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Relations among dimensions of emotion regulation and aggressive behavior

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Running head: EMOTION REGULATION AND AGGRESSIVE BEHAVIOR

Relations Among Dimensions of Emotion Regulation and Aggressive Behavior

by

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Abstract

In the absence of the ability to adaptively regulate one's emotions, individuals may turn to impulsive and maladaptive methods of regulation, including engaging in aggressive behavior. Gratz and Roemer's (2004) model of emotion regulation (Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41-54) includes the dimensions of nonacceptance, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, access to emotion regulation strategies, and lack of emotional clarity. This study sought to identify the relations among these dimensions and the broader constructs of emotional experiencing (i.e., affect intensity), emotional awareness (i.e., mindfulness), emotional clarity, (i.e., alexithymia), acceptance of emotions (i.e., experiential avoidance), and overall emotion regulation skillfulness (i.e., difficulties in emotion regulation) and the relative contributions of each of these dimensions to aggression utilizing web-based surveys administered to a college student sample ($n = 307$). Affect intensity was not significantly related to emotion regulation or to aggression. Regression analyses indicated that experiential avoidance predicts overall aggression, physical aggression, verbal aggression, hostility, and anger. Difficulty with impulse control when distressed predicted overall aggression, physical aggression, and anger. Access to emotion regulation strategies predicted hostility. These findings suggest that experiential avoidance may have an important role in aggressive behaviors and could be an effective target for intervention.

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Relations Among Dimensions of Emotion Regulation and Aggressive Behavior

Introduction and Background

Recent research has implicated the ability and the willingness to regulate emotion as important factors in maintaining psychological health. The impaired ability to experience, to remain in contact with, and to effectively regulate one's emotions appears to be linked to many forms of psychopathology (Dorard, Berthoz, Phan, Corcos, & Bungener, 2008; Gross & Munoz, 1995; Honkalampi et al., 2009; Taylor, 1994; Venta, Sharp, & Hart, 2012; Zonnevijlle-Bender, van Goozen, Cohen-Kettenis, van Elburg, & van Engeland, 2002). Vine and Aldao (2014) explored the possibility that deficits of emotion clarity (i.e., the ability to clearly identify emotion) exist as a transdiagnostic factor in psychopathology and found evidence that such deficits can be predictive of anhedonic depression, social anxiety, borderline personality pathology, binge eating, and alcohol use. In the same study, the relationship between emotion clarity and each of these disorders was mediated by emotion regulation deficits, leading the researchers to conclude that difficulties in identifying emotions impairs the ability to regulate emotions and thereby contributes to a variety of psychopathology. In the absence of adaptive regulation strategies, evidence supports the idea that individuals may attempt to regulate the presence of negative affect (that is, emotions that are considered aversive, whether the emotion is clear to the individual or difficult to identify) through maladaptive means, such as alcohol and substance use (Fischer, Anderson, & Smith 2004), risky sexual behavior (Simons, Maisto, & Wray, 2010), and aggression (Jakupcak, 2003), the topic of primary interest in this study.

Difficulties in Emotion Regulation

Gratz and Roemer (2004) identified six dimensions of difficulties in emotion regulation (ER): (a) the nonacceptance of emotional responses, (b) difficulties engaging in goal-directed behavior, (c) impulse control difficulties, (d) a lack of emotional awareness, (e) limited access to emotion regulation strategies, and (f) a lack of emotional clarity. This model of ER difficulties was developed in an attempt to integrate findings related to multiple theories of ER and to create a comprehensive, clinically relevant measurement of difficulties in ER. The resulting measure, the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) has been utilized in over 50,000 studies as a multidimensional measurement of emotion regulation difficulties and has been validated in French, German, Italian, Portuguese, Spanish, and Turkish; the DERS has also been successfully validated for use in adolescent populations and has been found to retain its psychometric properties across male and female respondents and the English-language version has been stable across racial groups and ethnic groups (specifically, African-American, Asian-American, Caucasian-American, Cuban-American, Dominican, Mexican-American, and Puerto Rican; Guarnaccia, Martinez, Acosta, 2005; Ritschel, Tone, Schoemann, & Lim, 2015).

At the time Gratz and Roemer (2004) developed the DERS, the available evidence suggested that ER consisted of the awareness and the identification of emotions, acceptance of emotions, the ability to engage in goal-directed behavior, and the individual's access to emotion regulation strategies that are perceived as effective. In order to develop the DERS, Gratz and Roemer created a set of questions for each of these domains. Analyses suggested that the initial conceptualization of awareness and identification of emotions was better explained as a two-factor construct wherein the awareness of emotions (being aware of emotional responses) and clarity of emotions (understanding emotional responses) are two distinct dimensions of ER.

Further, the ability to engage in goal-directed behavior (i.e., refraining from impulsively responding when experiencing negative emotions) emerged as two separate factors: the ability to engage in goal-directed behavior and the ability to inhibit impulsive responses. The initial validation of Gratz and Roemer's DERS found that four of these six dimensions were correlated with each other; only difficulties engaging in goal-directed behavior and lack of emotional awareness were not significantly correlated.

Given the evidence supporting the relevance of ER difficulties in self-harm (e.g., Linehan, 1993) and in intimate partner violence (Jakupcak, 2003), Gratz and Roemer's initial validation of their Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) included correlational analyses of DERS dimensions, the frequency of self-harm, and the frequency of intimate partner violence perpetration. Results of these analyses indicated that overall ER difficulties were significantly correlated with self-harm for women and men and that overall ER difficulty was significantly correlated with intimate partner violence for men but not for women. While these findings provide support for the role of ER difficulties in the perpetration of intimate partner violence, this work has not been extended to the exploration of the relations between these dimensions of ER, overall aggression, physical aggression, verbal aggression, anger, and hostility.

Although each of these dimensions of emotion regulation have been explored separately as potential factors in emotion regulation difficulties, the links among the experience of emotion, difficulties in emotion regulation, and aggressive behavior more generally have not been explored. It is also the case that there appears to be a wealth of literature outside of the DERS conceptualizations of these ER constructs that lends itself to this investigation of the value of the

factors in understanding emotion and aggression with greater richness. As a result, this study was strengthened by the use of multiple indices of each factor.

Nonacceptance of Emotional Responses/Emotional Willingness

This study examined the correlation between the nonacceptance of emotional responses dimension of the DERS and experiential avoidance. The development of the DERS utilized an early measure of experiential avoidance (the Acceptance and Action Questionnaire (*AAQ-I*; Hayes et al., 2004) in order to assess for the individual's willingness to remain in contact with an emotional experience (Gratz & Roemer, 2004). This dimension of the DERS refers to the willingness to experience and to remain in contact with negative emotional experiences without secondary negative reactions to those experiences. In line with Gratz and Roemer's initial conceptualization of this domain of emotion regulation difficulties, this study defines Gratz and Roemer's domain of Nonacceptance as individual levels of experiential avoidance and utilizes the broader term "emotional willingness."

Experiential avoidance. Experiential avoidance is defined as the attempt to control the form or frequency of aversive private experiences, including bodily sensations, emotions, thoughts, memories, and behavioral predispositions (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). It is closely related to emotion regulation but includes all cognitive and behavioral strategies that are used to reduce and to avoid negative experiences. The large overlap among the conceptual understandings of alexithymia, emotion regulation, and experiential avoidance led Venta, Hart, and Sharp (2013) to examine experiential avoidance as a mediator of the relationship between alexithymia and emotion regulation difficulties. Results replicated the aforementioned positive relationship between emotion regulation difficulties and alexithymia

and found that experiential avoidance partially mediated the relationship. Venta and colleagues (2013) theorized that experiential avoidance arises early in development and interferes with the individual's ability to learn and to use emotional language (alexithymia). Alternatively, the authors proposed that an underdeveloped ability to identify and describe aversive private experiences may increase experiential avoidance when failed attempts to identify and describe become aversive themselves. The most frequently used measure of experiential avoidance is the Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011). Item analysis of this measure has indicated that it primarily assesses willingness to experience emotion (Loverich, 2015), which has strong conceptual overlap with the Nonacceptance factor of the DERS. The Nonacceptance domain of the DERS was developed using a previous version of the AAQ-II; the AAQ-II was developed to improve reliability and comprehension of the older version (Hayes et al., 2004). This study uses the AAQ-II in addition to the DERS to investigate whether the relationship between these two measures remains significant with the revised measure.

