 5 months prior to completing Phase Two. Other participants completed both Phase One and Two during the Spring 2012 semester, a minimum of one week between completing these separate phases. Upon arrival, the experimenter asked participants to complete a written informed consent form. After obtaining informed consent the experiment began. First, the participant completed the paper and pencil measures, which included the PANAS-X General Negative Affect Scale (current) and the DS, both of which assessed subjects’ current emotional state to obtain a baseline (pre-task). After completing these measures, the participants entered a sound-attenuated room in the laboratory to complete the distress tolerance tasks (PASAT-C and MTPT-C) and the aggression task (TRT). The PASAT-C and MTPT-C were presented (prior to the TRT) in a counterbalanced order. To assess changes in affect from before to after completing the PASAT-C and MTPT-C, participants completed the PANAS-X General Negative Affect Scale and the DS once again after they completed both of these tasks (post-task). Upon completion of the second administration of the PANAS-X General Negative Affect Scale and DS, participants completed the TRT.

*Computerized Paced Auditory Serial Addition Task*

For this task, the experimenter seated the participant in front of a computer screen. Once the participant was seated comfortably, the experimenter then provided verbal instructions on how to complete the task. Participants were informed that they could discontinue the task at any time but that they should use maximum effort to attain the highest score possible and that discontinuing early would affect this overall score. The participant was provided an opportunity to ask questions about the task before it began. Once the participant confirmed that he or she understood the task the participant
pressed the “Begin” button (located on the computer screen) using the computer mouse, which initiated the task. During the PASAT-C, the experimenter sat approximately five feet from the participant (but in the same room) to ensure that the participant understood the task and that he or she was able to terminate the task if/when desired.

The task involved the presentation of three series of single-digit numbers (each series representing a separate level), each of which differs in the speed of number presentation. During the task, numbers were flashed sequentially on a computer screen and participants were instructed to add the current number to the number immediately preceding it. After adding the two numbers, the participant clicked on the correct sum using a keyboard provided on the computer screen. The numbers provided on the keyboard ranged from one to twenty. Once providing the answer, the participant added the next number presented to the number that was presented before it, then again clicked on the correct sum using the keyboard on the computer screen. Thus, participants continued adding the next number to each preceding number.

Prior to the task, the experimenter informed the participant that he or she should not provide a running total of the number series, but only the sum of the last two numbers that were presented. For example, if the first two numbers are two and nine, the participant should click “11” on the keyboard. If the next number is three, the participant should click “12” on the keyboard. If the next number is five, the participant should click “8” on the keyboard. The participant received one point for each correct answer and zero points if an answer was not entered or if an incorrect answer was provided. The total number of points was displayed in a box in the upper right-hand portion of the computer screen. Thus, participants could view whether their score increased with each answer they
provided during the task, which assisted in inducing frustration given that participants’ scores did not tend to increase as the task became more difficult (Wingenfeld, Holdwick, Davis, & Hunter, 1999). To further induce frustration, an “explosion” noise sounded from the computer speakers whenever the participant failed to enter an answer or provided an incorrect response. This noise was set at a moderate volume, as it was only intended to further frustrate the participant rather than startle him or her.

The task consisted of three levels, each level consisting of a different rate of number presentation. As mentioned previously, the version of the PASAT-C used in the current study is designed to control for skill and proficiency of each participant to prevent mathematical ability and other confounding variables (e.g., attentional abilities, reaction time) from interfering with the amount of time each participant is willing to spend performing the task (Lejuez et al., 2003). In other words, the program is designed to make it nearly equal in difficulty for each participant. The first level of the PASAT-C titrates according to skill; if the participant correctly answers a calculation, the next digit is presented 0.5 seconds faster than the previous one (i.e., the latency between number presentations decreases by 0.5 seconds). By contrast, if the participant incorrectly answers a calculation, the next digit is presented 0.5 seconds slower than the previous one (i.e., the latency between number presentations increases by 0.5 seconds). This pattern of titration is continued throughout the first level of the PASAT-C to control for skill and proficiency. Unlike the first level, the second and third levels use a fixed rate of number presentation. Specifically, the second level uses seventy-five percent of the average latency between number presentations from the first level. Similarly, the third level uses fifty percent of the average latency between number presentations from the first level. To
demonstrate, if the average latency between number presentations in the first level is two seconds, then the latency between number presentations will be 1.5 seconds on Level Two and one second on Level Three.

During each level, the participant had the option to terminate the task at any time by clicking a “Quit” box located in the lower middle portion of the computer screen. If the participant did not choose to click “Quit,” the computer program would automatically terminate the task at the end of the third and final trial. In this case, the participant is considered to have “completed” the task. If the participant quits one trial, subsequent trials are not delivered. The duration of the entire task (i.e., the sum of all three trials) lasted approximately twelve minutes.

Each trial of the PASAT-C had a maximum of sixty correct answers (i.e., sixty-one digits are presented during each level), thus the maximum point value for each level was sixty. When the participant terminated/completed the task, the PASAT-C computer program automatically recorded the number of points that the participant accrued during the task by entering the score into a database. Despite the PASAT-C measuring a variety of variables (attentional abilities, mathematical ability), the primary variable used in the current analyses was the latency in seconds to task termination or task completion. In other words, the experimenter was interested in how long, in seconds, the participant persisted in the task either before clicking “Quit,” or the task automatically ending at the end of the final trial.

*Computerized Mirror-Tracing Persistence Task*

The experimenter seated the participant in front of a computer screen. Once the participant was seated comfortably, the experimenter provided verbal instructions on how
to complete the task. Participants were informed that they could discontinue the task at any time but that they should use maximum effort to attain the highest score possible and that discontinuing early would affect this overall score. The participant was provided an opportunity to ask questions about the task before it began. Once the participant confirmed that he or she understood the task the participant pressed the “Begin” button (located on the computer screen) using the computer mouse, which initiated the task. During the MTPT-C, the experimenter sat approximately five feet from the participant (but in the same room) to ensure that the participant understood the task and that he or she was able to terminate the task if/when desired.

Participants were instructed to trace a dot along lines of various shapes using the computer mouse. As mentioned previously, the task was programmed to move the dot on the screen in the opposite direction from the movement of the computer mouse. To further induce frustration, each time the participant moved the mouse out of the lines or stopped moving the mouse for more than two seconds, a buzzer sounded and the dot moved back to the beginning of the shape. There were three levels of the MTPT-C, and each shape presented (one shape per level) became more difficult than the previous one. During each level, the participant had the option to terminate the task at any time by clicking a “Quit” box located in the lower middle portion of the computer screen.

When the participant terminated/completed the task, the MTPT-C computer program automatically recorded the number of errors (i.e., number of times the participant had to return to the starting position during the task) per second that the patient committed during the task. As with the PASAT-C, distress tolerance was the
variable of main interest to the experimenter. This variable was operationally defined as the latency in seconds to task termination or completion.

*Taylor Reaction-Time Task*

Prior to beginning the TRT, participants were seated in front of the reaction-time apparatus (a computer monitor and a keyboard, on which the only keys of interest were the space bar, which represented the reaction time key, and the numbers, which represented the shock levels). The experimenter attached electrodes to each participant’s index and middle fingers on his or her nondominant hand. The experimenter then informed the participant that he or she would be competing in a task against a subject in the adjoining room. Then, the experimenter informed the participant that the task instructions will be presented over an intercom after the experimenter leaves the room. The experimenter then exited the room and, after a short delay, the participant’s shock-tolerance threshold was determined by administering increasingly intense shocks, at 100-mA intervals, until the participant reported that he or she could not tolerate any further increase in shock intensity.

The participant then heard an audiotape seemingly portraying the experimenter determining the shock-tolerance threshold for a same-sex fictitious opponent. The experimenter then provided instructions for the reaction time task via intercom to both competitors. The instructions for the task informed the participant that each trial would involve holding down the space bar on the keyboard using a finger from their dominant hand when prompted by a message on the computer screen. The participant was then informed that a message saying “Release!” would then appear suddenly on the computer screen after several seconds. The participant was given the instruction to release their
finger as quickly as possible when this message appeared. The reaction-time task began after the instructions were read, the shock-tolerance threshold procedure was completed, and the researcher ensured the participant understood the task.

Each participant completed twenty-eight reaction-time trials. The frequency of wins and losses for the participant was preprogrammed at fifty percent by the experimenter and computer-controlled. Participants were not aware that the pattern of wins and losses was preprogrammed by the experimenter. Furthermore, the pattern of wins and losses was identical for each participant. For each participant, one initial trial was followed by four six-trial blocks of increasing provocation by the fictitious opponent. Before each trial, the participant was instructed to press one of twelve buttons on the keyboard to select a shock level (zero, one, two, three, four, five, six, seven, eight, nine, ten, or twenty). The fictitious opponent also ostensibly pressed one of twelve buttons on a keyboard to select a shock level (also zero, one, two, three, four, five, six, seven, eight, nine, ten, or twenty). The person (participant or fictitious opponent) who was preprogrammed to have the slower reaction time on that trial—which was considered a loss—received the shock set by the other person before the trial. The faster person did not receive a shock but saw what shock level the other person had set via a message on the computer screen. The ten-shock was equivalent to the participant’s shock-tolerance threshold. The nine-shock was set at ninety-five percent of this shock-tolerance threshold, the eight-shock at ninety percent, and so forth. The twenty-shock ostensibly administered a “severe” shock. Each participant was informed during the instruction portion of the task that the “20” shock would equal “twice the intensity” of the participant’s shock-tolerance threshold.
threshold and “may cause minor tissue damage that would heal quickly.” For the ‘‘0’’ response, no shock was supposedly administered.

The average shocks set by the fictitious opponent in Blocks one, two, three, and four were preprogrammed to be 2.5, 5.5, 8.5, and 8.5, respectively. The second and third blocks were each preceded by a trial, on which the fictitious opponent selected a shock of intermediate intensity (four and seven, respectively) to smooth the transition between blocks. However, between the third and fourth blocks, the fictitious opponent selected a twenty-shock for the participant, which was considered extreme provocation. The participant was preprogrammed to win this trial and, therefore, did not receive the twenty-shock. Participants were not aware that the pattern of the shock intensities that they received was experimentally manipulated to give the appearance of an increasingly aggressive encounter from the fictitious opponent. The researcher monitored the testing room via camera for the duration of the task. Responses indicative of aggressive behavior and tendencies were operationally defined as the magnitude of the average shock level set for the “opponent” and whether the twenty-shock was ever used against the “opponent.”
CHAPTER III
ANALYSIS OF DATA

Variables of Interest

In the current study, the primary variables for aggression included life history of aggression (self-reported), life history of self-aggression (self-reported), life history of antisocial behavior (self-reported), aggressive ideations and tendencies (self-reported), average aggression in the laboratory (behavioral), and whether an extreme aggressive response was used in the laboratory (behavioral). The variables based on self-report were collected during Phase One, whereas the behavioral measures of aggression were collected during Phase Two.

It should be noted that total use of extreme responses in the laboratory (i.e., number of “20” shocks used) is included in Table 1 to show its descriptive properties, but it was not used in that form in the remaining analyses because this variable contained an unacceptable amount of skewness and kurtosis. Instead, a new binary variable (also included in Table 1) was created based on whether or not a “20” shock was used; it is this variable that was used in the remaining analyses for the measure of extreme aggression in the laboratory. Also, two self-reported aggression variables (life history of aggression and life history of antisocial behavior) demonstrated moderately high skewness due to a high base rate of zero for each of these scales, which may be commonly found with these behaviors as many individuals may not engage in these types of aggressive behaviors. There were outliers for each of these scales but excluding the outliers did not change the level of skewness. It was deemed not necessary to artificially dichotomize these variables.
Table 1

**Descriptive Statistics for Primary Variables of Interest**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life History Aggression (^a)</td>
<td>0</td>
<td>25</td>
<td>9.21</td>
<td>5.89</td>
<td>.76</td>
<td>.41</td>
</tr>
<tr>
<td>Life History Self-Aggression (^a)</td>
<td>0</td>
<td>10</td>
<td>1.08</td>
<td>2.21</td>
<td>2.44</td>
<td>5.82</td>
</tr>
<tr>
<td>Life History Antisocial Beh (^a)</td>
<td>0</td>
<td>20</td>
<td>2.00</td>
<td>4.13</td>
<td>2.55</td>
<td>6.05</td>
</tr>
<tr>
<td>Agg Ideations/Tendencies (^b)</td>
<td>-1.43</td>
<td>2.95</td>
<td>0</td>
<td>.90</td>
<td>.87</td>
<td>.86</td>
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<tr>
<td>Average Aggression in Lab (^c)</td>
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<td>5.52</td>
<td>2.26</td>
<td>-.40</td>
<td>2.18</td>
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<tr>
<td>Extreme Agg in Lab (Total) (^d)</td>
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<td>15</td>
<td>1.01</td>
<td>2.14</td>
<td>4.16</td>
<td>22.13</td>
</tr>
<tr>
<td>Extreme Agg in Lab (Yes/No) (^e)</td>
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<td>1</td>
<td>.43</td>
<td>.50</td>
<td>.31</td>
<td>-1.95</td>
</tr>
<tr>
<td>Total Distress Tolerance (^f)</td>
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<td>74</td>
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<td>12.90</td>
<td>-.43</td>
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</tr>
<tr>
<td>Distress Tol - MTPT-C (^g)</td>
<td>28</td>
<td>378</td>
<td>174.97</td>
<td>89.23</td>
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<tr>
<td>Distress Tol - PASAT-C (^h)</td>
<td>22</td>
<td>780</td>
<td>468.09</td>
<td>270.91</td>
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<tr>
<td>General Neg Aff (PANAS-X) (^i)</td>
<td>10</td>
<td>44</td>
<td>19.29</td>
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<td>1.18</td>
<td>1.42</td>
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<td>10</td>
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<tr>
<td>Post-task Neg Aff (PANAS-X) (^i)</td>
<td>10</td>
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<td>3.16</td>
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<td>Pre-task Neg Affect (DS) (^i)</td>
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<td>6.55</td>
<td>2.35</td>
<td>1.44</td>
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<tr>
<td>Post-task Neg Affect (DS) (^i)</td>
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<td>8.71</td>
<td>3.71</td>
<td>.79</td>
<td>-.19</td>
</tr>
<tr>
<td>Change Neg Affect (DS) (^i)</td>
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<td>2.16</td>
<td>3.33</td>
<td>1.14</td>
<td>2.13</td>
</tr>
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</table>


\(^a\) From Life History of Aggression Scale

\(^b\) From Buss-Perry Aggression Questionnaire (verbal aggression and physical aggression scales composite based on \(z\)-scores for the two scales)

\(^c\) Average shock level set by the participant on the Taylor Reaction Time Task

\(^d\) Number of times the participant used the twenty-shock on the Taylor Reaction Time Task

\(^e\) Whether or not the participant used the twenty-shock on the Taylor Reaction Time Task

\(^f\) From the Distress Tolerance Scale

\(^g\) Time elapsed (in seconds) on the MTPT-C

\(^h\) Time elapsed (in seconds) on the PASAT-C

\(^i\) From Positive and Negative Affect Schedule – Expanded Form

\(^j\) From Dysphoria Scale
because neither was skewed enough to warrant that change, and it was preferred that the variability be measured by treating these variables continuously.