Factors implicated in the development of experiential avoidance. Blackledge and Hayes (2001) proposed that experiential avoidance is a result of the evaluative functions of human language and cognition. As explained by Hayes and Gifford (1997), experiential avoidance is a natural phenomenon that is built into human language and reinforced by societal norms. Avoiding aversive experiences becomes pathogenic when it is excessive and pervasive. Hayes and Gifford (1997) cited cognitive and behavioral research on suppression and avoidance that has consistently shown that attempts to suppress thoughts and emotions typically result in a rebound effect where those suppressed thoughts and feelings occur with greater frequency following attempted suppression. Further, Hayes and Gifford (1997) explained the development of experiential avoidance as a function of the bidirectionality of human language, where human

language symbolically represents events and can also influence the experience of the event (e.g., verbally reporting pain can lead to a re-experiencing of that pain).

Difficulties Engaging in Goal-Directed Behavior

As part of their model of ER, Gratz and Roemer (2004) proposed that individuals with ER difficulties would also have difficulties engaging in goal-directed behaviors. Goal-directed behavior is defined as purposive behavior oriented toward the pursuit of a desirable outcome. Goal-directed behavior is instrumental and controlled by the causal relationship between the individual's action and the predicted outcome or consequences (de Wit & Dickinson, 2009). Engaging in goal-directed behavior requires inhibiting responses that do not lead to the individual's desired outcome or that may create a barrier to the desired outcome. The DERS measures the ability to engage in goal-directed behavior using questions such as "when I'm upset, I have difficulty getting work done" and the reverse-scored item "when I'm upset, I can still get things done." The goal-directed behavior assessed by the DERS appears similar to the behavioral avoidance subscale of another psychometrically sound experiential avoidance questionnaire, the Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gamez, Chmielewski, Kotov, & Ruggero, 2014). The behavioral avoidance subscale measures avoidance of external situations that may cause discomfort (e.g., "I prefer to stick with what I am comfortable with, rather than try new activities" and "I go out of my way to avoid uncomfortable situations"). The MEAQ is similar to goal-directed behavior measurement in that the unwillingness to engage in situations that may cause discomfort or distress likely also inhibits the ability to engage in behaviors that will lead to goal achievement. This is in contrast to avoidance of internal situations such as thoughts and feelings, which is primarily assessed using the DERS Nonacceptance domain and the AAQ-II.

Factors implicated in goal-directed behavior deficits. Goal-directed behavior initially involves cognitive tasks of decision-making and planning. These tasks are believed to be largely controlled by the prefrontal cortex. As such, neural damage or dysfunction and low cognitive functioning can affect the ability to engage in goal-directed behavior (Botvinick & An, 2009). Deficits in the ability to engage in goal-directed behavior has also been associated with abnormal dopamine surges that may cause deficits in reward-associative mechanisms, thereby preventing the individual from being able to identify and assign appropriate values to potential outcomes (Aboitiz, Lopez, Lopez-Calderon, & Carrasco, 2006). Goal-directed behavior can also be inhibited by the relative dominance of habits (i.e., learned stimulus-response patterns that do not lead to a desired outcome), as is likely the case in obsessive-compulsive disorders and substance use disorders. For example, an individual may understand that compulsive hand washing is unlikely to prevent illness (i.e., does not lead to the desired outcome) and that the compulsive behavior is impairing but continues with the behavior in order to immediately relieve anxiety (Gillan et al., 2011).

Impulse Control Difficulties

Gratz and Roemer (2004) also hypothesized that impulse control problems would be related to ER. Impulse control difficulties are defined as a predisposition toward rapid, unplanned actions related to internal or external stimuli with diminished regard to the negative consequences of these reactions to the self or to others (Chamberlain & Sahakian, 2007). In the absence of the ability to adaptively and effectively regulate negative emotions, individuals may engage in impulsive behaviors; impulse control appears to deteriorate in the presence of emotional distress for individuals who have difficulty regulating that distress (Tice, Bratslavsky, & Baumeister, 2001). Impulsivity is common in personality disorders (particularly Cluster B

disorders), substance use disorders, disordered eating, childhood conduct problems, and bipolar disorders and is associated with self-injurious behavior and increased risk-taking behaviors (e.g., driving violations, risky sexual behavior, excessive gambling, and intimate partner violence; Chamorro et al., 2012; Menzies, 1997; Vitacco & Rogers, 2001). In a study investigating neuropsychological correlates of impulsive aggression in college students, the researchers (Stanford, Greve, & Gerstle, 1997) found that participants with higher self-reported frequencies of aggressive behavior also exhibited normative and relative deficits in impulse control on neuropsychological assessments. Impulsivity is also assessed by the Barratt Impulsiveness Scale (BIS; Patton, Stanford, & Barratt, 1995). While the DERS specifically measures impulsivity while distressed, the BIS aims to measure trait-level impulsivity (e.g., “I plan trips well ahead of time” and “I concentrate easily”). The use of both measures should indicate whether individuals who engage in impulsive behavior while distressed also exhibit greater trait-level impulsivity.

Factors implicated in the development of impulse control difficulties. Impulsivity is an aspect of executive functioning that appears to be influenced largely by the prefrontal cortex, particularly the orbitofrontal cortex (Neto & True, 2011). Low levels of serotonin combined with high levels of dopamine have been linked to increased impulsivity (Cyders & Smith, 2008), and extreme impulsivity may be influenced by specific genetic components (Neto & True, 2011). Developmentally, the development of impulsivity has been linked to harsh parental criticism, maltreatment and abuse in childhood, and the differential reinforcement of coercive behavior by families (Neto & True, 2011). Impulsivity, then, may be a learned behavior that is evident of a skills deficit.

Lack of Emotional Awareness

Lack of emotional awareness also is an important construct in Gratz & Roemer's (2004) model of ER. Various researchers have proposed different conceptualizations of emotional awareness. Emotional intelligence (Salovey, Mayer, & Caruso 2004), emotional literacy (Lotecka, 1974), and, more broadly, emotion processing (Tremeau, 2006) are terms present across social and behavioral science literature that attempt to describe the ability to appropriately identify and recognize emotional states in the self. Developmental psychologist Howard Gardner (1983) proposed the concept of emotional intelligence, described as the ability to monitor, discriminate, and label one's own emotions and the emotions of others. In terms of Gratz and Roemer's model of emotion dysregulation, the ability to monitor, evaluate, and regulate emotional experiences requires the ability to recognize and understand the emotion that is present.

Mindfulness. Much of the research on emotional awareness has focused on deficits in one's ability to identify and recognize emotional states. Nevertheless, recent work on mindfulness training in clinical work (Xu, Wang, & Liu, 2015) suggests that individuals can be taught to become emotionally aware. Mindfulness is an emerging concept that may be clinically useful in reducing psychological distress and cognitive vulnerability to distress. Bishop and colleagues (2004) proposed an operational definition of mindfulness that describes the concept as consisting of two components: the first is the self-regulation of attention so that it is maintained on immediate experience and the second is the adoption of a curious, open, and accepting orientation toward the immediate experience. Mindfulness training as part of treatment for self-harm and suicidal behavior in individuals with borderline personality disorder appears to be effective in increasing affect tolerance and decreasing distress (Segal, Williams, & Teasdale,

2002). Mindfulness approaches have also been effective in reducing relapses of major depression (Teasdale et al., 2000). Higher scores on measures of mindfulness have been associated with less avoidance of emotions, less thought suppression, more clarity of emotions, and a better ability to repair one's mood (Hayes & Feldman, 2004). These results suggest that mindfulness (i.e., the ability to self-regulate attention and to do so with an open orientation toward private experiences) may be a useful tool in increasing emotion regulation and reducing aggression. If these dimensions of emotion and emotion regulation are central to the perpetuation of maladaptive behaviors (and in this case, aggression), then mindfulness approaches may be clinically useful in reducing problem behaviors. Awareness will be assessed both by the DERS subscale and by use of the Mindful Attention Awareness Scale (MAAS; Brown and Ryan, 2003).

Factors implicated in lack of mindfulness. Differences in the ability to direct attention toward internal experiences are thought to be largely dispositional (i.e., “an inherent capacity”; Brown, Ryan, Loverich, Biegel, & West, 2011; Modinos, Ormel, & Aleman, 2010). Nevertheless, recent research on mindfulness and/or meditation has found that levels of emotional awareness can be increased through training in these skills (Shapiro, Brown, & Biegel, 2007). Higher levels of dispositional mindfulness (without formal mindfulness training) have been associated with higher levels of empathic concern, more perspective taking, and with less personal distress (Tipsord, 2009). The reduction of distress indicates that individuals with higher levels of mindfulness may also be more skilled in regulating emotions.