The primary variables for distress tolerance included total distress tolerance (self-reported), frustration tolerance on the MTPT-C (behavioral), and frustration tolerance on the PASAT-C (behavioral). Again, the self-report data were collected during Phase One, whereas the behavioral data were collected during Phase Two. The primary negative affect variables included general negative affect (collected in Phase One), as well as the level of overall negative affect following the frustration tasks [both pre- to post-task change in negative affect and post-task overall negative affect, assessed using both negative affect measures (i.e., PANAS-X and DS) during Phase Two]. Descriptive statistics for the primary variables of interest among the full current sample \(N = \text{eighty-seven}\) are presented in Table 1. Intercorrelations of all variables of interest in the study are presented in Table 2.

Consideration of Demographic Control Variables

Demographic variables were correlated with the primary variables of interest to determine if any were significantly related and, therefore, may need to be used as control variables when examining the hypotheses (Table 3). Bivariate correlation analyses revealed no significant relations among age and the primary variables for distress tolerance, negative affect, and aggression. There was a significant correlation between dichotomously-coded race \([(\text{Caucasian} = 0; n = 45), (\text{non-Caucasian} = 1; n = 42)]\) and life history of aggression, \(r = .23, p = .03\), life history of antisocial behavior, \(r = .30, p = .005\), aggressive ideations and tendencies, \(r = .33, p = .002\), average aggression in the
Table 2

Descriptive Statistics for Primary Variables of Interest in Hypothesis Testing

<table>
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<tr>
<th>Variable</th>
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<th>6</th>
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<tbody>
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<td>LH Agg</td>
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<td>.51***</td>
<td>.68***</td>
<td>.32**</td>
<td>.45**</td>
<td>.11</td>
<td>.09</td>
<td>.01</td>
<td>.21†</td>
<td>.09</td>
<td>.08</td>
<td>.01</td>
<td>.04</td>
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<tr>
<td>LH Self-Agg</td>
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<td>.78***</td>
<td>.39***</td>
<td>.11</td>
<td>.10</td>
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<td>.16</td>
<td>.21</td>
<td>.13</td>
<td>.18</td>
<td>.09</td>
<td>.56**</td>
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<td>.17</td>
<td>.22†</td>
<td>.28†</td>
<td>.09</td>
<td>.04</td>
<td>.23†</td>
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<td>.08</td>
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<td>.27†</td>
<td>.38**</td>
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<td>LH Agg Ideations/Tend</td>
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<td>.38**</td>
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<td>.06</td>
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<td>.17</td>
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<td>.03</td>
<td>.01</td>
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<td>Distress Tol - PASAT-C</td>
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<td>.05</td>
<td>.02</td>
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<td>.82***</td>
<td>.69***</td>
<td>.69***</td>
<td>.69***</td>
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<td>.73***</td>
<td>.73***</td>
<td>.73***</td>
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<td>.73***</td>
<td>.73***</td>
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<td>Post Neg Affect (DS)</td>
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<td>.78***</td>
<td>.78***</td>
<td>.78***</td>
<td>.78***</td>
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<td>Change Neg Affect (DS)</td>
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<td>.78***</td>
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<td>.78***</td>
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<td>.78***</td>
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</table>


* p < .05. ** p < .01. *** p < .001.
Table 3

*Correlations Between Demographic Variables and Primary Variables of Interest*

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
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<tbody>
<tr>
<td>Life History Aggression</td>
<td>-.09</td>
<td>.21*</td>
<td>.23*</td>
</tr>
<tr>
<td>Life History Self-Aggression</td>
<td>-.07</td>
<td>.07</td>
<td>.21</td>
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<tr>
<td>Life History Antisocial Beh</td>
<td>-.08</td>
<td>.14</td>
<td>.30**</td>
</tr>
<tr>
<td>Agg Ideations/Tendencies</td>
<td>-.02</td>
<td>.32**</td>
<td>.33**</td>
</tr>
<tr>
<td>Average Aggression in Lab</td>
<td>.03</td>
<td>.23*</td>
<td>.24*</td>
</tr>
<tr>
<td>Extreme Agg in Lab (Yes/No)</td>
<td>-.19</td>
<td>.23*</td>
<td>.33**</td>
</tr>
<tr>
<td>Total Distress Tolerance</td>
<td>.03</td>
<td>-.15</td>
<td>-.10</td>
</tr>
<tr>
<td>Distress Tol - MTPT-C</td>
<td>-.11</td>
<td>-.04</td>
<td>-.09</td>
</tr>
<tr>
<td>Distress Tol - PASAT-C</td>
<td>.09</td>
<td>.03</td>
<td>.00</td>
</tr>
<tr>
<td>General Neg Aff (PANAS-X)</td>
<td>-.01</td>
<td>.15</td>
<td>.08</td>
</tr>
<tr>
<td>Pre-Task Neg Aff (PANAS-X)</td>
<td>-.09</td>
<td>-.08</td>
<td>-.02</td>
</tr>
<tr>
<td>Post-task Neg Aff (PANAS-X)</td>
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<td>-.02</td>
<td>.08</td>
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<tr>
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<td>.02</td>
<td>.05</td>
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<td>-.06</td>
<td>.05</td>
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<tr>
<td>Change Neg Affect (DS)</td>
<td>-.07</td>
<td>-.04</td>
<td>.03</td>
</tr>
</tbody>
</table>

*Note.* Beh = behavior. Agg = aggression. Distress Tol = frustration tolerance. MTPT-C = Computerized Mirror-Tracing Persistence Task. PASAT-C = Computerized Paced Auditory Serial Addition Task. Neg Aff= negative affect. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. DS = Dysphoria Scale. Gender was coded 0 = female, 1 = male. Race was coded 0 = Caucasian, 1 = non-Caucasian.

* p < .05. ** p < .01.

Laboratory, $r = .24$, $p = .02$, and whether an extreme aggressive response was used in the laboratory, $r = .33$, $p = .002$, with non-Caucasians scoring higher on these aggression measures than non-Caucasians. Additionally, there was a significant correlation between dichotomously-coded gender [(female = 0; $n = 76$), (male = 1; $n = 11$)] and life history of
aggression, $r = .21$, $p = .05$, aggressive ideations and tendencies, $r = .32$, $p = .003$, average aggression in the laboratory, $r = .23$, $p = .033$, and whether an extreme aggressive response was used in the laboratory, $r = .23$, $p = .03$, with men scoring higher on these aggression measures than women.

Tests of Hypotheses

*Hypothesis One*

The first hypothesis (that life history of aggression, life history of self-aggression, life history of antisocial behavior, aggressive ideations and tendencies, average aggression in the laboratory, and use of extreme aggressive responses in the laboratory would all be positively related) was tested using bivariate Pearson correlations (Table 4). Although these correlations are also represented in Table 2, they are displayed again to specifically show the data relevant for Hypothesis One. As shown in the table, life history of aggression was positively related to life history of self-aggression, $r = .44$, $p < .001$, life history of antisocial behavior, $r = .51$, $p < .001$, aggressive ideations and tendencies, $r = .68$, $p < .001$, average aggression in the laboratory, $r = .32$, $p = .003$, and use of extreme aggressive responses in the laboratory, $r = .45$, $p < .001$, consistent with expectations. Additionally, as predicted, life history of self-aggression also was positively related to life history of antisocial behavior, $r = .78$, $p < .001$, and aggressive ideations and tendencies, $r = .39$, $p < .001$. Also consistent with the hypothesis, life history of antisocial behavior was further positively related to aggressive ideations and tendencies, $r = .49$, $p < .001$, and extreme aggressive responses in the laboratory, $r = .22$, $p = .046$. Likewise, having aggressive ideations and tendencies was further positively related to average aggression in the laboratory, $r = .27$, $p = .01$, and use of extreme aggressive
Table 4

Zero-order Correlations Among Aggression Variables (Test of Hypothesis 1)

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Life History Aggression</td>
<td></td>
<td>.44***</td>
<td>.51***</td>
<td>.68***</td>
<td>.32**</td>
<td>.45***</td>
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<tr>
<td>2. Life History Self-Aggression</td>
<td></td>
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<td>.78***</td>
<td>.39***</td>
<td>.11</td>
<td>.10</td>
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<tr>
<td>3. Life History Antisocial Beh</td>
<td></td>
<td></td>
<td></td>
<td>.49***</td>
<td>.17</td>
<td>.22*</td>
</tr>
<tr>
<td>4. Agg Ideations/Tendencies</td>
<td></td>
<td></td>
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<td>.38***</td>
</tr>
<tr>
<td>5. Average Aggression in Lab</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>.56***</td>
</tr>
<tr>
<td>6. Extreme Agg in Lab (Yes/No)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Note. Beh = behavior. Agg = aggression.

* p < .05. ** p < .01. *** p < .001.

responses in the laboratory, r = .38, p < .001. Additionally, the two behavioral measures of aggression (average aggression and use of extreme aggressive responses in the laboratory) were positively related, r = .56, p < .001, consistent with predictions.

Partial correlations were also conducted controlling for gender and race due to the significant relation between these demographic variables and many of the aggressive behavior outcomes. The partial correlations are presented in Table 5. Ten of the twelve significant correlations remained significant controlling for gender and race. Only the correlation between life history of antisocial behavior and extreme aggressive responses in the laboratory and the correlation between aggressive ideations and tendencies and average aggression in the laboratory became non-significant when controlling for gender and race.
Table 5

*Partial Correlations Among Aggression Variables (Controlling for Gender and Race)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>.35**</td>
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<tr>
<td>4. Agg Ideations/Tendencies</td>
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<td>.24*</td>
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</tr>
<tr>
<td>5. Average Aggression in Lab</td>
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<td>6. Extreme Agg in Lab (Yes/No)</td>
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</tr>
</tbody>
</table>

*Note.* Beh = behavior. Agg = aggression.

* * * p < .001.

** Hypothesis Two

Additionally, bivariate Pearson correlations were conducted to test the second hypothesis [that self-reported distress tolerance, as well as distress tolerance in the laboratory, would be inversely related to self-reported aggression (i.e., life history of aggression, life history of self-aggression, life history of antisocial behavior, and aggressive ideations and tendencies), average aggression in the laboratory, and use of extreme aggressive responses in the laboratory]. Results are presented in Table 6. Although these correlations are also represented in Table 2, they are displayed again to specifically show the data relevant for Hypothesis Two. Total self-reported distress tolerance was inversely related to three self-reported measures of aggression and one behavioral measure of aggression. Specifically, total self-reported distress tolerance was inversely related to life history of self-aggression, $r = -.28, p = .009$, life history of antisocial behavior, $r = -.28, p = .01$,
Table 6

Zero-order Correlations Between Distress Tolerance Variables and Aggression Variables (Test of Hypothesis 2)

<table>
<thead>
<tr>
<th></th>
<th>Total Distress Tolerance</th>
<th>Frustration Tolerance (MTPT-C)</th>
<th>Frustration Tolerance (PASAT)</th>
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<tbody>
<tr>
<td>Life History Aggression</td>
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<td>-.09</td>
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<tr>
<td>Life History Self-Aggression</td>
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<td>-.06</td>
<td>-.07</td>
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<tr>
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<td>-.04</td>
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<tr>
<td>Agg Ideations/Tendencies</td>
<td>-.26*</td>
<td>-.11</td>
<td>.04</td>
</tr>
<tr>
<td>Average Aggression in Lab</td>
<td>-.28**</td>
<td>.09</td>
<td>.20</td>
</tr>
<tr>
<td>Extreme Agg in Lab (Yes/No)</td>
<td>-.12</td>
<td>.08</td>
<td>.08</td>
</tr>
</tbody>
</table>


* p < .05. ** p < .01. *** p < .001.

Aggressive ideations and tendencies, \( r = -.26, \ p = .02 \), and average aggression in the laboratory, \( r = -.28, \ p = .009 \), which was consistent with expectations. Conversely, inconsistent with the hypothesis, total self-reported distress tolerance was not significantly correlated with either life history of aggression or use of extreme aggressive responses in the laboratory. However, neither frustration tolerance on the MTPT-C nor frustration tolerance on the PASAT-C were significantly related to any of the aggression measures (i.e., life history of aggression, life history of self-aggression, life history of antisocial behavior, aggressive ideations and tendencies, average aggression in the laboratory, or use of extreme aggressive responses in the laboratory)—all of which was inconsistent with the hypothesis. Partial correlations were also conducted controlling for gender and race due to the significant relation between these demographic variables and
many of the aggressive behavior outcomes. The partial correlations are presented in Table 7. The pattern of results generally remained the same. The only change when controlling for gender and race was that the relation between total self-reported distress tolerance and aggressive ideations and tendencies showed only a trend toward significance, \( r = -.21, p = .058 \).

Table 7

*Partial Correlations Between Distress Tolerance Variables and Aggression Variables (Controlling for Gender and Race)*

<table>
<thead>
<tr>
<th></th>
<th>Total Distress Tolerance</th>
<th>Frustration Tolerance (MTPT-C)</th>
<th>Frustration Tolerance (PASAT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life History Aggression</td>
<td>-.07</td>
<td>-.07</td>
<td>-.001</td>
</tr>
<tr>
<td>Life History Self-Aggression</td>
<td>-.26*</td>
<td>-.04</td>
<td>-.08</td>
</tr>
<tr>
<td>Life History Antisocial Beh</td>
<td>-.25*</td>
<td>-.06</td>
<td>-.05</td>
</tr>
<tr>
<td>Agg Ideations/Tendencies</td>
<td>-.21</td>
<td>-.05</td>
<td>.03</td>
</tr>
<tr>
<td>Average Aggression in Lab</td>
<td>-.24*</td>
<td>.13</td>
<td>.20</td>
</tr>
<tr>
<td>Extreme Agg in Lab (Yes/No)</td>
<td>-.06</td>
<td>.13</td>
<td>.08</td>
</tr>
</tbody>
</table>


* \( p < .05. ** \( p < .001.  

**Hypothesis 3**

To test the third hypothesis [that general negative affect would mediate the relation between self-reported distress tolerance and self-reported aggression (i.e., life history of aggression, life history of self-aggression, life history of antisocial behavior, and aggressive ideations and tendencies)], four mediation models—one for each measure of self-reported aggression—were tested using three linear regression
analyses for each model. The general mediational model tested in these analyses is
illustrated in Figure 1. Specific findings for these analyses can be found in Tables 8
and 9. Gender and race were included as control variables in all analyses (including when
general negative affect was regressed on self-reported distress tolerance) when testing
models with the outcome variables life history of aggression and aggressive ideations and
tendencies. Additionally, race was included as the only control variable in the three
analyses used when examining the outcome variable life history of antisocial behavior.
Although general negative affect did not relate to any demographic variables, use of the
respective control variables maintained consistency across all regression equations testing
the same model. For these and all subsequent regression analyses, demographic control
variables were entered on step one and the tested predictors were entered on step two in
the regression analyses to allow an examination of the increase in unique variance ($\Delta R^2$)
explained by the predictor(s). There were no demographic control variables for the life
history of self-aggression outcome.

![Diagram](image)

*Figure 1.* Model of general negative affect as a mediator in the relation between self-reported distress tolerance and aggression outcomes. Results shown in Tables 8 and 9.

* Including life history of aggression, life history of self-aggression, life history of antisocial behavior, and aggressive ideations and tendencies.
Table 8

Tests of Mediational Models Examining General Negative Affect as a Mediator in the Relations between Self-Reported Distress Tolerance and Life History of Aggression and Self-Aggression

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome: Life History of Aggression (LHA) ¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LHA regressed on self-reported distress tolerance (SRDT) (c path)</td>
<td>-0.03</td>
<td>0.05</td>
<td>-0.07</td>
<td>-0.63</td>
<td>0.53</td>
<td>0.004</td>
</tr>
<tr>
<td>General negative affect (GNA) regressed on SRDT (a path)</td>
<td>-0.28</td>
<td>0.05</td>
<td>-0.54</td>
<td>-5.82</td>
<td>&lt; 0.001</td>
<td>0.28</td>
</tr>
<tr>
<td>LHA regressed on GNA, controlling for SRDT (b path)</td>
<td>0.17</td>
<td>0.11</td>
<td>0.19</td>
<td>1.51</td>
<td>0.14</td>
<td>0.02</td>
</tr>
<tr>
<td>LHA regressed on SRDT, controlling for GNA (c’ path)</td>
<td>0.02</td>
<td>0.06</td>
<td>0.04</td>
<td>0.28</td>
<td>0.78</td>
<td>0.001</td>
</tr>
<tr>
<td>Outcome: Life History of Self-Aggression (LHSA) ²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LHSA regressed on self-reported distress tolerance (SRDT) (c path)</td>
<td>-0.05</td>
<td>0.02</td>
<td>-0.28</td>
<td>-2.69</td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>General negative affect (GNA) regressed on SRDT (a path)</td>
<td>-0.29</td>
<td>0.05</td>
<td>-0.55</td>
<td>-6.09</td>
<td>&lt; 0.001</td>
<td>0.30</td>
</tr>
<tr>
<td>LHSA regressed on GNA, controlling for SRDT (b path)</td>
<td>0.001</td>
<td>0.04</td>
<td>0.002</td>
<td>0.02</td>
<td>0.99</td>
<td>0.00</td>
</tr>
<tr>
<td>LHSA regressed on SRDT, controlling for GNA (c’ path)</td>
<td>-0.05</td>
<td>0.02</td>
<td>-0.28</td>
<td>-2.22</td>
<td>0.03</td>
<td>0.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of Significance of Indirect Effects</th>
<th>B</th>
<th>SE</th>
<th>LLCI</th>
<th>ULCI</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNA as a mediator between SRDT and LHA</td>
<td>-0.05</td>
<td>0.04</td>
<td>-0.15</td>
<td>0.01</td>
<td>-1.44</td>
<td>0.15</td>
</tr>
<tr>
<td>GNA as a mediator between SRDT and LHSA</td>
<td>-0.0002</td>
<td>0.02</td>
<td>-0.04</td>
<td>0.03</td>
<td>-0.02</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c’ path = direct effect. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for t-test for B/β as well as for F-test for ΔR². To report the specific value for ΔR², additional analyses were conducted to enter only the specified predictor variable on the last step.

¹ Each analysis controlling for gender and race.

² No demographic controls necessary.
Table 9

Tests of Mediational Models Examining General Negative Affect as a Mediator in the Relations between Self-Reported Distress Tolerance and Life History of Antisocial Behavior and Aggressive Ideations and Tendencies

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome: Life History of Antisocial Behavior (LHAB)¹</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LHAB regressed on self-reported distress tolerance (SRDT) (c path)</td>
<td>-.08</td>
<td>.03</td>
<td>-.25</td>
<td>-2.49</td>
<td>.02</td>
<td>.06</td>
</tr>
<tr>
<td>General negative affect (GNA) regressed on SRDT (a path)</td>
<td>-.29</td>
<td>.05</td>
<td>-.45</td>
<td>-6.01</td>
<td>&lt;.001</td>
<td>.30</td>
</tr>
<tr>
<td>LHAB regressed on GNA, controlling for SRDT (b path)</td>
<td>.06</td>
<td>.08</td>
<td>.10</td>
<td>.80</td>
<td>.43</td>
<td>.01</td>
</tr>
<tr>
<td>LHAB regressed on SRDT, controlling for GNA (c’ path)</td>
<td>-.06</td>
<td>.04</td>
<td>-.20</td>
<td>-1.64</td>
<td>.10</td>
<td>.03</td>
</tr>
<tr>
<td><strong>Outcome: Aggressive Ideations and Tendencies (AIT)²</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIT regressed on self-reported distress tolerance (SRDT) (c path)</td>
<td>-.01</td>
<td>.01</td>
<td>-.19</td>
<td>-1.92</td>
<td>.058</td>
<td>.03</td>
</tr>
<tr>
<td>General negative affect (GNA) regressed on SRDT (a path)</td>
<td>-.28</td>
<td>.05</td>
<td>-.54</td>
<td>-5.82</td>
<td>&lt;.001</td>
<td>.28</td>
</tr>
<tr>
<td>AIT regressed on GNA, controlling for SRDT (b path)</td>
<td>.03</td>
<td>.02</td>
<td>.23</td>
<td>2.04</td>
<td>.045</td>
<td>.04</td>
</tr>
<tr>
<td>AIT regressed on SRDT, controlling for GNA (c’ path)</td>
<td>-.004</td>
<td>.008</td>
<td>-.06</td>
<td>-0.55</td>
<td>.58</td>
<td>.003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of Significance of Indirect Effects</th>
<th>B</th>
<th>SE</th>
<th>LLCI</th>
<th>ULCI</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNA as a mediator between SRDT and LHAB</td>
<td>-.02</td>
<td>.03</td>
<td>-.09</td>
<td>.03</td>
<td>-.78</td>
<td>.44</td>
</tr>
<tr>
<td>GNA as a mediator between SRDT and AIT</td>
<td>-.009</td>
<td>.006</td>
<td>-.02</td>
<td>.002</td>
<td>-1.90</td>
<td>.06</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c’ path = direct effect. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for t-test for B/β as well as for F-test for ΔR². To report the specific value for ΔR², additional analyses were conducted to enter only the specified predictor variable on the last step.

¹ Each analysis controlling for race.

² Each analysis controlling for gender and race.
For all models, in addition to testing the paths for \( a, b, c, \) and \( c' \) as well as comparing the reduction from \( c \) to \( c' \), indirect effects were examined two ways. Bootstrapping analytical techniques with 5,000 resamples with replacement were used to estimate an indirect effect coefficient as well as an asymmetric confidence interval around the coefficient, with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect (Preacher & Hayes, 2008). Likewise, a normal \( z \)-test of the significance of the indirect effect using the coefficients and standard errors of paths \( a \) and \( b \) was conducted (Sobel, 1982). Both the confidence interval estimates and Sobel tests of the indirect effects were conducted via PROCESS, a computational tool that can be run within SPSS (Hayes, 2012).

Results indicated that general negative affect did not statistically mediate the relation between self-reported distress tolerance and life history of aggression, self-aggression, antisocial behavior, or aggressive ideations and tendencies (each tested separately), which was inconsistent with hypotheses. There was no relation between self-reported distress tolerance and life history of aggression to be mediated. Although such a relation with self-reported distress tolerance did exist for life history of self-aggression and antisocial behavior, general negative affect did not significantly relate to these outcomes when controlling for distress tolerance and, therefore, was not a mediator. The indirect effect of distress tolerance on these two outcomes through general negative affect was also found to be non-significant. Specifically, the bootstrapping analyses showed that the confidence intervals of the point estimate of the coefficient of the indirect effect included zero, and the normal test of mediation was also non-significant. Finally, although general negative affect significantly related to aggressive ideations and
tendencies when controlling for self-reported distress tolerance, the initial relation between the self-reported distress tolerance and aggressive ideations and tendencies was only a trend ($\beta = -0.19, p = 0.058$). The direct effect ($c'$ path) also was not significantly less than the total effect (a reduction from $\beta = -0.19$ to $-0.06$). Likewise, the indirect effect was not significant, indicated by confidence intervals of the point estimate of the coefficient of the indirect effect that included zero and a Sobel test that was only a trend, $Z = -1.90, p = 0.058$ (Table 9).

_Hypothesis Four_

To test the first part of the fourth hypothesis [that pre- to post-task change in negative affect as well as overall post-task negative affect would each (separately) mediate the relation between distress tolerance (MTPT-C time elapsed and PASAT-C time elapsed) and average aggression in the laboratory], eight mediational models were tested using three linear regression analyses for each model. The eight models resulted from two different predictors [i.e., behavioral distress tolerance (MTPT time elapsed and PASAT time elapsed)] and four different mediators [i.e., change from pre- to post-task in negative affect (based on either the PANAS-X or DS) and post-task negative affect (based on either the PANAS-X or DS)]. For all of the models examined using linear regression, the outcome variable was average aggression in the laboratory. The general mediational models used for these analyses are illustrated in Figure 2. Specific findings for these analyses can be found in Tables 10 through 13. Due to their relation with average aggression in the laboratory, gender and race were included as control variables on step one within each of these eight mediational models.
Results indicated that none of the measures of negative affect (all four tested separately) statistically mediated the relation between either measure of behavioral distress tolerance (both tested separately) and average aggression in the laboratory, which is inconsistent with predictions. Most of the models failed to support mediation because

![Diagram of mediation model](image)

Figure 2. Model of negative affect as a mediator in the relation between behavioral distress tolerance and average aggression in the laboratory. Results shown in Tables 10 through 13.

1 As measured by elapsed time on the Computerized Mirror-Tracing Persistence Task (MTPT-C) or the Computerized Paced Auditory Serial Addition Task (PASAT-C).

2 Either change in negative affect (from pre-task to post-task) or post-task negative affect. Each measured by either the Positive and Negative Affect Schedule – Expanded Form or the Dysphoria Scale.

3 Measured on the Taylor Reaction-Time Task (TRT).

none of the paths of the models were significant. There was one exception in that behavioral distress tolerance (as observed in the laboratory based on time spent on the PASAT-C task) was significantly related to average aggression in the laboratory. Nevertheless, it did not relate to any of the mediators, none of mediators related to average aggression in the laboratory, and there was no support for an indirect effect in the relation between this measure of distress tolerance and average aggression in the laboratory based on the potential mediators examined for the current study.
Table 10

Tests of Mediational Models Examining Change in Negative Affect as a Mediator in the Relation between Behavioral Distress Tolerance Displayed on the Computerized Mirror-Tracing Persistence Task (MTPT-C) and Average Aggression in the Laboratory (AAL) ¹

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mediator: Change in Negative Affect (CNA) on the PANAS-X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAL regressed on behavioral distress tolerance (BDT; MTPT-C) (c path)</td>
<td>.003</td>
<td>.003</td>
<td>.12</td>
<td>1.19</td>
<td>.24</td>
<td>.02</td>
</tr>
<tr>
<td>CNA PANAS-X regressed on BDT MTPT-C (a path)</td>
<td>.003</td>
<td>.01</td>
<td>.06</td>
<td>.50</td>
<td>.62</td>
<td>.003</td>
</tr>
<tr>
<td>AAL regressed on CNA PANAS-X, controlling for BDT MTPT-C (b path)</td>
<td>-.02</td>
<td>.05</td>
<td>-.04</td>
<td>-.38</td>
<td>.71</td>
<td>.002</td>
</tr>
<tr>
<td>AAL regressed on BDT MTPT-C, controlling for CNA PANAS-X (c’ path)</td>
<td>.003</td>
<td>.003</td>
<td>.13</td>
<td>1.21</td>
<td>.23</td>
<td>.02</td>
</tr>
<tr>
<td>Mediator: Change in Negative Affect on the DS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAL regressed on behavioral distress tolerance (BDT; MTPT-C) (c path)</td>
<td>.003</td>
<td>.003</td>
<td>.12</td>
<td>1.19</td>
<td>.24</td>
<td>.02</td>
</tr>
<tr>
<td>CNA DS regressed on BDT MTPT-C (a path)</td>
<td>.002</td>
<td>.004</td>
<td>.06</td>
<td>.54</td>
<td>.59</td>
<td>.003</td>
</tr>
<tr>
<td>AAL regressed on CNA DS, controlling for BDT MTPT-C (b path)</td>
<td>-.06</td>
<td>.07</td>
<td>-.09</td>
<td>-.85</td>
<td>.40</td>
<td>.01</td>
</tr>
<tr>
<td>AAL regressed on BDT MTPT-C, controlling for CNA DS (c’ path)</td>
<td>.003</td>
<td>.003</td>
<td>.13</td>
<td>1.24</td>
<td>.22</td>
<td>.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of Significance of Indirect Effects</th>
<th>B</th>
<th>SE</th>
<th>LLCI</th>
<th>ULCI</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNA PANAS-X as a mediator between BDT MTPT-C and AAL</td>
<td>-.0001</td>
<td>.0003</td>
<td>-.001</td>
<td>.0003</td>
<td>-.16</td>
<td>.87</td>
</tr>
<tr>
<td>CNA DS as a mediator between BDT MTPT-C and AAL</td>
<td>-.0001</td>
<td>.0003</td>
<td>-.001</td>
<td>.0002</td>
<td>-.32</td>
<td>.75</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c’ path = direct effect. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. DS = Dysphoria Scale. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for t-test for Bβ as well as for F-test for ΔR². To report the specific value for ΔR², additional analyses were conducted to enter only the specified predictor variable on the last step.