Limited Access to Emotion Regulation Strategies

Given that individuals' environments are constantly changing, flexibility in emotional responding is a crucial component of adaptive emotion regulation and good mental health

(Aldao, Sheppes, & Gross, 2015; Gupta & Bonanno, 2011). This dimension of Gratz and Roemer's (2004) emotion regulation difficulties does not explicitly measure the individual's skills or strategies used to regulate emotion but rather the perceived effectiveness of the individual's ability to regulate negative affect. The decision to measure the individual's perceived ability to regulate emotional responses was based on the theoretical idea that the subjective appraisal of the individual better accounts for the contextually dependent nature of emotion regulation strategies compared to labeling individuals' reported strategies as effective or adaptive in the absence of contextual information (Gratz & Roemer, 2004). This study operationalized this domain as generalized expectancies for negative mood regulation (NMR; i.e., the individual's expectation that negative affect can be effectively regulated). Increased negative mood regulation expectancies have been associated with the increased use of active rather than avoidant coping (Kirsch, Mearns, & Catanzaro, 1990). Lower negative mood regulation expectancies have been associated with depression, higher levels of emotional distress, anger, alcohol use, and self-harm (Catanzaro, 1993; Catanzaro & Laurent, 2004; Mearns & Mauch, 1998; Tresno, Ito, & Mearns, 2012). Access to emotion regulation strategies was measured using the DERS subscale of the same name and through use of the Generalized Expectancy for Negative Mood Regulation Scale (NMR; Catanzaro & Mearns, 1990). The NMR measures the expectation of the individual regarding their ability to successfully regulate negative moods, which is the same construct measured by the DERS Strategies subscale. The addition of NMR to the use of the DERS in this study will allow for the examination of the relationship between the DERS subscale and the full-length NMR.

Factors implicated in limited access to emotion regulation strategies. Research involving negative mood regulation expectancies is based on response expectancy theory

whereby NMR expectancies are self-confirming (Pfeiffer, Kaemmerer, Mearns, Catanzaro, and Backenstrass, 2011). The belief that one has the ability to effectively regulate a negative mood state will make that individual's attempts to do so more effective; in the absence of the belief that one's negative mood state can be effectively regulated, the individual is more likely to employ ineffective, maladaptive strategies (Kirsch, 1999). This suggests that an individual who possesses the belief that their emotional state is unchangeable may be more likely to engage in behaviors that are considered maladaptive (e.g., aggression).

Lack of Emotional Clarity

Gratz and Roemer (2004) define their dimension of Clarity as the ability to recognize and name an emotion (e.g., "I know exactly how I am feeling" and "I have difficulty making sense out of my feelings"). In terms of emotion regulation, the DERS model posits that one must have the ability to accurately identify the emotion that is experienced in order to regulate it. Similarly, the construct of alexithymia is described as the inability to identify and describe emotions and is characterized by (a) a reduction or incapacity to experience emotions, (b) a reduction or incapacity to verbalize emotions, (c) a reduction or incapacity to fantasize, and (d) an absence of tendencies to think about one's emotions (Nemiah & Sifneos, 1970; Taylor, Ryan, & Bagby, 1985; Vorst & Bermond, 2001). Prevalence rates for alexithymia are reported to range from 10% to 19% in multinational college and community samples (Loas, Fremaux, Otmani, & Verrier, 1995; Mason, Tyson, Jones, & Potts, 2005; Parker, Taylor, & Bagby, 1989; Salminen, Saarijarvi, Aarela, Toikka, & Kauhanen, 1998). Rates of alexithymia in clinical samples have ranged from 30% to 60% (Franz et al., 2008; Kokkonen et al., 2001; Salminen et al., 1999; Taylor, 2000).

Given the nature of alexithymia, it is unsurprising that alexithymia has been associated with difficulties in emotion regulation. Pandey, Saxena, and Dubey (2011) compared alexithymic and non-alexithymic students on the dimensions of emotion regulation identified by Gratz and Roemer (2004): (a) nonacceptance of emotional responses, (b) difficulties engaging in goal directed behavior, (c) impulse control difficulties, (d) lack of emotional awareness, (e) limited access to emotion regulation strategies, and (e) lack of emotional clarity. Students with higher scores on measures of alexithymia compared to students with lower scores scored significantly higher on all DERS dimensions and showed significantly greater overall difficulty with emotion regulation. Further, Pandey Saxena, and Dubey found that the dimensions of emotion regulation difficulties differentiated alexithymic and non-alexithymic students with about 90% accuracy with the dimensions of “lack of emotional clarity” and “nonacceptance of emotional responses” contributing most to the observed differences. A study of healthy university students by Swart, Kortekaas, and Aleman (2009) found that increased alexithymia scores were significantly associated with increased emotion regulation difficulties, particularly difficulty with reappraisal and use of suppression. Alexithymia, in addition to appearing to be linked to dysregulated emotion, was found to be significantly more prevalent among adolescents with severe behavioral problems than among controls (Manninen et al., 2011) and was correlated with self-reported aggression within the clinical group. In addition to measuring emotional clarity using the DERS subscale, emotional clarity was assessed using the Toronto Alexithymia Scale (*TAS-20*; Bagby, Parker, & Taylor, 1994). Gratz and Roemer (2004) defined the DERS dimension of emotional clarity as a measurement of an individual’s ability to understand emotional responses; this definition is in line with the *TAS-20*’s measurement of difficulties identifying feelings and distinguishing these from physiological sensations and difficulty communicating those feelings

to others. The TAS-20 appears often within psychology literature as a method of measuring long-term emotional clarity (see, for example, Lischetzke, Angelova, & Eid, 2011).

Factors implicated in the development of alexithymia. Alexithymia has been associated with the dysfunction of specific brain structures, with deficits in interhemispheric transfer and with genetic factors (Jorgensen, Zachariae, Skytthe, & Kyvik, 2007; Lane, Ahern, Schwartz, & Kaszniak, 1997; Tabibnia & Zaidel, 2005). There is also evidence that alexithymia can develop following acute and severe trauma exposure or secondary to the presence of early life stress (Aust, Hartwig, Heuser, & Bajbouj, 2013; de Vente, Kamphuis, & Emmelkamp, 2006; Freyberger, 1977; Gundel, Ceballos-Baumann, & von Rad, 2002; Lumley, Neely, & Burger, 2007). Early life stress, trauma exposure in childhood and adolescence, and emotional neglect are similar risk factors for emotion dysregulation (Aust et al., 2013; Heim & Nemeroff, 2001; Kaplan, Pelcovitz, & Labruna, 1999; Pechtel & Pizzagalli, 2010). Aust and colleagues (2013) found that alexithymia in adulthood was related to deficits in emotion regulation and to lower acceptance rates of emotion. Another study examining cultural influences on adult alexithymia found that parental reactions to the child's emotional expressions were associated with alexithymia in adulthood (Le, Berenbaum & Raghavan, 2002), and it has been proposed that alexithymia is associated with social and family environments that do not encourage the identification and communication of emotions (Berenbaum, 1996; Berenbaum & James, 1994; Le et al., 2002; Fukunishi, Kikuchi, Wogan, & Takubo, 1997). This finding provides evidence that emotional clarity (i.e., alexithymia) is another dimension of emotion regulation that is learned and may be a skill that can be trained.

Emotional Experience

Affect intensity. Although not a part of Gratz and Roemer's model of ER, how one experiences emotions appears to be related to ER and seems to influence the manner in which individuals attempt to regulate emotion and how the perceived effectiveness of these strategies. One area researchers have explored in relation to ER is affect intensity. Affect intensity refers to the individual difference in how strongly affect is experienced (Larsen & Diener, 1987). A study conducted by Flett, Blankstein, and Obertynski (1996) found that higher affect intensity was significantly associated with higher levels of emotion-focused coping (rather than task-focused coping). They also found that individuals reporting high affect intensity also reported significantly more negative expectancies regarding their ability to regulate negative affective states, indicating that individuals reporting higher levels of affect intensity may be more prone to employing maladaptive emotion regulation strategies. Similarly, Lynch, Robins, Morse, and Krause (2001) found that higher affect intensity was associated with greater use of suppression and avoidance. The affect intensity of an individual, when averaged over time, appears to be stable across emotions and does not differ between negatively- and positively-valenced affect (Larsen & Diener, 1987). The reported affect intensity of an individual also appears to be stable across situations (i.e., work versus recreational activities and social versus alone activities; Diener & Larsen, 1984).

There are a limited number of studies measuring affect intensity and aggression. Larsen, Diener, and Emmons (1986) investigated differences in the subjective ratings of scenarios deemed to be normative life events (e.g., "your bike got a flat," "you saw your ex-boyfriend or ex-girlfriend with another person," "you received a scholarship or loan that you desperately needed") and found that individuals with higher general affect intensity reported more intense

emotional reactions to these hypothetical events. Some studies have examined the link between under-regulated anger (i.e., self-reported intense anger) and aggressive behavior (e.g., Robertson, Daffern, & Bucks, 2012) and have provided evidence that difficulty regulating this specific emotional response is related to an increase in aggressive behavior. Taken together, these findings suggest that the subjective intensity of affect may have a significant relationship to aggression.