¹ Each analysis (when testing both models) controlling for gender and race.
Table 11

Tests of Mediational Models Examining Change in Negative Affect as a Mediator in the Relation between Behavioral Distress Tolerance Displayed on the Computerized Paced Auditory Serial Addition Task (PASAT-C) and Average Aggression in the Laboratory (AAL)

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mediator: Change in Negative Affect (CNA) on the PANAS-X</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAL regressed on behavioral distress tolerance (BDT; PASAT-C) (c path)</td>
<td>.002</td>
<td>.001</td>
<td>.19</td>
<td>1.87</td>
<td>.07</td>
<td>.04</td>
</tr>
<tr>
<td>CNA PANAS-X regressed on BDT PASAT-C (α path)</td>
<td>.00</td>
<td>.002</td>
<td>.02</td>
<td>.17</td>
<td>.87</td>
<td>.00</td>
</tr>
<tr>
<td>AAL regressed on CNA PANAS-X, controlling for BDT PASAT-C (b path)</td>
<td>-.02</td>
<td>.04</td>
<td>-.04</td>
<td>-.35</td>
<td>.73</td>
<td>.001</td>
</tr>
<tr>
<td>AAL regressed on BDT PASAT-C, controlling for CNA PANAS-X (c’ path)</td>
<td>.002</td>
<td>.001</td>
<td>.19</td>
<td>1.86</td>
<td>.07</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Mediator: Change in Negative Affect on the DS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAL regressed on behavioral distress tolerance (BDT; PASAT-C) (c path)</td>
<td>.002</td>
<td>.001</td>
<td>.19</td>
<td>1.87</td>
<td>.07</td>
<td>.04</td>
</tr>
<tr>
<td>CNA DS regressed on BDT PASAT-C (α path)</td>
<td>.00</td>
<td>.001</td>
<td>-.01</td>
<td>-.13</td>
<td>.90</td>
<td>.00</td>
</tr>
<tr>
<td>AAL regressed on CNA DS, controlling for BDT PASAT-C (b path)</td>
<td>-.05</td>
<td>.07</td>
<td>-.08</td>
<td>-.76</td>
<td>.45</td>
<td>.01</td>
</tr>
<tr>
<td>AAL regressed on BDT PASAT-C, controlling for CNA DS (c’ path)</td>
<td>.002</td>
<td>.001</td>
<td>.19</td>
<td>1.85</td>
<td>.07</td>
<td>.04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of Significance of Indirect Effects</th>
<th>B</th>
<th>SE</th>
<th>LLCI</th>
<th>ULCI</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNA PANAS-X as a mediator between BDT PASAT-C and AAL</td>
<td>.00</td>
<td>.0001</td>
<td>-.0003</td>
<td>.0001</td>
<td>-.05</td>
<td>.96</td>
</tr>
<tr>
<td>CNA DS as a mediator between BDT PASAT-C and AAL</td>
<td>.00</td>
<td>.0001</td>
<td>-.0002</td>
<td>.0003</td>
<td>.08</td>
<td>.94</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c’ path = direct effect. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. DS = Dysphoria Scale. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for t-test for Bβ as well as for F-test for ΔR². To report the specific value for ΔR², additional analyses were conducted to enter only the specified predictor variable on the last step.

1 Each analysis (when testing both models) controlling for gender and race.
Table 12

Tests of Mediational Models Examining Post-task Negative Affect as a Mediator in the Relation between Behavioral Distress Tolerance Displayed on the Computerized Mirror-Tracing Persistence Task (MTPT-C) and Average Aggression in the Laboratory (AAL)

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mediator: Post-task Negative Affect (PTNA) on the PANAS-X</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAL regressed on behavioral distress tolerance (BDT; MTPT-C) (c path)</td>
<td>.003</td>
<td>.003</td>
<td>.12</td>
<td>1.19</td>
<td>.24</td>
<td>.02</td>
</tr>
<tr>
<td>PTNA PANAS-X regressed on BDT MTPT-C (α path)</td>
<td>.001</td>
<td>.01</td>
<td>.02</td>
<td>.17</td>
<td>.86</td>
<td>.00</td>
</tr>
<tr>
<td>AAL regressed on PTNA PANAS-X, controlling for BDT MTPT-C (b path)</td>
<td>.03</td>
<td>.04</td>
<td>.07</td>
<td>.65</td>
<td>.52</td>
<td>.004</td>
</tr>
<tr>
<td>AAL regressed on BDT MTPT-C, controlling for PTNA PANAS-X (c' path)</td>
<td>.003</td>
<td>.003</td>
<td>.12</td>
<td>1.18</td>
<td>.24</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Mediator: Post-task Negative Affect on the DS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAL regressed on behavioral distress tolerance (BDT; MTPT-C) (c path)</td>
<td>.003</td>
<td>.003</td>
<td>.12</td>
<td>1.19</td>
<td>.24</td>
<td>.02</td>
</tr>
<tr>
<td>PTNA DS regressed on BDT MTPT-C (α path)</td>
<td>.003</td>
<td>.01</td>
<td>.07</td>
<td>.64</td>
<td>.53</td>
<td>.01</td>
</tr>
<tr>
<td>AAL regressed on PTNA DS, controlling for BDT MTPT-C (b path)</td>
<td>.002</td>
<td>.06</td>
<td>.004</td>
<td>.04</td>
<td>.97</td>
<td>.00</td>
</tr>
<tr>
<td>AAL regressed on BDT MTPT-C, controlling for PTNA DS (c' path)</td>
<td>.003</td>
<td>.003</td>
<td>.12</td>
<td>1.18</td>
<td>.24</td>
<td>.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of Significance of Indirect Effects</th>
<th>B</th>
<th>SE</th>
<th>LLCI</th>
<th>ULCI</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTNA PANAS-X as a mediator between BDT MTPT-C and AAL</td>
<td>.00</td>
<td>.0003</td>
<td>-.001</td>
<td>.001</td>
<td>.09</td>
<td>.93</td>
</tr>
<tr>
<td>PTNA DS as a mediator between BDT MTPT-C and AAL</td>
<td>.00</td>
<td>.0003</td>
<td>-.001</td>
<td>.001</td>
<td>.02</td>
<td>.98</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c’ path = direct effect. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. DS = Dysphoria Scale. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for t-test for Bβ as well as for F-test for ΔR². To report the specific value for ΔR², additional analyses were conducted to enter only the specified predictor variable on the last step.

1 Each analysis (when testing both models) controlling for gender and race.
Table 13

Tests of Mediational Models Examining Post-task Negative Affect as a Mediator in the Relation between Behavioral Distress Tolerance Displayed on the Computerized Paced Auditory Serial Addition Task (PASAT-C) and Average Aggression in the Laboratory (AAL) ¹

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mediator: Post-task Negative Affect (PTNA) on the PANAS-X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAL regressed on behavioral distress tolerance (BDT; PASAT-C) (c path)</td>
<td>.002</td>
<td>.001</td>
<td>.19</td>
<td>1.87</td>
<td>.07</td>
<td>.04</td>
</tr>
<tr>
<td>PTNA PANAS-X regressed on BDT PASAT-C (a path)</td>
<td>.001</td>
<td>.002</td>
<td>.05</td>
<td>.44</td>
<td>.66</td>
<td>.002</td>
</tr>
<tr>
<td>AAL regressed on PTNA PANAS-X, controlling for BDT PASAT-C (b path)</td>
<td>.03</td>
<td>.04</td>
<td>.06</td>
<td>.59</td>
<td>.56</td>
<td>.004</td>
</tr>
<tr>
<td>AAL regressed on BDT PASAT-C, controlling for PTNA PANAS-X (c' path)</td>
<td>.002</td>
<td>.001</td>
<td>.19</td>
<td>1.83</td>
<td>.07</td>
<td>.04</td>
</tr>
<tr>
<td>Mediator: Post-task Negative Affect on the DS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAL regressed on behavioral distress tolerance (BDT; PASAT-C) (c path)</td>
<td>.002</td>
<td>.001</td>
<td>.19</td>
<td>1.87</td>
<td>.07</td>
<td>.04</td>
</tr>
<tr>
<td>PTNA DS regressed on BDT PASAT-C (a path)</td>
<td>.001</td>
<td>.001</td>
<td>.07</td>
<td>.66</td>
<td>.51</td>
<td>.01</td>
</tr>
<tr>
<td>AAL regressed on PTNA DS, controlling for BDT PASAT-C (b path)</td>
<td>-.001</td>
<td>.06</td>
<td>-.001</td>
<td>-.01</td>
<td>.99</td>
<td>.00</td>
</tr>
<tr>
<td>AAL regressed on BDT PASAT-C, controlling for PTNA DS (c' path)</td>
<td>.002</td>
<td>.001</td>
<td>.19</td>
<td>1.85</td>
<td>.07</td>
<td>.04</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of Significance of Indirect Effects</th>
<th>B</th>
<th>SE</th>
<th>LLCI</th>
<th>ULCI</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTNA PANAS-X as a mediator between BDT PASAT-C and AAL</td>
<td>.00</td>
<td>.0001</td>
<td>-.0001</td>
<td>.0004</td>
<td>.21</td>
<td>.83</td>
</tr>
<tr>
<td>PTNA DS as a mediator between BDT PASAT-C and AAL</td>
<td>.00</td>
<td>.0001</td>
<td>-.0002</td>
<td>.0002</td>
<td>-.01</td>
<td>.99</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c' path = direct effect. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. DS = Dysphoria Scale. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for t-test for Bβ as well as for F-test for ΔR². To report the specific value for ΔR², additional analyses were conducted to enter only the specified predictor variable on the last step.

¹ Each analysis (when testing both models) controlling for gender and race.
To test the second part of the fourth hypothesis [that pre- to post-task change in negative affect as well as overall post-task negative affect would each (separately) mediate the relation between distress tolerance (MTPT-C time elapsed and PASAT-C time elapsed) and use of extreme aggressive responses in the laboratory], eight mediational models were tested—each model being tested by two logistic regression analyses (when regressing the outcome variable on predictors) and one linear regression analysis (when regressing the mediator on predictors). Again, the eight models resulted from two different predictors [i.e., behavioral distress tolerance (MTPT time elapsed and PASAT time elapsed)] and four different mediators [i.e., change from pre- to post-task in negative affect (based on either the PANAS-X or DS) and post-task negative affect (based on either the PANAS-X or DS)]. For all of the models examined using logistic regression, the outcome variable was use of extreme aggressive responses in the laboratory. The general mediational models used for these analyses are illustrated in Figure 3. Specific findings for these analyses can be found in Tables 14 through 18. Specifically, Table 14 displays the linear regression analyses examining each mediator regressed on each predictor (a path). Tables 15 through 18 display the results for all other paths, as well as the indirect effects, for each model. Due to their relation with extreme aggressive responses in the laboratory, gender and race were included as control variables on step one within each of these eight mediational models.

Results indicated that none of the measures of negative affect displayed in the laboratory (all four assessments tested separately) statistically mediated the relation between either measure of behavioral distress tolerance (both tested separately) and use of extreme aggressive responses in the laboratory, which is inconsistent with predictions.
For each model examined, none of the paths of the models were significant. There was no relation between distress tolerance in the laboratory and use of extreme aggression in the laboratory. Furthermore, distress tolerance did not relate to any of the mediators, none of the mediators related to use of extreme aggression in the laboratory, and there was no support for an indirect effect in the relation between distress tolerance and average aggression in the laboratory based on the potential mediators examined for the current study.

Figure 3. Model of negative affect as a mediator in the relation between behavioral distress tolerance and use of extreme aggressive responses in the laboratory. Results shown in Tables 14 through 18.

1 As measured by elapsed time on the Computerized Mirror-Tracing Persistence Task or the Computerized Paced Auditory Serial Addition Task.

2 Either change in negative affect (from pre-task to post-task) or post-task negative affect. Each measured by either the Positive and Negative Affect Schedule – Expanded Form or the Dysphoria Scale.

3 Measured on the Taylor Reaction-Time Task (TRT)
Table 14

Results of Linear Regression Analyses Examining the Paths between the Predictors and the Mediators in Models Examining Use of Extreme Aggressive Responses in the Laboratory as the Outcome Variable

<table>
<thead>
<tr>
<th>Mediator: Change in Negative Affect (CNA)</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>T</th>
<th>p</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNA PANAS-X regressed on BDT MTPT-C</td>
<td>.003</td>
<td>.01</td>
<td>.10</td>
<td>.50</td>
<td>.62</td>
<td>.003</td>
</tr>
<tr>
<td>CNA DS regressed on BDT MTPT-C</td>
<td>.002</td>
<td>.004</td>
<td>.10</td>
<td>.54</td>
<td>.59</td>
<td>.003</td>
</tr>
<tr>
<td>CNA PANAS-X regressed on BDT PASAT-C</td>
<td>.00</td>
<td>.002</td>
<td>.02</td>
<td>.17</td>
<td>.87</td>
<td>.00</td>
</tr>
<tr>
<td>CNA DS regressed on BDT PASAT-C</td>
<td>.00</td>
<td>.001</td>
<td>-.01</td>
<td>-.13</td>
<td>.90</td>
<td>.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mediator: Post-task Negative Affect (PTNA)</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>T</th>
<th>p</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTNA PANAS-X regressed on BDT MTPT-C</td>
<td>.001</td>
<td>.01</td>
<td>.02</td>
<td>.17</td>
<td>.86</td>
<td>.00</td>
</tr>
<tr>
<td>PTNA DS regressed on BDT MTPT-C</td>
<td>.003</td>
<td>.01</td>
<td>.07</td>
<td>.64</td>
<td>.53</td>
<td>.01</td>
</tr>
<tr>
<td>PTNA PANAS-X regressed on BDT PASAT-C</td>
<td>.001</td>
<td>.002</td>
<td>.05</td>
<td>.44</td>
<td>.66</td>
<td>.002</td>
</tr>
<tr>
<td>PTNA DS regressed on BDT PASAT-C</td>
<td>.001</td>
<td>.001</td>
<td>.07</td>
<td>.66</td>
<td>.51</td>
<td>.01</td>
</tr>
</tbody>
</table>

Note. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. BDT MTPT-C = Behavioral Distress Tolerance on the Computerized Mirror-Tracing Persistence Task. DS = Dysphoria Scale. PASAT-C = Behavioral Distress Tolerance on the Computerized Paced Auditory Serial Addition Task.