Factors influencing affect intensity. Affect intensity is generally thought to be an aspect of temperament, the stylistic method of accomplishing behaviors (Larsen & Diener, 1987). The predominant theory on differences among individuals in levels of affect intensity is that these differences are attributable to differences in baseline levels of arousal in the individuals. In order to regulate arousal levels, individuals with lower baseline levels of arousal may experience affect more strongly than those with relatively high baseline levels of arousal. This theory is supported by evidence that baseline GSR and heart rate are significantly and negatively correlated with affect intensity (Larsen, Diener, & Emmons, 1986), suggesting that individuals who are reporting higher affect intensity are indeed experiencing emotions more strongly than others. Conceptually, higher reported intensity of emotions may be related to the ability to regulate emotional experiences.

Emotion Regulation and Aggression

Research devoted to the link between dysregulated emotion and aggression has largely focused on the regulation of anger. Research suggests that the under-regulation of anger (i.e., the inability to contain the emotional experience of anger) leads to an increase in aggressive acts (Berkowitz, 1990, 2012; Cornell, Peterson, & Richards, 1999; Gardner & Moore, 2008;

Robertson, Daffern, & Bucks, 2012). Similarly, the over-regulation of anger (i.e., avoiding or suppressing the experience of anger) appears to increase both aggressive acts and negative affect (Blackburn, 1986). A review of longitudinal studies that examined the relationship between general emotion regulation and aggression in children and adolescents showed that early dysregulation was significantly associated with later externalizing and aggressive behaviors (Roll, Koglin, & Petermann, 2012). In adult men with posttraumatic stress disorder, Tull, Jakupcak, Paulson, and Gratz (2007) found that the use of avoidance and suppression as emotion regulation strategies predicted aggressive behavior. Similarly, Tager, Good, and Brammer (2010) reported an association between aggression and emotion regulation difficulties in adult men who were attending intervention groups for perpetrators of intimate partner violence.

Other studies have examined facets of emotion regulation and aggression. For example, Cohn, Jakupcak, Seibert, Hildebrandt, and Zeichner (2010) found that emotional acceptance mediates the relationship between restrictive emotionality (i.e., deficits in emotional awareness) and aggression and, separately, Jackupcak (2003) reported that mens' self-reported fear of emotion predicts the likelihood of perpetrating intimate partner violence. There is also evidence that some people engage in aggression in the hopes that it will help regulate negative affective states (Bushman, Baumeister, & Phillips, 2001). A study of aggression and well-being in children showed that children who most frequently engaged in acts of physical aggression reported being significantly more unhappy and reported significantly less satisfaction in their social lives, suggesting that perhaps aggressiveness in children is associated with fewer adaptive strategies for regulating unhappiness and that they are more unwilling to attend to and experience aversive emotional states (Spratt & Doob, 2000). Jakupcak (2003) posited that the association between fear of emotions and aggression may lend support to the theory that, in addition to the

use of aggression potentially regulating negative affective states, aggression may also serve to terminate feelings of emotional vulnerability. This body of research offers evidence that some portions of the individual emotional experience, emotional awareness, willingness to experience emotion, and ability to regulate emotion are crucial to understanding aggressive behavior in adults.

This study aimed to better understand the role of emotion regulation in self-reported aggression within an undergraduate student population. Research in psychology has consistently indicated that aggression is linked to later violence in youth (American Psychological Association, 2013). Rates of physical violence, particularly cases identified as dating violence, have been reported as being perpetrated by 20%–50% of U.S. college students (Baker & Stith, 2008; Lewis & Frenouw, 2001). Although rates of general verbal aggression among U.S. college students are not widely reported, some studies have indicated that as many as 32% of college students have been victims of sexual coercion that included high amounts of verbal aggression (i.e., 78% of sexual coercion cases; Fair & Vanyur, 2011). Rates of bullying on U.S. college campuses have been reported as 18.5% (cyberbullying rates have been found to be slightly higher, 22%; Macdonald & Robert-Pittman, 2010). These relatively high occurrences of aggressive behavior indicate that young adults, particularly college undergraduates, are an appropriate and important population to further the understanding of aggression and potential factors.

Summary

Evidence from the study of emotion regulation, emotional experiencing, emotional awareness, and emotional willingness suggests that each of these constructs may be factors that

contribute to aggressive behavior. Gratz and Roemer's (2004) model of difficulties in emotion regulation provides an excellent framework for examining the relative contributions of each of these areas to aggressive behavior. A lack of adaptive emotion regulation strategies has been associated with many forms of psychopathology and with maladaptive and excessive behaviors. The intensity and frequency with which one experiences emotion may affect how skillfully the individual is able to regulate emotion. Lack of awareness and clarity may be associated with maladaptive emotion regulation strategies, and aggression could serve to regulate or terminate negative affect in the absence of adaptive strategies to do so. Individuals who have difficulty tolerating negative affective states (i.e., individuals high in experiential avoidance) may be more likely to engage in a maladaptive, "quick fix" solution such as aggressing against others or other impulsive behaviors.

Clinical Utility

This study examined the relationship between emotion regulation difficulties and aggression and the relative contributions of experiential avoidance, difficulties engaging in goal-directed behavior, impulsivity, emotional awareness, negative mood regulation expectancy, emotion clarity, and affect intensity to aggression (overall aggression, physical aggression, verbal aggression, anger, and hostility) in college-age adults. Aggressive behaviors are present in many DSM-5 diagnoses, including intermittent explosive disorder, disruptive mood dysregulation disorder, conduct disorder, oppositional defiant disorder, and antisocial personality disorder. Treatment for these disorders often involves expensive, extensive, time-consuming therapy services (e.g., multisystemic therapy) and, in the case of antisocial personality disorder, for example, may have no known efficacious treatment. Aside from DSM-5 diagnoses, aggression in the young adult population may manifest as acts of violence against persons or

property that can result in substantial financial and social costs. Low levels of aggression may manifest in non-criminal behaviors such as bullying, unfriendly competition, grudges, harassment, and argumentativeness that also inflict personal and interpersonal harm.

The identification of mechanisms that have high relative contributions to aggression and to different types of aggression (in this case, physical aggression, verbal aggression, anger, and hostility) may support more targeted interventions that could effectively prevent or decrease aggressive behaviors and avoid some of these associated costs. Further, the identification of important mechanisms in aggression may allow for early intervention aimed at minimizing the development of aggressive behaviors. This study also explored the relationship between overall ER difficulties and self-reported overall aggression in college-age adults. Additionally, this study aimed to explore the individual emotional experience (hereafter termed “affect intensity”) as a potential moderator of the relationship between ER difficulties and overall aggression. The relationship between each of the DERS domains and overall aggression, physical aggression, verbal aggression, anger, and hostility were also examined. Finally, this study investigated deficits in the broad domains initially recognized by Gratz and Roemer (2004): emotional awareness, emotional identification, willingness to experience emotion, and skillful volitional emotion regulation, and added the domain of affect intensity in order to investigate whether this broader model better captured the contributions of ER difficulties to aggression. Given advances in the study of emotional awareness and in the willingness to experience emotion (hereafter termed “experiential avoidance”), each of the DERS dimensions were supported by domain-specific measures validated to measure what appear to be the same construct.

Hypotheses

Hypothesis 1. It was expected that overall emotion regulation difficulties would be positively correlated with overall aggression. The first hypothesis examined the relation between participant responses on the six subscales and overall ER score on the DERS with their responses on a measure that assesses four aspects of aggression: physical aggression, verbal aggression, anger, and hostility (from the Buss-Perry Aggression Questionnaire, AQ; see Methods for details on this measure). It was hypothesized that nonacceptance of negative emotions, difficulty in goal-directed behavior, impulsive behaviors, limited emotional regulation strategies, lack of emotional awareness, lack of emotional clarity, and overall DERS scores would be positively related to all four aspects of aggression. This hypothesis was based on previous work done by Bushman, Baumeister, and Phillips (2001); Roll, Koglin, and Petermann, (2012); and Tull, Jakupcak, Paulson, and Gratz (2007) that found that emotion regulation difficulties play an important role in aggressive behavior.