1 Each analysis controlling for gender and race.
Table 15

Tests of Mediation Models Examining Change in Negative Affect as a Mediator in the Relation between Behavioral Distress Tolerance Displayed on the Computerized Mirror-Tracing Persistence Task (MTPT-C) and Use of Extreme Aggressive Responses in the Laboratory (EAL)

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>Wald</th>
<th>OR</th>
<th>p</th>
<th>X²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mediator: Change in Negative Affect (CNA) on the PANAS-X</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAL regressed on behavioral distress tolerance (BDT; MTPT-C) (c path)</td>
<td>.003</td>
<td>.003</td>
<td>1.40</td>
<td>1.00</td>
<td>.24</td>
<td>1.42</td>
</tr>
<tr>
<td>CNA PANAS-X regressed on BDT MTPT-C (a path; see Table 14)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EAL regressed on CNA PANAS-X, controlling for BDT MTPT-C (b path)</td>
<td>.03</td>
<td>.05</td>
<td>.37</td>
<td>1.03</td>
<td>.55</td>
<td>.37</td>
</tr>
<tr>
<td>EAL regressed on BDT MTPT-C, controlling for CNA PANAS-X (c' path)</td>
<td>.003</td>
<td>.003</td>
<td>1.32</td>
<td>1.00</td>
<td>.25</td>
<td>1.34</td>
</tr>
<tr>
<td><strong>Mediator: Change in Negative Affect on the DS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAL regressed on behavioral distress tolerance (BDT; MTPT-C) (c path)</td>
<td>.003</td>
<td>.003</td>
<td>1.40</td>
<td>1.00</td>
<td>.24</td>
<td>1.42</td>
</tr>
<tr>
<td>CNA DS regressed on BDT MTPT-C (a path; see Table 14)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EAL regressed on CNA DS, controlling for BDT MTPT-C (b path)</td>
<td>-.07</td>
<td>.08</td>
<td>.76</td>
<td>.94</td>
<td>.38</td>
<td>.79</td>
</tr>
<tr>
<td>EAL regressed on BDT MTPT-C, controlling for CNA DS (c' path)</td>
<td>.003</td>
<td>.003</td>
<td>1.51</td>
<td>1.00</td>
<td>.22</td>
<td>1.53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of Significance of Indirect Effects</th>
<th>B</th>
<th>SE</th>
<th>LLCI</th>
<th>ULCI</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNA PANAS-X as a mediator between BDT MTPT-C and EAL</td>
<td>.0001</td>
<td>.0004</td>
<td>-.0004</td>
<td>.002</td>
<td>.24</td>
<td>.81</td>
</tr>
<tr>
<td>CNA DS as a mediator between BDT MTPT-C and EAL</td>
<td>-.0001</td>
<td>.0005</td>
<td>-.002</td>
<td>.0003</td>
<td>-.33</td>
<td>.74</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c' path = direct effect. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. DS = Dysphoria Scale. OR = odds ratio. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for Wald test for B and odds ratio as well as the omnibus test for X². To report the specific value for X², additional analyses were conducted to enter only the specified predictor variable on the last step.

¹ Each analysis (when testing both models) controlling for gender and race.
Table 16

Tests of Mediational Models Examining Change in Negative Affect as a Mediator in the Relation between Behavioral Distress Tolerance Displayed on the Computerized Paced Auditory Serial Addition Task (PASAT-C) and Use of Extreme Aggressive Responses in the Laboratory (EAL) 1

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>Wald</th>
<th>OR</th>
<th>p</th>
<th>X^2</th>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAL regressed on behavioral distress tolerance (BDT; PASAT-C) (c path)</td>
<td>.001</td>
<td>.001</td>
<td>.56</td>
<td>1.00</td>
<td>.45</td>
<td>.56</td>
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<tr>
<td>CNA PANAS-X regressed on BDT PASAT-C (a path; see Table 14)</td>
<td>---</td>
<td>---</td>
<td>---</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EAL regressed on CNA PANAS-X, controlling for BDT PASAT-C (b path)</td>
<td>.03</td>
<td>.05</td>
<td>.44</td>
<td>1.03</td>
<td>.51</td>
<td>.44</td>
</tr>
<tr>
<td>EAL regressed on BDT PASAT-C, controlling for CNA PANAS-X (c’ path)</td>
<td>.001</td>
<td>.001</td>
<td>.55</td>
<td>1.00</td>
<td>.46</td>
<td>.55</td>
</tr>
<tr>
<td>Mediator: Change in Negative Affect on the DS</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAL regressed on behavioral distress tolerance (BDT; PASAT-C) (c path)</td>
<td>.001</td>
<td>.001</td>
<td>.56</td>
<td>1.00</td>
<td>.45</td>
<td>.56</td>
</tr>
<tr>
<td>CNA DS regressed on BDT PASAT-C (a path; see Table 14)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EAL regressed on CNA DS, controlling for BDT PASAT-C (b path)</td>
<td>-.06</td>
<td>.08</td>
<td>.65</td>
<td>.94</td>
<td>.42</td>
<td>.66</td>
</tr>
<tr>
<td>EAL regressed on BDT PASAT-C, controlling for CNA DS (c’ path)</td>
<td>.001</td>
<td>.001</td>
<td>.55</td>
<td>1.00</td>
<td>.46</td>
<td>.55</td>
</tr>
<tr>
<td>Tests of Significance of Indirect Effects</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CNA PANAS-X as a mediator between BDT PASAT-C and EAL</td>
<td>.00</td>
<td>.001</td>
<td>-.0002</td>
<td>.0004</td>
<td>.11</td>
<td>.91</td>
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<tr>
<td>CNA DS as a mediator between BDT PASAT-C and EAL</td>
<td>.00</td>
<td>.002</td>
<td>-.0002</td>
<td>.0005</td>
<td>.09</td>
<td>.93</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c’ path = direct effect. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. DS = Dysphoria Scale. OR = odds ratio. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for Wald test for B and odds ratio as well as the omnibus test for X^2. To report the specific value for X^2, additional analyses were conducted to enter only the specified predictor variable on the last step.

1 Each analysis (when testing both models) controlling for gender and race.
Table 17

Tests of Mediational Models Examining Post-task Negative Affect as a Mediator in the Relation between Behavioral Distress Tolerance Displayed on the Computerized Mirror-Tracing Persistence Task (MTPT-C) and Use of Extreme Aggressive Responses in the Laboratory (EAL)\(^1\)

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>Wald</th>
<th>OR</th>
<th>p</th>
<th>(X^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mediator: Post-task Negative Affect (PTNA) on the PANAS-X</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAL regressed on behavioral distress tolerance (BDT; MTPT-C) (c path)</td>
<td>.003</td>
<td>.003</td>
<td>1.40</td>
<td>1.00</td>
<td>.24</td>
<td>1.42</td>
</tr>
<tr>
<td>PTNA PANAS-X regressed on BDT MTPT-C (a path; see Table 14)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EAL regressed on PTNA PANAS-X, controlling for BDT MTPT-C (b path)</td>
<td>.03</td>
<td>.04</td>
<td>.56</td>
<td>1.03</td>
<td>.45</td>
<td>.57</td>
</tr>
<tr>
<td>EAL regressed on BDT MTPT-C, controlling for PTNA PANAS-X (c’ path)</td>
<td>.003</td>
<td>.003</td>
<td>1.40</td>
<td>1.00</td>
<td>.24</td>
<td>1.42</td>
</tr>
<tr>
<td><strong>Mediator: Post-task Negative Affect on the DS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAL regressed on behavioral distress tolerance (BDT; MTPT-C) (c path)</td>
<td>.003</td>
<td>.003</td>
<td>1.40</td>
<td>1.00</td>
<td>.24</td>
<td>1.42</td>
</tr>
<tr>
<td>PTNA DS regressed on BDT MTPT-C (a path; see Table 14)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EAL regressed on PTNA DS, controlling for BDT MTPT-C (b path)</td>
<td>-.04</td>
<td>.07</td>
<td>.43</td>
<td>.96</td>
<td>.51</td>
<td>.44</td>
</tr>
<tr>
<td>EAL regressed on BDT MTPT-C, controlling for PTNA DS (c’ path)</td>
<td>.003</td>
<td>.003</td>
<td>1.47</td>
<td>1.00</td>
<td>.23</td>
<td>1.49</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of Significance of Indirect Effects</th>
<th>B</th>
<th>SE</th>
<th>LLCI</th>
<th>ULCI</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTNA PANAS-X as a mediator between BDT MTPT-C and EAL</td>
<td>.00</td>
<td>.0004</td>
<td>-.001</td>
<td>.001</td>
<td>.10</td>
<td>.92</td>
</tr>
<tr>
<td>PTNA DS as a mediator between BDT MTPT-C and EAL</td>
<td>-.0001</td>
<td>.0004</td>
<td>-.002</td>
<td>.0003</td>
<td>-.31</td>
<td>.76</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c’ path = direct effect. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. DS = Dysphoria Scale. OR = odds ratio. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for Wald test for B and odds ratio as well as the omnibus test for \(X^2\). To report the specific value for \(X^2\), additional analyses were conducted to enter only the specified predictor variable on the last step.

\(^1\) Each analysis (when testing both models) controlling for gender and race.
Table 18

Tests of Mediational Models Examining Post-task Negative Affect as a Mediator in the Relation between Behavioral Distress Tolerance Displayed on the Computerized Paced Auditory Serial Addition Task (PASAT-C) and Use of Extreme Aggressive Responses in the Laboratory (EAL) 1

<table>
<thead>
<tr>
<th>Tests of Significance of Model Paths (Including Total and Direct Effects)</th>
<th>B</th>
<th>SE</th>
<th>Wald</th>
<th>OR</th>
<th>p</th>
<th>X²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mediator: Post-task Negative Affect (PTNA) on the PANAS-X</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>EAL regressed on behavioral distress tolerance (BDT; PASAT-C) (c path)</td>
<td>.001</td>
<td>.001</td>
<td>.56</td>
<td>1.00</td>
<td>.45</td>
<td>.56</td>
</tr>
<tr>
<td>PTNA PANAS-X regressed on BDT PASAT-C (α path; see Table 14)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EAL regressed on PTNA PANAS-X, controlling for BDT PASAT-C (b path)</td>
<td>.03</td>
<td>.04</td>
<td>.51</td>
<td>1.03</td>
<td>.47</td>
<td>.52</td>
</tr>
<tr>
<td>EAL regressed on BDT PASAT-C, controlling for PTNA PANAS-X (c′ path)</td>
<td>.001</td>
<td>.001</td>
<td>.52</td>
<td>1.03</td>
<td>.47</td>
<td>.52</td>
</tr>
<tr>
<td><strong>Mediator: Post-task Negative Affect on the DS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAL regressed on behavioral distress tolerance (BDT; PASAT-C) (c path)</td>
<td>.001</td>
<td>.001</td>
<td>.56</td>
<td>1.00</td>
<td>.45</td>
<td>.56</td>
</tr>
<tr>
<td>PTNA DS regressed on BDT PASAT-C (α path; see Table 14)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EAL regressed on PTNA DS, controlling for BDT PASAT-C (b path)</td>
<td>-.04</td>
<td>.07</td>
<td>.43</td>
<td>.96</td>
<td>.51</td>
<td>.43</td>
</tr>
<tr>
<td>EAL regressed on BDT PASAT-C, controlling for PTNA DS (c′ path)</td>
<td>.001</td>
<td>.001</td>
<td>.63</td>
<td>1.00</td>
<td>.43</td>
<td>.63</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests of Significance of Indirect Effects</th>
<th>B</th>
<th>SE</th>
<th>LLCI</th>
<th>ULCI</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTNA PANAS-X as a mediator between BDT PASAT-C and EAL</td>
<td>.00</td>
<td>.0001</td>
<td>-.0001</td>
<td>.0005</td>
<td>.27</td>
<td>.78</td>
</tr>
<tr>
<td>PTNA DS as a mediator between BDT PASAT-C and EAL</td>
<td>.00</td>
<td>.0001</td>
<td>-.001</td>
<td>.0001</td>
<td>-.29</td>
<td>.77</td>
</tr>
</tbody>
</table>

Note. c path = total effect. c’ path = direct effect. PANAS-X = Positive and Negative Affect Schedule – Expanded Form. DS = Dysphoria Scale. OR = odds ratio. LLCI = lower limit of the confidence interval. ULCI = upper limit of the confidence interval. Bootstrap analyses with 5,000 resamples with replacement were used to generate indirect effects (Hayes, 2012), with ninety-five percent confidence intervals exclusive of zero indicating a significant indirect effect. Z = normal test of indirect effect using the Sobel test. p-value is for Wald test for B and odds ratio as well as the omnibus test for X². To report the specific value for X², additional analyses were conducted to enter only the specified predictor variable on the last step.

1 Each analysis (when testing both models) controlling for gender and race.
CHAPTER IV
SUMMARY

Goal of Current Study

The main goal of this study was to examine the relation between distress tolerance and aggression and to determine if negative affect mediated that relation. This examination involved a consideration of both self-reported general tendencies for these constructs as well as specific, behavioral manifestations of these constructs (i.e., particularly distress tolerance and aggression) in a laboratory setting.

Self-Reported and Behavioral Aggression (Hypothesis One)

The hypothesis that self-reported aggression and behavioral aggression in the laboratory would be positively related was partially supported. Specifically, life history of aggression was positively related to life history of self-aggression, life history of antisocial behavior, aggressive ideations and tendencies, average aggression in the laboratory, and use of extreme aggressive responses in the laboratory. This finding confirms previous findings which suggest that aggressive, self-aggressive, and antisocial behavior are related constructs. To demonstrate, Coccaro et al. (1997) demonstrated that the three subscales of the LHA scale, including the life history of aggressive behavior, self-aggressive behavior, and antisocial behavior subscales, were each moderately and positively correlated. Moreover, antisocial behavior and aggressive behavior are related in that antisocial behavior consists of both other-directed aggressive (e.g., frequent physical assaults) and nonaggressive (e.g., manipulating or deceiving others frequently) behavior (American Psychiatric Association, 2000). This study also confirms that aggressive ideations and tendencies, also conceptualized as the likelihood or proneness of
committing various aggressive acts (Archer & Webb, 2006), are related to overt aggressive behavior on both self-reported aggression measures and behavioral aggression measures. Furthermore, aggressive ideations and tendencies are related to self-aggressive and antisocial behaviors, based on self-report. Thus, the current study supports the notion that the BPAQ and LHA questionnaires can serve as useful measures when attempting to predict overt aggressive behavior, which is consistent with previous research findings (Archer & Webb, 2006).