Hypothesis 2. A secondary purpose of this study was to determine if other measures of these emotion regulation variables operate similarly to those in the DERS. Consequently, it was hypothesized that measures of experiential avoidance, behavioral avoidance, impulsivity, mindfulness, negative mood regulation, and alexithymia would be related to subscales of the DERS and that scales measuring similar constructs (e.g., DERS Nonacceptance and experiential avoidance as measured by the AAQ-II) would be correlated more strongly than with other ER constructs (2a). An additional measure of affect intensity (i.e., the reactivity of an individual to emotional content as measured by the AIM, see below for description) was also examined in relationship to the DERS and the four aspects of aggression; it was expected that affect intensity would be related to subscales of the DERS and to the four aspects of aggression (2b). It was also

expected that each ER construct would be significantly related to each of the four aspects of aggression (2c).

Hypothesis 3. It was hypothesized that affect intensity would moderate the relationship between scores on the DERS subscales and the four aspects of aggression. This hypothesis was based on the conceptual possibility that experiencing emotion more or less strongly may affect how that emotion is regulated and the strength of the behavioral reaction to the emotion and on research indicating that under-regulation of anger is a predictor of aggressive behavior (i.e., when anger is experienced as very intense, then aggression is more likely particularly in the presence of emotion regulation difficulties; Robertson et al., 2012).

Hypothesis 4. Hypothesis 4 examined the relative contributions of the DERS subscales and the alternative ER measures employed in this study (experiential avoidance, behavior avoidance, impulsivity, mindfulness, negative mood regulation, and alexithymia) in predicting overall aggression (a total score from the AQ), physical aggression, verbal aggression, anger, and hostility (AQ subscales). In order to determine which of these measures (or combination of measures) best predicts each aspect of aggression, DERS subscale scores were entered alongside their non-DERS counterpart (e.g., DERS Nonacceptance and AAQ-II) as pairs of indices in separate steps of a stepwise regression model. Separate regression models for each aspect of aggression were examined.

Method

Participants and Procedure

Undergraduate students ($n = 537$) were recruited from a psychology department using the online SONA system. Of the 537 participants who completed the measures, seven respondents

(1.3%) indicated that their age was lower than 18; their data were excluded from analysis. Of the remaining 530 participants, 42.9% ($n = 223$) were excluded due to a positive CAGE-AID screen (see measures section below for an explanation of this screening measure), leaving a sample of 307 for analyses.

The sample used for analyses consisted of 104 males (33.9%), 198 females (64.5%), and 5 individuals who identify as transgender (1.6%). The mean age of participants was 20.19 with a range of 18–48 ($SD = 3.48$). The vast majority of participants (92.8%) were between the ages of 18 and 24. More than half of the sample (63.2%) identified as Caucasian. The next largest ethnicity represented was African-American (22.8%), followed by Hispanic/Latino (3.9%), multiple ethnicities (3.9%), Asian (2.6%), Middle Eastern (2.3%), and American Indian (0.3%). Three participants declined to identify their ethnicity (1%).

Questionnaires were completed on SurveyMonkey, a web-based platform where survey responses are secure and encrypted. Participants were first presented with an informed consent form that explained the purpose of the study, confidentiality, foreseeable risks, possible compensation, and contact information of the primary investigator, the secondary investigator, and the Institutional Review Board (see Appendix A for the informed consent). Following the consent, questionnaires included a standard demographics form (Appendix B), a substance use screening questionnaire (Appendix C), and the construct-specific measures below. The primary investigator downloaded responses as password-protected electronic files from www.surveymonkey.com. The only potentially identifying information included in this data were respondents' IP addresses; these were deleted from the dataset. The electronic file was saved to a password-protected PC in a secure research lab at the university.

Measures

Table 1 contains a list of all the scales and subscales used in this study. The table also contains the means, standard deviations, and reliabilities (Cronbach's alpha) for each scale and subscale.

Substance use. The CAGE-AID (Brown & Rounds, 1995; Appendix C) is a 4-item questionnaire designed for use in primary care settings to assess potential problem alcohol and/or drug use. The developers of this screening tool suggest that administrators consider one or more positive responses (i.e., answered "yes" to any item) as a positive screen; this cutoff has exhibited a sensitivity of .79. Up to 75% of individuals receiving treatment for substance use have reported a history of aggression and violent behavior (Chermack, et al., 2008). Given the high rates of violence and aggression among individuals with substance use problems, the CAGE-AID was used to exclude from primary analyses participants who endorsed any item.

General health. The Brief Symptom Inventory (*BSI*; Derogatis, 1993; Appendix D) consists of 53 items rated on a five-point Likert-type scale from zero ("not at all") to four ("extremely") designed to measure psychological distress and the presence of psychiatric disorders. The BSI has nine symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism, as well as a Global Severity Index, a Positive Symptom Distress Index, and a Positive Symptom Total. Internal consistency reliability estimates in a community sample range from a low of .70 for Psychoticism to a high of .89 for Depression (Derogatis & Melisaratos,

1983). The BSI's Global Severity Index was used in this study to control for broader mental health pathology. See Table 1 for the means, SDs, and reliability of this scale for this study.

Aggression. The Buss-Perry Aggression Questionnaire (*AQ*; Buss & Perry, 1992; Appendix E) consists of 29 items rated on a five-point Likert-type scale from one ("extremely uncharacteristic of me") to five ("extremely characteristic of me"). The four subscales of the questionnaire are Physical Aggression (PA, nine items), Verbal Aggression (VA, five items), Anger (AN, seven items) and Hostility (HS, eight items). In validating their measure, Buss and Perry found that the total alpha coefficient for this measure is .89; alpha coefficients for the subscales range from .72 for Verbal Aggression to .85 for Physical Aggression. More recently, a validation with an adult Hungarian population to determine the generalizability of the AQ found that subscale coefficients for the AQ are .82 for Physical Aggression, .68 for Verbal Aggression, .70 for Anger, and .75 for hostility in that population (Gerevich, Bacskai, & Czobor, 2007). See Table 1 for the means, SDs, and reliability for the current study population.

Difficulties in emotion regulation. Difficulties in emotion regulation was measured using the Difficulties in Emotion Regulation Scale (*DERS*; Gratz & Roemer, 2004; Appendix F). The DERS is a 36-item measure designed to assess six subscales of emotion regulation: *Nonacceptance* of negative emotions (six items), inability to engage in *Goal-Directed* behavior when experiencing negative emotions (five items), difficulties with *Impulse* control when experiencing negative emotions (six items), lack of emotional *Awareness* (six items), limited access to emotion regulation *Strategies* perceived as effective (eight items), and lack of emotional *Clarity* (five items). These items are scored on a scale from one ("Almost never, 0–10%") to five ("Almost always, 91–100%"). Gratz and Roemer (2004) defined nonacceptance as an inability to tolerate or cope with emotional experiences, goal-directed as the ability to engage

in prosocial and adaptive emotion coping strategies, impulse control as the capacity to avoid engaging in impulsive and reckless behavior when experiencing negative emotions, awareness as the capacity to have knowledge of and gain insight into emotional states, and clarity as the facility to understand, describe, and label emotions. The DERS demonstrates high internal consistency ($\alpha = 0.93$; Gratz & Roemer, 2004). Gratz and Roemer reported alphas of 0.85, 0.89, 0.86, 0.80, 0.88, and 0.84 for the Nonacceptance, Goals, Impulse, Awareness, Strategies, and Clarity scales respectively. Table 1 contains the means, SDs, and alphas for the total DERS score and each subscale for the current study.

Emotional willingness/experiential avoidance. Experiential avoidance was measured using the Acceptance and Action Questionnaire-II (*AAQ-II*; Bond, et al., 2011; Appendix G). The AAQ-II was designed to evaluate an individual's intolerance for experiencing negative affect. Participants rate 7 items on a 7-point scale. The AAQ-II has shown good internal validity ($\alpha = 0.84$) and good test-retest reliability (3-month = 0.81, 12-month = 0.79). See Table 1 for internal consistency, mean, and SD for the AAQ-II for this study.

Goal-directed behavior. Difficulties engaging in goal-directed behavior was measured using the Behavioral Avoidance subscale of the Multidimensional Experiential Avoidance Questionnaire (*MEAQ*; Gamez, et al., 2011; Appendix H). The MEAQ is composed of six subscales that were each designed to measure different aspects of experiential avoidance; the Behavioral Avoidance subscale is comprised of 11 items that inquire about the individual's situational avoidance and avoidance of distress (e.g., "I go out of my way to avoid uncomfortable situations"). Response choices range from one ("Strongly disagree") to six ("Strongly agree"). Internal consistency of the behavioral avoidance subscale is good, with alphas ranging from .85 in a student sample to .90 in a community sample. This scale has also been significantly

correlated with subjective well-being scales that measure purpose in life, lending construct validity to the use of this scale to measure the ability and willingness to engage in goal-directed behavior. Table 1 contains the mean, SD, and reliability of the Behavioral Avoidance subscale for this study.

Impulse control difficulties. Impulsivity was measured using the Barratt Impulsiveness Scale–11 (*BIS-11*, Patton, Stanford, & Barratt, 1995; Appendix I). The BIS-11 was developed to assess the construct of impulsiveness and is the most widely used measure for the assessment of impulsiveness and related clinical constructs (Reise, Moore, Sabb, Brown, & London, 2013). The BIS-11 consists of 30 items rated on a 4-point scale; items assess common impulsive or non-impulsive behaviors and preferences. Internal consistency of the BIS-11 is good ($\alpha = .80$). See Table 1 for the means, SDs, and reliability of this scale.

Emotional awareness/mindfulness. Participants completed the Mindful Attention Awareness Scale (*MAAS*; Brown & Ryan, 2003; Appendix J). The MAAS is a 15-item single-dimension measure of trait mindfulness that measures the frequency of attention to and awareness of events and experiences. Items are answered using a 6-point Likert scale. The MAAS has demonstrated internal consistency scores of $\alpha = .82$ in a university student sample and $\alpha = .87$ in an independent non-college, U.S.-wide adult sample. The MAAS has also shown temporal stability in university student and non-college adult samples with an intraclass correlation (following a variance components analysis) of .81 (Brown & Ryan, 2003). See Table 1 for descriptives for this study.

Limited access to emotion regulation strategies. Participants completed the Generalized Expectancy for Negative Mood Regulation Scale (*NMR*; Catanzaro & Mearns, 1990; Appendix K). The NMR is a 30-item questionnaire that utilizes a scale of one to six and

measures the expectation that an individual can successfully regulate negative moods. This scale has shown good internal consistency ($\alpha = .90$ in a college student population) and good test-retest reliability ($r = .76$). See Table 1 for the means, SDs, and reliability of this scale for this sample.

Emotional clarity/identification. Participants completed the 20-item Toronto Alexithymia Scale (*TAS-20*; Bagby, Parker, & Taylor, 1994; Appendix L). Items on the *TAS-20* are answered using a 5-point Likert scale and target three domains of alexithymia: 1) difficulty identifying feelings and distinguishing feelings from bodily sensations; 2) difficulty communicating emotions to others; and 3) externally oriented thinking. The *TAS-20* has demonstrated acceptable internal consistency (Cronbach's alpha = 0.81) and good convergent and discriminant validity (Bagby, Taylor, & Parker, 1994). The means, SDs, and reliabilities for the 3 subscales of the *TAS-20* for this population are available in Table 1.

Emotional experience/affect intensity. Subjective emotional intensity was measured using the Affect Intensity Measure (*AIM*; Larsen & Diener, 1987; Appendix M). The *AIM* is a 40-item measure of the characteristic intensity and reactivity of emotional responses and is thought to measure the temperament dimension of emotional intensity in adults. Response options on the *AIM* range from one ("Never") to six ("Always"). The *AIM* has high internal consistency and good test-retest reliability over a two-year period ($\alpha = .94$, $r = .81$; Larsen & Diener, 1987). See Table 1 for the descriptives for this measure.

Data Analyses

First, a correlation matrix using Pearson's r was created to observe the relationships among all study variables with Pearson's r . Based on the observed correlations, the predictor

variables were entered into a stepwise regression analysis to predict scores on the AQ. Initially it was thought that potential predictor variables entered would be scores on the DERS, the AAQ-II, the behavioral avoidance subscale of the MEAQ, the BIS-11, the MAAS, the NMR, the TAS-20, and AIM. Based on theory, it was anticipated that overall emotion dysregulation, experiential avoidance, impulsivity, alexithymia, and overall aggression would be positively correlated; that affect intensity would be negatively correlated with alexithymia scores; and that affect intensity would moderate the relationship between overall emotion dysregulation and aggression. Goal-directed behavior, mindfulness, and negative mood regulation expectancy were expected to be negatively correlated with aggression, overall emotion dysregulation, alexithymia, and experiential avoidance.

Analysis of the required sample size to complete a linear multiple regression analysis using these variables was conducted using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009). In order to achieve a power of .95 ($\alpha = .05$; $f^2 = .15$) a sample size of 160 would be required for initial analyses. The sample size used for these regression analyses was 307.

Results

Pearson's correlations between overall aggression, physical aggression, verbal aggression, anger, and hostility and the six subscales of the DERS (Nonacceptance, Goals, Impulsiveness, Strategies, Awareness, and Clarity) and the overall DERS score are reported in Table 2 (Hypothesis 1). As expected, each subscale and the overall emotion regulation difficulties were significantly positively related to overall aggression, anger, and hostility. Physical aggression was significantly positively correlated with overall emotion regulation difficulties, impulsiveness, access to regulation strategies, awareness of emotions, and emotional

clarity. Physical aggression was not significantly related to nonacceptance or to difficulties in goal-directed behavior. Similarly, verbal aggression was significantly positively related to overall emotion regulation difficulties, impulsiveness, access to regulation strategies, and emotional clarity but not significantly related to nonacceptance, difficulties in goal-directed behavior, or awareness of emotions.

Pearson's correlations between overall emotion regulation difficulties and each of the six DERS subscales (Nonacceptance, Goals, Impulse, Awareness, Strategies, and Clarity) and measures of experiential avoidance, behavioral avoidance, impulsivity, mindfulness, negative mood regulation, alexithymia, and affect intensity are presented in Table 3 (Hypothesis 2a). Experiential avoidance (AAQ-II) was significantly and positively correlated with all DERS subscales and the overall emotion regulation difficulties. The AAQ-II was most strongly correlated with the DERS Strategies subscale and overall emotion regulation difficulties. Behavioral avoidance (MEAQ BA) was positively and significantly correlated with overall emotion regulation difficulties and each subscale of the DERS except Awareness. As expected, the strongest relationship was between the MEAQ BA and the DERS subscale of goal-directed behavior. Impulsivity (BIS-11) was significantly and positively correlated with overall emotion regulation difficulties and with each subscale of the DERS, with the strongest relationship being between impulsivity and the DERS Clarity subscale; the Impulse subscale of the DERS also showed a strong correlation. Mindfulness, as measured by the MAAS, was significantly and negatively correlated with overall emotion regulation difficulties and with each DERS subscale; the strongest relationship was between mindfulness and overall emotion regulation difficulties. Negative mood regulation expectancy (NMR) was significantly and negatively correlated with overall emotion regulation difficulties and with each subscale of the DERS. As expected, the

strongest correlation was between negative mood regulation expectancies and DERS Strategies, although this relationship was equal to the one between NMR and overall emotion regulation difficulties. Alexithymia (TAS-20) was significantly and positively correlated with overall emotion regulation difficulties and with each subscale of the DERS. Consistent with expectations, the strongest relationship present was between alexithymia and DERS Clarity. Finally, affect intensity (AIM) was significantly positively related to DERS Nonacceptance, DERS Goal-directed behavior, and DERS Strategies (Hypothesis 2b; see Table 3). Affect intensity was significantly and negatively correlated with DERS Awareness. Correlations between affect intensity and DERS Impulse Control, DERS Clarity, and overall emotion regulation difficulties were not significant.

Pearson's correlations between overall aggression, physical aggression, verbal aggression, anger, hostility, affect intensity, alexithymia, negative mood regulation expectancy, impulsivity, behavioral avoidance, experiential avoidance, and overall emotion regulation difficulties are reported in Table 4 (Hypothesis 2c). Consistent with expectations, experiential avoidance, impulsivity, alexithymia, and negative mood regulation expectancies were all significantly positively correlated with three or more aspects of aggression as measured by the Buss-Perry Aggression Questionnaire. Interestingly, affect intensity was not significantly related to any aspect of aggression.

To test the hypothesis that affect intensity moderates the relationship between emotion regulation difficulties and aggression (Hypothesis 3), a hierarchical multiple regression analysis was conducted. In the first step, two variables were included: affect intensity (AIM score) and emotion regulation difficulties (overall DERS score). These variables accounted for a significant amount of variance in the total aggression score on the Buss-Perry Aggression Questionnaire, R^2

= .18, $F(2, 292) = 32.21, p < .001$. The variables were centered and an interaction term between emotion regulation difficulties and affect intensity was created (Aiken & West, 1991). Next, the interaction term was added to the regression model; this did not account for a significant proportion of the variance in aggression, $\Delta R^2 = .003, \Delta F(1, 291) = 1.17, p > .05, b = .06, t(291) = 1.08, p = .28$. Affect intensity did not moderate the relationship between aggression and emotion regulation difficulties.