Consistent with the first hypothesis, life history of self-aggression was positively related to all other aggression constructs based on self-report (i.e., life history of aggression, life history of antisocial behavior, and aggressive ideations and tendencies). However, life history of self-aggression was not related to either measure of behavioral aggression (i.e., average aggression and extreme use of aggression in the laboratory). Self-aggression was expected to relate to behavioral measures of aggression in the current study, given that previous research has established a positive relation between self-aggressive behavior and aggressive behavior based on self-report (e.g., Mann, Waternaux, Haas, & Malone, 1999; Oquendo et al., 2000; Straub, Woltersdorf, Keller, & Hole, 1992). Despite these prior findings, there are limited studies examining self-reported aggression as it relates to behavioral aggression observed in the laboratory, and the results of the current study did not substantiate their relation. It would be prudent for future research to further assess this relation using a multi-measure approach (i.e., using both self-report and behavior-based measures) to elucidate the relation between behavioral and self-reported aggression and self-aggression, as doing so could help predict—and thus, prevent—aggression or self-aggression in real-world settings.
Consistent with the first hypothesis, life history of antisocial behavior was positively related to all other constructs of aggression based on self-report (i.e., life history of aggression, life history of self-aggression, aggressive ideations and tendencies), as well as one behavioral measure of aggression (i.e., extreme use of aggression in the laboratory). As discussed previously, this finding was expected given the previous empirical findings that aggression, self-aggression, antisocial behavior, and aggressive ideations and tendencies are related constructs (American Psychiatric Association, 2000; Coccaro et al., 1997). However, inconsistent with predictions, life history of antisocial behavior was not related to average aggression in the laboratory. Studies assessing the relation between life history of antisocial behavior and laboratory-based aggression are limited, so it has not been empirically established why it may be that history of antisocial behavior is not related to average aggression in the laboratory in the current study. For the current study, extreme aggression in the laboratory was treated as a construct that is unique and separate from average aggression in the laboratory given that extreme aggressive responses in the laboratory could be independently conceptualized as the most antisocial response possible on the TRT (i.e., due to its somewhat callous nature). Thus, it can be reasonably presumed that average aggression in the laboratory did not fully capture the same behavioral construct as use of extreme of aggressive responses in the laboratory (i.e., antisocial behavior, psychopathy). Furthermore, the effect size of the relation between life history of antisocial behavior and average aggression in the laboratory was small-to-medium (Cohen, 1992) and was only significantly detected when isolating extreme aggressive responses.
Consistent with predictions, aggressive ideations and tendencies were positively related to all aggression constructs based on self-report (i.e., life history of aggression, life history of self-aggression, life history of antisocial behavior) and behavior in the laboratory (i.e., average aggression and extreme use of aggressive responses). This finding is consistent with previous research findings suggesting that these are all related constructs. Additionally, as predicted, the two behavioral measures of aggression were positively related to each other. This finding is expected given that they are both obtained from the same behavioral measure (i.e., TRT) and, as discussed above, are conceptualized as separate but related constructs. Moreover, participants who were more aggressive overall were more likely to use the most extreme aggressive response available to them in the given paradigm.

In sum, the current findings support previous findings that life history of aggression, self-aggression, and antisocial behavior, as well as behavioral aggression, are separate but related constructs. Furthermore, the interrelations among these constructs generally hold, even when considering shared variance with gender and race.

Distress Tolerance and Aggression (Hypothesis Two)

The hypothesis that self-reported and behavioral distress tolerance would be inversely related to self-reported aggression and behavioral aggression in the laboratory was partially supported. More specifically, self-reported distress tolerance was inversely related to life history of self-aggression, life history of antisocial behavior, aggressive ideations and tendencies, and average aggression in the laboratory. These significant correlations held, even when accounting for shared variance with gender and race. Previous studies have established that emotion dysregulation—a common underlying trait
in individuals who self-harm (Iverson et al., 2011)—is a manifestation of low distress tolerance (Cougle, Timpano, & Goetz, 2012), which would explain the current study’s finding that self-reported distress tolerance is inversely related to life history of self-aggression. Additionally, low distress tolerance has been implicated in antisocial personality disorder (Sargeant et al., 2011), particularly those individuals who engage in frequent aggressive acts (e.g., assault, vandalism), as these individuals are also believed to have poor emotion regulation (McMurran, 2011). Furthermore, the current study’s findings that self-reported distress tolerance is inversely related to aggressive ideations and tendencies as well as average aggression in the laboratory is consistent with the long-established view (derived from both animal and human studies) that low distress tolerance often manifests as aggression directed toward others when provoked with a frustrating stimulus (e.g., Azrin et al., 1966; Deater-Deckard et al., 2010; Hennessy & Wiesenthal, 1999).

Contrary to hypotheses, self-reported distress tolerance was not significantly related to life history of aggression or extreme aggression in the laboratory. The finding that self-reported distress tolerance was not related to life history of aggression contradicts previously established empirical findings and suggests that future research should continue examining this relation to assess whether other unidentified variables are playing an important role in the relation between distress tolerance and aggression. Furthermore, the finding that self-reported distress tolerance was not significantly related to extreme aggression in the laboratory further supports the notion that this behavioral variable of extreme aggression may be more closely related to the antisocial behavior spectrum. A previous study, which was discussed in an earlier section, found that
individuals with psychopathic traits, which are a separate but related construct to antisocial behavior and are considered to be at the most extreme level on the antisocial behavior spectrum, tend to have high distress tolerance because of their characteristic emotional hypo-reactivity, diminished physiological arousal, and emotional detachment (Sargeant et al., 2011). Contrastingly, as noted in Sargeant et al. (2011), individuals who possess antisocial personality traits but low levels of psychopathy tend to have lower levels of distress tolerance. In light of such previous findings, perhaps the participants who used extreme aggressive responses in the laboratory most frequently (i.e., individuals presumed to possess higher levels of psychopathy) reported higher distress tolerance, whereas participants who used extreme aggressive responses, albeit less frequently (i.e., individuals presumed to possess lower levels of psychopathy), reported lower distress tolerance. Such a scenario may have washed out the relation between self-reported distress tolerance and use of extreme aggression in the laboratory, but this can only be hypothesized given that psychopathic traits were not assessed.

Also inconsistent with predictions, behavioral distress tolerance was not related to any of the self-reported aggression measures (i.e., life history of aggression, life history of self-aggression, life history of antisocial behavior, and aggressive ideations and tendencies). Only one known study has previously examined behavioral distress tolerance and its relation to self-aggression (Nock & Mendes, 2008). This study found that a life history of self-aggression was related to lower distress tolerance during a frustrating card sorting task. No other known studies have examined the relation between behavioral distress tolerance and self-reported aggression variables. Thus, given the current study’s null results, it is still unclear whether behavioral distress tolerance observed in a
laboratory setting relates to aggression outside of the laboratory. As discussed below, it is suggested that future research be mindful of which laboratory tasks are used to assess behavioral distress tolerance. Nock and Mendes (2008) may have found a significant result in the relation between behavioral distress tolerance and life history of self-aggression because of the potentially stronger validity of the card sorting task.

Also contrary to hypotheses, behavioral distress tolerance was not related to aggression observed in the laboratory. There are no known studies that have examined behavioral distress tolerance as it relates to behavioral aggression. The behavioral measure that was employed to assess aggression in the laboratory (i.e., TRT) has been established in the extant research as a valid approach to assessing behavioral aggression toward others (e.g., Giancola & Chermack, 1998). However, anecdotally, the behavioral distress tolerance tasks (time elapsed on two frustrating computer tasks, the PASAT-C and the MTPT-C) appeared to affect participants differently, which could have distorted the results. For instance, the two tasks seemed to be differentially frustrating, as 37.1% of participants completed the PASAT-C and none of the participants completed the MTPT-C. Moreover, only 9.2% reached the final level of the MTPT-C before terminating the task. The positive correlation between time elapsed on the two tasks was significant but moderate ($r = .32, p = .002$).

Additionally, as described in a previous section, the PASAT-C involved the addition of two one-digit numbers, which may have been internalized (prior to starting the task) as a seemingly simple task for a college-level student. Thus, when the number presentations became more rapid (and so, the task became more difficult), participants may have experienced performance anxiety, or ego threat, given that the researcher
closely observed each participant while he or she completed the task. Indeed, it was
anecdotally observed by the researcher that many participants appeared flustered and
even embarrassed upon having difficulty completing the task. Therefore, it is plausible
that certain personality traits, such as perfectionism or neuroticism, could have induced
anxiety and played a role in the level of frustration experienced by participants,
confounding the results of these analyses. Furthermore, it was observed that the PASAT-
C became unfeasibly fast for those participants who demonstrated a high level of task
proficiency. In other words, for those participants who provided correct responses the
most rapidly in the beginning of the task, the program would control for their skill
proficiency by speeding up the presentation of numbers, but to a level that seemed to
surpass the speed of processing for these participants. Subsequently, it was observed that
these participants would become seemingly helpless in completing the task and would
then terminate the program. It is also notable that the two behavioral distress tolerance
tasks did not relate to aggression as expected and that the time elapsed, when considered
across the two tasks, approached a significant positive correlation with aggression. Future
research should examine whether these are the most appropriate behavioral measures of
distress tolerance to use in research in this area, given that they likely tap into constructs
other than distress tolerance.

Taken together, findings suggest that low self-reported distress tolerance is related
to a greater history of aggressive behavior and plays a role in increased overall behavioral
aggression. However, results indicate that low laboratory-based distress tolerance
generally does not lead to increased aggression in the laboratory.
Self-Reported Distress Tolerance, General Negative Affect, and Self-Reported Aggression (Hypothesis Three)

The hypothesis that general negative affect would mediate the relation between self-reported distress tolerance and self-reported aggression was not supported in the current study in that none of the examined mediational models using the self-report measures were supported. No known previous study has examined the role of general negative affect in the relation between distress tolerance and aggression. The extant research indicates that aggressive behavior is not determined by one factor, but is a complex interaction of multiple factors, including chemical variables (e.g., testosterone, serotonin, cortisol; Berman, Gladue, & Taylor, 1993; Berman, McCloskey, Fanning, Schumaker, & Coccaro, 2009; Brooks & Reddon, 1996; McCloskey, Berman, Echevarria, & Coccaro, 2009), past exposure to violence and abuse (Vermeiren, Ruchkin, Leckman, Deboutte, & Schwab-Stone, 2002), and challenges to social status, particularly in men (McAndrew, 2009). Unfortunately, the self-report measures employed in the current study did not assess the specific contexts in which past aggressive, antisocial, or self-aggressive behaviors occurred. Rather, these self-report measures assessed for general tendencies and behaviors and, thus, likely did not fully capture the underlying motivation for each past aggressive event.

Overall, these findings indicate that general negative affect does not mediate the relation between general distress tolerance and aggression or the related constructs examined in the current study.
Behavioral Distress Tolerance, Negative Affect, and Behavioral Aggression

(Hypothesis Four)

The hypothesis that negative affect in the laboratory (either change in affect from before to after a frustrating task or when considering affect only after the frustrating task) would mediate the relation between behavioral distress tolerance and behavioral aggression in the laboratory was not supported. There is no known study that has previously examined change in negative affect, or post-task negative affect, as separate mediators in the relation between laboratory-based measures of distress tolerance and aggression. This result indicates that a real-time, laboratory-based approach to assessing these variables does not support negative affect as a mediator in the relation between distress tolerance and aggression. Thus, the current study’s conceptualization that level of distress tolerance determines extent of negative affect following a frustrating stimulus, which in turn determines level of aggression (Berkowitz, 1989; Ellis et al., 2010), was not supported.

The behavioral distress tolerance measures that were used in this study have been used in several earlier studies to examine how behavioral distress tolerance relates to psychopathology, such as mood disorders (Ellis et al., 2010), personality disorders (Bornovalova et al., 2008; Iverson et al., 2011), and substance abuse disorders (Daughters et al., 2005). However, these behavioral distress tolerance programs have not been previously used to examine how they may relate to aggressive behavior in the laboratory. Thus, given the anecdotal limitations of the behavioral distress tolerance measures previously discussed, it would be prudent for researchers to establish an approach to measuring behavioral distress tolerance that is more applicable in the context of assessing
the frustration-aggression hypothesis. Furthermore, it is notable that the current study used a community sample rather than a clinical sample. Most previous studies examining distress tolerance (particularly when using laboratory-based measures) have used a clinical sample to examine the relation between distress tolerance and symptom severity and/or treatment outcome. In a community sample, aggressive behavior (and its related constructs) and negative affect will, in theory, be less intense than that of a clinical sample. It is not clear how such variability in a community sample (relative to a clinical sample) may impact the relations among variables in the model. However, it is plausible that the current study was not able to fully capture the relation between the aforementioned variables due to the nature of the sample if a true mediation conditionally exists based on group (i.e., diagnostic) status.

Impact of Sample Characteristics

The current study was open to all eligible participants on the SONA participation recruitment system, regardless of gender. However, the majority of participants (87.4%; seventy-six individuals) were women, which is presumed to have had an impact on the current findings. The extant research, including several meta-analyses, shows that women are less likely to engage in aggression toward others and are less likely to display antisocial behavior (American Psychiatric Association, 2000; Archer, 2004; Bettencourt & Miller, 1996). Furthermore, national crime statistics indicate that men commit the majority of crimes in almost every domain of violence (Federal Bureau of Investigation, 2009; White & Kowalski, 1994). These general characteristics of women likely affected the analyses when the outcome variable was self-reported or behavioral aggression. Indeed, as discussed in the results, men in the current study reported a greater life history
of aggression and more aggressive ideations and tendencies and displayed more aggressive behavior on both laboratory measures of aggression relative to women.