Hypothesis 4 examined the relative contributions of the DERS subscales and the alternative ER measures in predicting overall aggression, physical aggression, verbal aggression, anger, and hostility using stepwise regression analyses. Pearson's correlations between age and aggression-related variables were each significant and negative, where aggression decreased as age increased. Correlations between global severity of mental health problems and aggression-related variables were each significant and positive where more mental health problems were related to increased aggression (see Table 5). In order to examine the impact of the ER variables of interest in this study apart from broader mental health pathology and apart from age/developmental level, all regression analyses began with entering age and global severity of overall mental health problems.

Stepwise regression analyses were conducted by entering each pair of indices (i.e., the DERS subscale and its non-DERS counterpart) in separate steps as predictors. Predictors were entered in the following order: DERS Nonacceptance and experiential avoidance (AAQ-II), DERS Goals and behavioral avoidance (MEAQ BA), DERS Impulse and impulsivity (BIS-11), DERS Awareness and mindfulness (MAAS), DERS Strategies and negative mood regulation expectancies (NMR), and DERS Clarity and alexithymia (TAS-20). Due to the difference in patterns of correlations between ER variables and DERS subscales with aggression subscales,

this order is in line with Gratz and Roemer's (2004) factor loadings of DERS subscales (greatest to least) rather than by strength of correlation. First, overall aggression was predicted, then physical aggression, then verbal aggression, anger, and hostility (see Tables 6, 7, 8, 9, 10).

Of the potential ER predictors of overall aggression only experiential avoidance ($\Delta R^2 = .21$, $F(3, 291) = 33.07$, $p < .001$) and DERS impulse control ($\Delta R^2 = .05$, $F(4, 290) = 30.83$, $p < .001$) emerged as significant. Age and the global severity of mental health problems were also significant predictors of overall aggression.

In predicting physical aggression experiential avoidance ($\Delta R^2 = .02$, $F(3, 291) = 6.13$, $p < .001$) and DERS Impulse ($\Delta R^2 = .04$, $F(4, 290) = 7.71$, $p < .001$) again emerged as significant predictors, as did DERS Awareness ($\Delta R^2 = .01$, $F(5, 289) = 7.19$, $p < .001$). Experiential avoidance (the AAQ-II) was no longer significant in predicting physical aggression after the addition of these DERS domains to the model. Age was a significant predictor; however, the global severity of mental health problems was not a significant predictor of physical aggression once variables beyond age and global severity were added to the model.

Experiential avoidance was the sole significant predictor of verbal aggression ($\Delta R^2 = .02$, $F(3, 291) = 9.55$, $p < .001$), aside from age and global severity of mental health problems, which were significant in Step 1 only. Experiential avoidance was also a significant predictor of anger ($\Delta R^2 = .06$, $F(3, 291) = 23.39$, $p < .001$); however, experiential avoidance was no longer significant when DERS impulse control ($\Delta R^2 = .12$, $F(4, 290) = 33.13$, $p < .001$) was added in Step 3. Neither age nor global severity of mental health problems were significant predictors of anger in Step 2 or Step 3. Finally, experiential avoidance was a significant predictor of hostility ($\Delta R^2 = .06$, $F(3, 291) = 63.45$, $p < .001$) as was DERS strategies ($\Delta R^2 = .02$, $F(4, 290) = 50.39$, p

< .001). In predicting hostility, age was not significant; global severity of mental health problems was significant.

Discussion

As expected, overall emotion regulation difficulties were significantly correlated with overall aggression and with each aspect of aggression (i.e., physical, verbal, hostility, and anger). Correlations between overall aggression, anger, and hostility and between each subscale of the DERS were consistent with expectations (positive and significant). Physical aggression and verbal aggression, however, were not significantly correlated with DERS Nonacceptance or with DERS Goals. It is possible that anger and hostility represent a domain of private aggression (in contrast to the public nature of physical and verbal aggression) and that this type of aggression warrants separate investigation, as different factors may be influential.

Each subscale of the DERS was significantly correlated with each measure (with parallel measures and with all others) used in this study (excluding affect intensity), with the sole exception of a non-significant relationship between behavioral avoidance and the DERS subscale of awareness. The lack of discreteness among these variables provides further evidence of the complexity of emotion regulation mechanisms and components and indicates the likely intertwined nature of each of the necessary and involved processes for regulating emotion. Some of the observed relationships were in line with expectations, but the high number of significant relationships indicates that each of the categories assessed by the DERS are important in the ability to adaptively regulate emotion and may not reflect distinct, discrete skills (e.g., deficits in emotional awareness may be so strongly linked to deficits in clarity that these become difficult to assess separately).

Although it was expected that experiential avoidance measured by the AAQ-II would be most strongly related to DERS Nonacceptance, the strongest relationships with the AAQ-II were with the overall DERS score and with DERS Strategies (the relationship between the AAQ-II and DERS Nonacceptance was the second strongest). DERS Nonacceptance appears to specifically measure negative emotional reactions to the presence of emotions, while the DERS Strategies dimensions measures how well an individual believes they can regulate negative emotional states. It is possible that an individual who endorses that emotions are undesirable (e.g., in the AAQ-II) may also believe that those emotions are difficult to attenuate, thereby creating the strong relationship between these two measures. Similarly, in the initial validation of the DERS, Gratz and Roemer (2004) found that DERS Strategies was most strongly correlated with the AAQ-II's predecessor, the AAQ-I.

Behavioral avoidance measured by the MEAQ was most strongly related to DERS Goals; this was the expected finding. Impulsivity measured by the BIS-11 was most strongly related to overall emotion regulation difficulties. This finding suggests that trait-level impulsivity is likely an important component of emotion regulation difficulties (as suggested by Gratz and Roemer, 2004). The second strongest relationship with impulsivity as measured by the BIS-11 was with DERS Clarity, the dimension of the DERS that asks individuals whether they can identify their emotional experience. The relationship between these two constructs is in line with research suggesting that impulse control may deteriorate in the presence of distress (Tice et al., 2001) and that distress is related to increased difficulty identifying emotions (Liang & West, 2011). The relationship between the BIS-11 (impulsivity) and DERS Impulse was the third strongest. The MAAS was used as a measure of mindfulness and was intended to measure the same construct as the DERS domain of Awareness. The correlation between mindfulness and every subscale of the

DERS was significant; the relationship between mindfulness and DERS Awareness was the weakest of these. The DERS domain of Awareness specifically asks the respondent about awareness to feelings (e.g., “I am attentive to my feelings”) whereas the MAAS appears to measure mindfulness/attention to the present moment (e.g., “I do jobs or tasks automatically, without being aware of what I’m doing”). Mindfulness appears to be an important aspect of emotion regulation and its individual domains (as evidenced by the significant correlations with each of these), but, given these differences, should likely to be assessed as a separate construct than assessed via the DERS. Negative mood regulation expectancy (as assessed by the NMR) and alexithymia (as assessed by the TAS-20) were also significantly correlated with each DERS domain, but were most strongly associated with the expected dimensions (i.e., NMR and DERS Strategies and TAS-20 and DERS Clarity), indicating that these DERS domains are likely measuring the same constructs that the NMR and TAS-20 are measuring.

The only significant correlation involving affect intensity was with behavioral avoidance where increased affect intensity was related to increased avoidance of uncomfortable situations. This suggests that if an individual experiences their emotions as being very intense, they may be more likely to engage in behavioral avoidance in order to minimize the potential discomfort. Behavioral avoidance in this case may map onto Gross’ variable of suppression of emotion display, which was found to be the most common response of most people in the presence of anger (Kashdan, Barrios, Forsyth, & Steger, 2006). This relationship does not appear to extend to experiential avoidance, where the individual may also attempt to avoid staying in contact with negative internal experiences.

The expected positive correlations between experiential avoidance, impulsivity, alexithymia, and aggression are consistent with research indicating that difficulty regulating

emotion, an unwillingness to experience negative emotion, difficulty refraining from impulsive behavioral responses, and difficulty identifying and describing emotions are related to increased mental and behavioral health problems (Dorard, Berthoz, Phan, Corcos, & Bungener, 2008; Gross & Munoz, 1995; Honkalampi et al., 2009; Taylor, 1994; Venta, Sharp, & Hart, 2012; Zonnevijlle-Bender, van Goozen, Cohen-Kettenis, van Elburg, & van Engeland, 2002). The lack of significance in the relationship between affect intensity and variables other than behavioral avoidance indicates a less important than expected relationship between the subjective experience of emotion and the ability to identify, describe, and regulate emotion. Affect intensity varies among individuals, but this does not appear to have a substantial relationship with the individual's (in this sample) ability to recognize and to regulate the emotional experience. This finding—that an individual difference such as affect intensity does not have a significant effect on emotional skillfulness—is in line with research that has suggested emotion regulation skills training as an effective transdiagnostic treatment, over and beyond arousal regulation interventions (Neacsiu, Eberle, Kramer, Wiesmann, & Linehan, 2014). The relationships between affect intensity and other variables in this study suggest that individuals learn to regulate their emotions regardless of the intensity of their affect.