A further limitation of the current sample was the limited age range of participants, as 85.4% of individuals were in the eighteen to twenty-two years old range. It is known that frequency and severity of aggression, antisocial behavior, and self-harm behavior varies by age (American Psychiatric Association, 2000; Hawton & Harriss, 2008), so it is presumed that including a larger age range would have provided more variability in the data and, consequently, increased the likelihood of finding true effects if they exist.

Finally, the participants being a university-based, community sample (i.e., rather than a clinical sample) may have impacted the nature of the relations among variables as discussed above. That is, it may be that the mediation model examined in the current study would only hold for certain diagnostic groups. For example, perhaps a moderated mediational model where diagnostic status moderates the relation between distress tolerance and negative affect (with the indirect effect being conditional upon diagnostic status) may be a more appropriate model to test.

Clinical Implications

The current findings did find relations among aggression and distress tolerance and general negative affect and aggressive ideations and tendencies (even when controlling for distress tolerance), suggesting that these constructs could be important targets if the patient or client is experiencing difficulty controlling aggressive urges or behaviors. However, the nature of the interrelations among these variables is not fully elucidated by the current study, and other models should be considered to inform in the
efforts to predict and prevent all domains of real-world aggression, including aggressive behavior toward others, self-aggressive behavior, and antisocial behavior.

Limitations of the Current Study and Suggestions for Future Research

There are limitations to consider when interpreting the results of the current study. As discussed previously, one important limitation of this study was the significant discrepancy between male and female participants, with women significantly outnumbering men (seventy-six women; eleven men). Therefore, it is not clear how these findings would generalize to the broader general population, which would be more representative of men. It is also certainly not determined if these same findings would apply to a predominantly male sample, which would be of interest given the outcomes under study. Thus, future research should consider examining these questions with a sample equally representing males and females or with a sample limited to males only. In a similar vein, it is suggested that future studies examine the same mediational models that were used in this study but instead use a clinical sample. This would help determine whether the relations are stronger among individuals with more severe symptoms related to the constructs being investigated (e.g., individuals with anxiety disorders, depressive disorders, borderline personality disorder, antisocial personality disorder).

A further limitation was that the sample size was somewhat low ($N = 87$), reducing the power of statistical analyses. Thus, it is possible that certain results were not obtained simply because of the limitations in sample size. However, given the very small effect sizes (Cohen, 1992) of many of the findings (e.g., between behavioral distress tolerance and negative affect) as well as the counterintuitive direction of the relation among some variables (e.g., between behavioral distress tolerance and average
aggression in the laboratory), it is not likely that an increased sample size would change the findings. The exceptions are possibly the mediational models examining life history of aggression, self-aggression, and antisocial behavior as outcomes. These mediational models were not supported, and a post-hoc power analysis indicated that the likelihood of detecting a true effect was only twenty percent or less for each of the outcomes [i.e., given the effect size of the relation between general negative affect and those outcomes (when controlling for distress tolerance), and with \( N = \) eighty-seven, \( p < .05 \), four predictors, and two tested predictors].

Another limitation, which was discussed previously, is the limited age range of participants. As with the imbalanced gender composition, the restricted age range of the participants in the study certainly affects the generalizability of the results. Future research should consider using a broader age range of adults to examine these questions. Alternatively, to gain a developmental perspective, it would also be of interest to examine this conceptual model among children and adolescents.

Upon examination of the current results, it is clear that further research is needed to better understand the relation between distress tolerance and aggressive behavior, as well as the role of negative affect in this relation. It is suggested that research should focus on the underlying constructs that may predict aggressive behavior, as the current study suggests there is more to be examined than distress tolerance and negative affect. Furthermore, although the PASAT-C was designed to be nearly equal in difficulty for each participant by controlling for skill and proficiency, speed of number presentation for more proficient participants surpassed their speed of processing (i.e., to make it more difficult). Given these anecdotal limitations of the behavioral distress tolerance measures,
it is recommended that future studies focus on establishing an alternative approach to assessing behavioral distress tolerance to ensure that the task is equal in difficulty for all participants and that other constructs (e.g., perfectionism, performance anxiety) are not inadvertently confounding the results. Additionally, there was mild skewness on the life history of self-aggression and life history of antisocial behavior subscales, which was not simply due to extreme outliers. Accordingly, using other self-report measures of these constructs that result in less skew should be considered for future studies.

There was varying amounts of time between completing the online portion of the study and completing the laboratory portion of the study. More specifically, the time between completing the online measures and the laboratory session varied (by participant) from zero to five months. That is, some participants completed the online questionnaires five months prior to completing the laboratory session, whereas other participants completed the online portion within the same week as completing the laboratory session. Therefore, it is not clear to what extent the passage of time diluted the effect size when examining the relations among variables captured at these various time points. Future research should be conducted to determine if self-report measures and laboratory measures assessed more close temporally would show stronger relations. However, it should be noted that despite this limitation, it was found that most domains of aggressive behavior (life history of aggression, life history of antisocial behavior, and aggressive ideations and tendencies), which were measured by self-report at one time point, were related to behavioral aggression in the laboratory often months later (five of the eight tested correlations were significant).
Finally, future research should consider other possible models of the relations among the variables of interest. For example, it could be that negative affect interacts with distress tolerance when predicting aggression, suggesting a moderational—rather than a mediational—model. That is, perhaps low distress tolerance coupled with strong negative affect predicts the highest levels of aggression among individuals.

Conclusions

The main purpose of the current study was to examine the relation between distress tolerance and aggression, as well as the role of negative affect in this relation. It can be concluded from the current results that self-reported distress tolerance is inversely related to multiple domains of aggression. Based on previous research, individuals with low distress tolerance have difficulty regulating affect and may engage in aggressive acts—directed toward self and/or others—to help regulate emotions. Despite these previous findings, the current study did not yield a relation between behavioral distress tolerance and self-reported aggression or behavioral aggression, which contrasts with the findings of a previous study (Nock & Mendes, 2008). There were several anecdotal limitations with the behavioral distress tolerance tasks employed in this study, which likely decreased the construct validity of the tasks and weakened analyses. When the role of negative affect was examined in the relation between distress tolerance and aggression in twenty tested models, negative affect was not supported as a mediator. Thus, the current findings do not support the idea that negative affect plays a mediating role in the relation between distress tolerance and aggression.
APPENDIX A

LHA (Coccaro et al., 1997)

Directions: Rate yourself on each of the following items using the rating system below. Only rate actual behavior, be it verbal and/or physical. Do not include in your ratings thoughts not followed by any action. For these questions, it is important to rate any events that have occurred over your lifetime (including your years as a teenager and a young adult). Be as honest as possible.

\[0 = \text{Never Happened}\]
\[1 = \text{Only Happened Once}\]
\[2 = \text{Happened a Couple of Times (2-3)}\]
\[3 = \text{Happened Several Times (4-9)}\]
\[4 = \text{Happened Many Times (10+)}\]
\[5 = \text{Happened So Many Times I Couldn’t Give a Number}\]

HOW MANY TIMES WOULD YOU SAY YOU DID THE FOLLOWING THINGS OVER THE COURSE OF YOUR LIFE TO DATE?

1. “Throw” a temper tantrum (for example: screaming, slamming doors, throwing things when frustrated to the “breaking point”, etc.).

\[0 = \text{Never Happened}\]
\[1 = \text{Only Happened Once}\]
\[2 = \text{Happened a Couple of Times (2-3)}\]
\[3 = \text{Happened Several Times (4-9)}\]
\[4 = \text{Happened Many Times (10+)}\]
\[5 = \text{Happened So Many Times I Couldn’t Give a Number}\]

2. Get into physical fights with other people.
3. Get into verbal fights or arguments with other people.

0 = Never Happened
1 = Only Happened Once
2 = Happened a Couple of Times (2-3)
3 = Happened Several Times (4-9)
4 = Happened Many Times (10+)
5 = Happened So Many Times I Couldn’t Give a Number

4. Deliberately hit another person (or animal) in anger.

0 = Never Happened
1 = Only Happened Once
2 = Happened a Couple of Times (2-3)
3 = Happened Several Times (4-9)
4 = Happened Many Times (10+)
5 = Happened So Many Times I Couldn’t Give a Number

5. Deliberately struck or deliberately broke objects (for example: windows, dishes, etc.) in anger.

0 = Never Happened
1 = Only Happened Once
2. Deliberately tried to physically hurt yourself in anger or desperation.

0 = Never Happened
1 = Only Happened Once
2 = Happened a Couple of Times (2-3)
3 = Happened Several Times (4-9)
4 = Happened Many Times (10+)
5 = Happened So Many Times I Couldn’t Give a Number

7. Deliberately tried to end your life or kill yourself in anger or desperation.

0 = Never Happened
1 = Only Happened Once
2 = Happened a Couple of Times (2-3)
3 = Happened Several Times (4-9)
4 = Happened Many Times (10+)
5 = Happened So Many Times I Couldn’t Give a Number

8. Had discipline problems in school, which resulted in a reprimand by the school principal or in a suspension or expulsion from school.

0 = Never Happened
1 = Only Happened Once
2 = Happened a Couple of Times (2-3)
3  = Happened Several Times (4-9)
4  = Happened Many Times (10+)
5  = Happened So Many Times I Couldn’t Give a Number

9. Had difficulties with bosses or supervisors, which resulted in a physical or verbal fight
and led to a reprimand, a demotion, or a firing from your job.
0  = Never Happened
1  = Only Happened Once
2  = Happened a Couple of Times (2-3)
3  = Happened Several Times (4-9)
4  = Happened Many Times (10+)
5  = Happened So Many Times I Couldn’t Give a Number

10. Had difficulties with other people due to lying, stealing, sexual promiscuity,
involvement in activities that were questionably legal, and/or disregard for the rights of
others.
0  = Never Happened
1  = Only Happened Once
2  = Happened a Couple of Times (2-3)
3  = Happened Several Times (4-9)
4  = Happened Many Times (10+)
5  = Happened So Many Times I Couldn’t Give a Number

11. Had difficulties with the law or police, which resulted in a warning, arrest, or
conviction of a misdemeanor or felony offense.
0  = Never Happened
1  = Only Happened Once
2 = Happened a Couple of Times (2-3)
3 = Happened Several Times (4-9)
4 = Happened Many Times (10+)
5 = Happened So Many Times I Couldn’t Give a Number
APPENDIX B

BPAQ (Buss & Perry, 1992)

Instructions: Please rate each of the following items in terms of how characteristic they are of you. Be as honest as possible. Use the following scale to rate yourself.

Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

1. Once in a while I can’t control the urge to strike another person.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

2. Given enough provocation, I may hit another person.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

3. If somebody hits me I hit back.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

4. I get into fights more than the average person.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

5. If I have to resort to violence to protect my rights, I will.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

6. There are people that have pushed me so far that we came to blows.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

7. I can think of no good reason for ever hitting a person.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

8. I have threatened people I know.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

9. I have become so mad that I have broken things.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me

10. I tell my friends openly when I disagree with them.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
11. I often find myself disagreeing with people.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
12. When people annoy me, I may tell them what I think of them.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
13. I can’t help getting into arguments with people I disagree with.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
14. My friends say I am somewhat argumentative.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
15. I flare up quickly but get over it quickly.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
16. When frustrated, I let my irritation show.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
17. I sometimes feel like a powder keg ready to explode.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
18. I am an even-tempered person.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
19. Some of my friends say I am hot-headed.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
20. Sometimes I fly off the handle for no good reason.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
21. I have trouble controlling my temper.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
22. I am sometimes eaten up with jealousy.
Not Like Me At All  1 - 2 - 3 - 4 - 5  Very Much Like Me
23. At times I feel like I have gotten a raw deal out of life.
Not Like Me At All 1 - 2 - 3 - 4 - 5 Very Much Like Me

24. Other people always seem to get the breaks.
Not Like Me At All 1 - 2 - 3 - 4 - 5 Very Much Like Me

25. I wonder why sometimes I feel so bitter about things.
Not Like Me At All 1 - 2 - 3 - 4 - 5 Very Much Like Me

26. I know that “friends” talk about me behind my back.
Not Like Me At All 1 - 2 - 3 - 4 - 5 Very Much Like Me

27. I am suspicious of overly friendly strangers.
Not Like Me At All 1 - 2 - 3 - 4 - 5 Very Much Like Me

28. I sometimes feel that people are laughing at me behind my back.
Not Like Me At All 1 - 2 - 3 - 4 - 5 Very Much Like Me

29. When people are especially nice, I wonder what they want.
Not Like Me At All 1 - 2 - 3 - 4 - 5 Very Much Like Me
APPENDIX C

DTS (Simons & Gaher, 2005)

Directions: Think of times that you feel distressed or upset. Rate yourself on each of the following items by placing a check in the box that best describes your beliefs about feeling distress or upset.

1. Feeling distressed or upset is unbearable to me.
   □ Strongly Agree
   □ Mildly Agree
   □ Agree and Disagree Equally
   □ Mildly Disagree
   □ Strongly Disagree

2. When I feel distressed or upset, all I can think about is how bad I feel.
   □ Strongly Agree
   □ Mildly Agree
   □ Agree and Disagree Equally
   □ Mildly Disagree
   □ Strongly Disagree

3. I can’t handle feeling distressed or upset.
   □ Strongly Agree
   □ Mildly Agree
   □ Agree and Disagree Equally
   □ Mildly Disagree
   □ Strongly Disagree
4. My feelings of distress are so intense that they completely take over.

☐ Strongly Agree  ☐ Mildly Agree  ☐ Agree and Disagree Equally  ☐ Mildly Disagree  ☐ Strongly Disagree

5. There’s nothing worse than feeling distressed or upset.

☐ Strongly Agree  ☐ Mildly Agree  ☐ Agree and Disagree Equally  ☐ Mildly Disagree  ☐ Strongly Disagree

6. I can tolerate being distressed or upset as well as most people.

☐ Strongly Agree  ☐ Mildly Agree  ☐ Agree and Disagree Equally  ☐ Mildly Disagree  ☐ Strongly Disagree

7. My feelings of distress or being upset are not acceptable.

☐ Strongly Agree  ☐ Mildly Agree  ☐ Agree and Disagree Equally  ☐ Mildly Disagree  ☐ Strongly Disagree
8. I’ll do anything to avoid feeling distressed or upset.
   - □ Strongly Agree
   - □ Mildly Agree
   - □ Agree and Disagree Equally
   - □ Mildly Disagree
   - □ Strongly Disagree

9. Other people seem to be able to tolerate feeling distressed or upset better than I can.
   - □ Strongly Agree
   - □ Mildly Agree
   - □ Agree and Disagree Equally
   - □ Mildly Disagree
   - □ Strongly Disagree

10. Being distressed or upset is always a major ordeal for me.
    - □ Strongly Agree
    - □ Mildly Agree
    - □ Agree and Disagree Equally
    - □ Mildly Disagree
    - □ Strongly Disagree

11. I am ashamed of myself when I feel distressed or upset.
    - □ Strongly Agree
    - □ Mildly Agree
    - □ Agree and Disagree Equally
    - □ Mildly Disagree
    - □ Strongly Disagree
12. My feelings of distress or being upset scare me.
☐ Strongly Agree
☐ Mildly Agree
☐ Agree and Disagree Equally
☐ Mildly Disagree
☐ Strongly Disagree

13. I'll do anything to stop feeling distressed or upset.
☐ Strongly Agree
☐ Mildly Agree
☐ Agree and Disagree Equally
☐ Mildly Disagree
☐ Strongly Disagree

14. When I feel distressed or upset, I must do something about it immediately.
☐ Strongly Agree
☐ Mildly Agree
☐ Agree and Disagree Equally
☐ Mildly Disagree
☐ Strongly Disagree

15. When I feel distressed or upset, I cannot help but concentrate on how bad the distress actually feels.
☐ Strongly Agree
☐ Mildly Agree
☐ Agree and Disagree Equally
☐ Mildly Disagree
☐ Strongly Disagree
APPENDIX D

PANAS-X (GENERAL NEGATIVE AFFECT SCALE; Watson et al., 1988)

Directions:

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way in general (that is, on the average). Use the following scale to record your answers:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>very slightly or not at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>a little</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>moderately</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>quite a bit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

______ afraid       _____ lonely
______ nervous      _____ scared
______ distressed   _____ sad
______ hostile      _____ angry
______ jittery      _____ disgusted
______ scornful     _____ loathing
______ irritable    _____ upset
______ downhearted  _____ alone
______ blue         _____ guilty
______ ashamed
APPENDIX E

PANAS-X (GENERAL NEGATIVE AFFECT SCALE; Watson, 1988)

Directions:

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now (that is, at the present moment). Use the following scale to record your answers:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>very slightly or not at all</td>
<td>a little</td>
<td>moderately</td>
<td>quite a bit</td>
<td>extremely</td>
</tr>
</tbody>
</table>

| _____ afraid | _____ lonely |
| _____ nervous | _____ scared |
| _____ distressed | _____ sad |
| _____ hostile | _____ angry |
| _____ jittery | _____ disgusted |
| _____ scornful | _____ loathing |
| _____ irritable | _____ upset |
| _____ downhearted | _____ alone |
| _____ blue | _____ guilty |
| _____ ashamed |  |
APPENDIX F

DYSPHORIA SCALE (DS; Brown et al., 2002)

Instructions: Think of how you are feeling right now. For each question, circle the number that best describes how you are feeling each emotion at the present moment. Use the following scale when considering your answers.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very slightly or not at all</td>
<td>A little</td>
<td>Moderately</td>
<td>Quite a bit</td>
<td>Extremely</td>
</tr>
</tbody>
</table>

**How frustrated do you feel?**

1 – Not at all or very slightly
2 – A little
3 – Moderately
4 – Quite a bit
5 – Extremely

**How anxious do you feel?**

1 – Not at all or very slightly
2 – A little
3 – Moderately
4 – Quite a bit
5 – Extremely

**How irritable do you feel?**

1 – Very slightly or not at all
2 – A little
3 – Moderately
4 – Quite a bit
5 – Extremely

**Are you experiencing any physical discomfort?**

(circle one) YES NO

If yes, how uncomfortable are you?

1 – Very slightly or not at all
2 – A little
3 – Moderately
4 – Quite a bit
5 – Extremely
APPENDIX G
DEMOGRAPHICS AND BACKGROUND INFORMATION FORM

General Information:
Age: ___________
Sex (circle one): Male  Female
Race (circle one): Caucasian  African American  Asian  Hispanic  Other: ______________
Date of Birth: ___________
Current Occupation: ____________________________________________________

Behavioral History
Have you ever been diagnosed with a mental health disorder (e.g., depression, anxiety)?
YES  NO

If yes, are you currently taking medication to treat a mental health disorder?
YES  NO

If yes, what type of medication are you currently taking? - ______________

Academic History

Have you ever been diagnosed with a learning disorder (LD)?  YES
NO

If yes, at what age were diagnosed with LD? ________
If yes, where or by whom was he/she diagnosed with LD?

____________________________________________________________________

Have you ever been in any specialized classes at school?  YES  NO

Have you ever repeated a grade?  YES  NO

If yes, what grade(s) were you retained? _____________________

Highest grade completed in school: __________________________

[ If attended college, please enter 12+1 for each year attended. For example, if 2 years of college, enter 14. Bachelor’s degree, enter 16; Master’s degree, enter 18, Ph.D. or higher degree, enter 20.]

Medical History:

Do you require a hearing aid?  YES  NO

If yes, are you wearing your hearing aid today?  YES  NO

Do you have a hearing problem that is not corrected by a hearing aid?  YES  NO

If yes, please describe: _____________________________________________
Do you wear contacts or glasses?  

| YES | NO |

If yes, are you wearing your glasses or contacts today?  

| YES | NO |

Do you have a visual problem that is not corrected by glasses or contacts?  

| YES | NO |

Do you have a history of seizures?  

| YES | NO |

Do you have a history of concussions?  

| YES | NO |

If yes, about how many concussions have you had? ______________________

Do you have a history of a traumatic brain injury (TBI)?  

| YES | NO |

Have you ever been diagnosed with a neurological deficit (e.g., memory loss)?

**Family Information:**

**Current Marital Status (please check one):**  

| Never married | Currently married | Currently living together | Separated | Divorced | Widowed |

Taking into account all sources of income (wages, interest, government assistance, child support, etc.), please estimate the total family income on a yearly basis BEFORE taxes.
(This is for research purposes ONLY. No identifying information will be paired with these data)

(Enter corresponding Number from column at right)  

0= Earns no income/dependent on welfare  
1=Earns less than $10,000  
2= $10,000- $14,999  
3= $15,000- $19,999  
4= $20,000- $24,999  
5= $25,000- $29,999  
6= $30,000- $34,999  
7= $35,000- $39,999  
8= $40,000- $49,999  
9= $50,000- $59,999  
10= $60,000- $74,999  
11= $75,000- $99,999  
12= Earns $100,000 or more

Are you receiving any form of government assistance (e.g., AFCD, SSI)?

YES  NO

(This is for research purposes ONLY. No identifying information will be paired with these data)

Drugs and Alcohol:

Do you smoke or use other nicotine products?  YES  NO

If yes, when was the last time that you used nicotine (day and time)?__________

(day/time)

Do you drink alcohol?  YES  NO
If yes, when was the last time that you consumed an alcoholic beverage? ______

(day/time)

If yes, what is the average number of alcoholic beverages that you consume weekly? _____
APPENDIX H

ONLINE INFORMED CONSENT FOR PHASE ONE

The University of Southern Mississippi

Authorization to Participate in Research Project

Consent is hereby given to participate in the study titled: How Emotions Affect Behavior

PURPOSE: The present study is designed to examine the association between specific emotions and behaviors. Results will be used to guide later research on emotions and behaviors.

DESCRIPTION OF STUDY: This study consists of two phases. The first phase involves completing several brief questionnaires via the internet. The completion of these initial questionnaires should take approximately 30 minutes. Participants who complete these online questionnaires will earn 0.5 research participation credit. Participants who complete the online questionnaires might be contacted by the researcher (via email or telephone) and asked to complete the second phase of this study, which involves attending a 60-minute laboratory session. Individuals who participate in this laboratory session will earn an additional 2 research participation credits (for a total of 2.5 SONA credits for participating in both phases of the study).

BENEFITS: Participants will receive 0.5 research participation credit upon completion of the first phase of the study (completing the online questionnaires). Furthermore, it is hoped that this study will contribute to our understanding of emotions and behaviors.

RISKS: During the first phase of the study (online questionnaires), participants will not be exposed to more than minimal risk (e.g., fleeting reminders of past stressful events). If
participants find they are distressed by completing these questionnaires, they should notify the researcher immediately.

CONFIDENTIALITY: You will place your name on the informed consent form and the internet-based questionnaires. At the conclusion of data collection for this study, all identifying information will be deleted. Data gathered from the present study will be stored in a secure location for six years, at which time it will be destroyed. Findings will be presented in aggregate form with no identifying information to ensure confidentiality.

PARTICIPANT ASSURANCE: Whereas no assurance can be made concerning results that may be obtained (since results from investigational studies cannot be predicted) the researcher will take every precaution consistent with the best scientific practice.

Participation in this project is completely voluntary, and participants may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Questions concerning the research should be directed to Anne McIntyre (anne.mcintyre@eagles.usm.edu) or Dr. Mitchell Berman (mitchell.berman@usm.edu) by email or by telephone (601) 266-4588. This project and this consent form have been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human participants follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive, Box #5147, Hattiesburg, MS 39406, (601) 266-6820. Participants may request a copy of this form.

If you become distressed as a result of your participation in this study, then you might want to contact an agency on-campus or in the surrounding community that may be
able to provide services for you. You will be responsible for any fees associated with these services. A partial list of available resources is provided below:

University of Southern Mississippi Counseling Center (601) 266-4829
Pine Belt Mental Healthcare (601) 544-4641
Pine Grove Recovery Center (800) 821-7399
Forrest General Psychology Services (601) 288-4900
Lifeway Counseling Service Incorporated (601) 268-3159

If you experience distress as a result of your participation in this study, please notify Anne McIntyre (anne.mcintyre@eagles.usm.edu).

ELECTRONIC CONSENT:

*Before you begin, please type your name as it appears in USM records. This will serve as your "electronic signature" that you agree to participate in this study. Your name will never be linked with your responses.

*Please provide us with your e-mail address and cellular phone number so that we may contact you via email or phone about participating in the second phase of the study.
APPENDIX I

WRITTEN INFORMED CONSENT FOR PHASE TWO

The University of Southern Mississippi

Authorization to Participate in Research Project

Consent is hereby given to participate in the study titled: Emotions, Competition, and Reaction-Time

PURPOSE: The present study is designed to examine the association between specific emotions, competitive tasks, and reaction-time. Results will be used to guide later research on emotions, competition, and reaction-time.

DESCRIPTION OF STUDY: Participation will consist of a 60-minute laboratory session, and participants who attend this session will earn 2 research participation credits (to be added to the 0.5 SONA credit earned for completing the online questionnaires, for a total of 2.5 credits). During the laboratory session, participants will complete two computer tasks, a short questionnaire, and a reaction-time task. The short questionnaire assesses your current emotions. The computer tasks and reaction-time task assess your speed of information processing (i.e., reaction-time).

BENEFITS: Individuals who participate in this laboratory session will receive 2 research participation credits (to be added to the 0.5 SONA credit earned for completing the online questionnaires). Additionally, it is hoped that this study will contribute to our understanding of emotions, competition, and reaction-time.

RISKS: During the laboratory session, participants will be exposed to two brief, challenging computer tasks as well as a reaction-time competition against an opponent. The reaction-time task will involve delivering and receiving mild electric shocks. The
electric shocks are not strong enough to pose a danger to your health or safety. You will have the option to discontinue the reaction-time task without penalty.

CONFIDENTIALITY: You will place your name on the informed consent form. A three-digit code known only to the researcher will be used to link your name to your data. After assigning this three-digit code to your name, the researcher will use this code (rather than your name) when examining your data. At the conclusion of data collection for this study, all identifying information will be deleted. Data gathered from the present study will be stored in a secure location for six years, at which time it will be destroyed. Findings will be presented in aggregate form with no identifying information to ensure confidentiality.

PARTICIPANT ASSURANCE: Whereas no assurance can be made concerning results that may be obtained (since results from investigational studies cannot be predicted) the researcher will take every precaution consistent with the best scientific practice.

Participation in this project is completely voluntary, and participants may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Questions concerning the research should be directed to Anne McIntyre (anne.mcintyre@eagles.usm.edu) or Dr. Mitchell Berman (mitchell.berman@usm.edu) by email or by telephone (601) 266-4588. This project and this consent form have been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human participants follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive, Box #5147, Hattiesburg, MS 39406, (601) 266-6820. Participants may request a copy of this form.
If you become distressed as a result of your participation in this study, then you might want to contact an agency on-campus or in the surrounding community that may be able to provide services for you. You will be responsible for any fees associated with these services. A partial list of available resources is provided below:

University of Southern Mississippi Counseling Center  (601) 266-4829
Pine Belt Mental Healthcare  (601) 544-4641
Pine Grove Recovery Center  (800) 821-7399
Forrest General Psychology Services  (601) 288-4900
Lifeway Counseling Service Incorporated  (601) 268-3159

If you experience distress as a result of your participation in this study, please notify Anne McIntyre (anne.mcintyre@eagles.usm.edu).

____________________________________________________
DATE ____________
Printed Name of the Research Participant

____________________________________________________
DATE____________
Signature of the Research Participant

____________________________________________________
DATE____________
Signature of the Person Explaining the Study
APPENDIX J

INSTITUTIONAL REVIEW BOARD NOTICE OF COMMITTEE ACTION

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.6820 | Fax: 601.266.4377 | www.usm.edu/irb

TO: Anne McIntyre
431 Twin Oaks Lane
Hattiesburg, MS 39402

FROM: Lawrence A. Hosman, Ph.D.
Institutional Review Board Chair

PROTOCOL NUMBER: 11101702
PROJECT TITLE: The Role of Distress Tolerance in Aggressive Behavior

Enclosed is The University of Southern Mississippi Institutional Review Board Notice of Committee Action taken on the above referenced project proposal. If I can be of further assistance, contact me at (601) 266-4279, FAX at (601) 266-4275, or you can e-mail me at Lawrence.Hosman@usm.edu. Good luck with your research.
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board 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: 11101702
PROJECT TITLE: The Role of Distress Tolerance in Aggressive Behavior
PROJECT TYPE: Dissertation
RESEARCHER/S: Anne McIntyre
COLLEGE/DIVISION: College of Education & Psychology
FUNDING AGENCY: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF PROJECT APPROVAL: 10/20/2011 to 10/19/2012

Lawrence A. Hosman, Ph.D.
Institutional Review Board Chair

DATE 10-21-2011
REFERENCES