The nonsignificant relationship between the DERS dimension that measures difficulties engaging in goal-directed behavior and physical and verbal aggression is consistent with the nonsignificant correlation between the separate measure of goal-directed behavior (MEAQ Behavioral avoidance). This finding suggests that individuals who engage in physical and/or verbal aggression are generally not avoiding situations that may lead to unfavorable outcomes in order to achieve longer-term goals or to avoid discomfort. In the future, a measure of the individual's goals and/or levels of future orientation may help to clarify this relationship. It is

possible that individuals who engage in physical and/or verbal aggression also engage in poor planning or have few defined goals where such behavior acts as a barrier to goal achievement. The relationship between DERS Awareness and verbal aggression was also nonsignificant. Similarly, the relationship between the separate measure of awareness (the MAAS) and verbal aggression was nonsignificant, suggesting that those who engage in verbally aggressive behavior do not necessarily exhibit a deficit in awareness of their emotional experience.

The nonsignificant correlation between DERS Nonacceptance and these two forms of aggression are particularly interesting in light of the significant correlation between experiential avoidance (a construct similar to Nonacceptance) and the significant correlation between the employed measure of experiential avoidance (the AAQ-II) and the DERS Nonacceptance domain. Each item of the DERS Nonacceptance measure asks about secondary emotions when upset (e.g., “When I’m upset, I become irritated with myself for feeling that way”) while the AAQ-II asks questions such as “I’m afraid of my feelings” and “Emotions cause problems in my life.” These differences in the constructs and apparently divergent correlational findings could indicate that individuals who endorse that emotions are problematic for them are not universally experiencing or acknowledging emotional reactions to the experience of emotion.

Given these correlations, it appears that the DERS constructs map onto similar measures of emotion regulation. Utilizing the DERS with its subscales could be an effective and parsimonious method of assessing specific difficulties with emotion regulation, although the multiple significant relationships among these measures and the DERS subscales also supports the use of the DERS overall score as a relatively effective, low-cost, and fast option for screening individuals with aggressive behaviors who may benefit from broad ER skills training.

Correlational findings involving the DERS Clarity subscale should be interpreted with extreme caution given the extremely low reliability for this scale present in this sample ($\alpha = .18$; see Table 1). Reasons for this low reliability are unclear and are not mirrored in the development sample for the DERS. Similarly, the TAS-20 subscale of Difficulty Describing Feelings, which uses questions similar to the DERS Clarity subscale, demonstrated an unacceptable Cronbach's alpha ($\alpha = .48$), although the overall TAS-20 reliability was in the acceptable range. This sample may be artifactually low in emotional clarity or these low levels of clarity in emotion identification may be the result of a cohort effect that warrants further investigation.

In regards to more targeted skills training, it is notable that experiential avoidance predicted each dimension of aggression and overall aggression, although the significance of that relationship did not always persist when DERS subscales were included in the model. In the case of overall aggression, experiential avoidance and the DERS dimension of impulse control best predicted the likelihood that an individual self-reports engaging in aggressive behavior. The DERS dimension of impulse control explicitly inquires about the individual's ability to refrain from engaging in impulsive behavior in the face of distressing emotion (i.e., "When I am upset..."), while the alternative measure used in this study measures overall, trait-level impulsivity. While these two measures were employed together in an attempt to measure the same construct, this difference and the subsequent predictive value of the DERS dimension of impulse control is likely an important one. This suggests that overall impulsivity (e.g., acting on impulse, failing to plan ahead of time, overall difficulties focusing on larger projects) may be less important to aggression than the ability to effectively manage distressing emotions in the moment. Individuals whose behavior suggests general conscientiousness and restraint may engage in impulsive actions when distressed; it appears that the DERS method of explicitly

asking about behavior in the face of distress is an important tool in predicting impulsive aggression. The finding that impulse control in the face of distress predicts aggression in addition to experiential avoidance also lends support to the theory that individuals who wish to avoid feeling distressed may engage in escape behavior (in this case, aggression); if this is the case then trait-level conscientiousness (i.e., lack of impulsivity) may be less important than the urge to escape (i.e., engage in experiential avoidance) and suggests that adding context to questions designed to assess ER constructs would be helpful in better understanding emotion regulation.

Similarly, experiential avoidance, DERS Impulse, and DERS Awareness predicted physical aggression. Lack of awareness was uniquely predictive of physical aggression. This DERS dimension measures the extent to which an individual attends to and assigns value to their emotional experience (e.g., "...my feelings are valid and important"). Conceptually, the lack of attention to and value of emotion would be consistent with an increased desire to avoid distressing internal events, but this does not entirely explain why awareness was significant in predicting physical aggression and not overall aggression or other forms of aggression. This finding may indicate that some individuals who engage in aggressive behavior lack the skills to evaluate and analyze their arousal and become overwhelmed by it. Clinically, this finding suggests that interventions that target awareness in addition to the willingness to have the experience and take time before acting may be valuable in preventing or reducing physical aggression.

Verbal aggression was predicted only by experiential avoidance. The measurement of verbal aggression in this study included being argumentative with others and verbally indicating interpersonal annoyance. The finding that experiential avoidance predicts this kind of verbal aggression suggests that such aggression may be useful as a method of discharging the

experience of uncomfortable emotion and may be an important part of the relationship between emotion regulation difficulties and interpersonal problems.

Aggressive anger (e.g., being a “hothead” and “flaring up” easily), like overall aggression and physical aggression, was predicted by experiential avoidance and by the DERS dimension of impulse control. This suggests that the tendency to “lose [one’s] temper” may be very similar to actually engaging in physical aggression, and may serve an emotion regulation function.

The form of aggression termed *hostility* refers to covert aggression such as often feeling jealous, feelings that others are undeserving relative to the self, and beliefs that the individual is getting a “raw deal.” This type of aggression was predicted by experiential avoidance and by DERS Strategies. This DERS dimension refers to the perceived ability of the individual to effectively regulate distress. Again, the belief that one will not be skillful in terminating distress easily is likely related to the desire to avoid such experiences. As such, interventions that target the individual’s avoidance and skills training to improve agency may be effective in reducing hostility.

In addition to emotion regulation variables, age and the global severity of mental health problems were both significant predictors of overall aggression. Existing literature and current statistics on the prevalence of aggression have indicated that younger individuals are more likely to engage in aggressive behavior and to commit aggression-related offenses (Farrington, 2001; World Health Organization, 2014), and so this finding is not unexpected. Further, at least one study has found that experiential avoidance decreases with age (Mahoney, Segal, & Coolidge, 2015). Age significantly predicted overall aggression and physical aggression and remained significant after experiential avoidance was added to the model. Age significantly predicted

verbal aggression only before experiential avoidance was added to the model. These findings lend further support to the importance of preventive interventions among young people. Given that each of the significant domains in this study have established skills training methods, the application of these to preventive services for youth may be an important tool in reducing aggression among young people.

The global severity of mental health problems includes the endorsement of symptoms from multiple domains: somatic, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobias, paranoia, and psychoticism. This variable was significant in predicting overall aggression and hostility. It was also significant in predicting verbal aggression before experiential avoidance was added to the model. Although mental health problems were not delineated by symptoms, severity, or diagnosis in this study, and the sample contained current college students (and, as such, likely relatively well-functioning participants), it is worth noting that increased endorsement of mental health problems is likely linked to increased feelings of hostility and overall aggressive behaviors but is not a significant predictor of physical aggression or aggressive anger once variables beyond general mental health problems are accounted for. This finding is useful not only in countering the stereotype that mental health problems lead to or predict violence but also in providing further support for interventions targeting the variables that were found significant (in this case, experiential avoidance, impulse control when distressed, and the awareness of/attention to emotional experiences) in non-clinical populations as a method of reducing self-reports of aggressive behavior. This is also consistent with studies indicating that treatments utilizing emotion regulation skill training methods to decrease subjective distress are effective in doing so (Neacsiu, et al., 2014).

Limitations and Future Study

The current study utilized college students from one Midwestern university and had a limited age range. These findings may not apply to community samples or to student samples in other settings; as such, these findings should be replicated in communities and with other groups of students. This recommendation is particularly important regarding the low reliabilities of DERS Clarity and the related TAS-20 subscale (Difficulty Describing Emotion) as this finding may be unique to this sample or may suggest a larger cohort effect of decreased emotional clarity (at least as it is measured by the DERS and the TAS-20) among this sample type. This study also used a relatively broad, self-report measure of aggression and did not collect information regarding specific behaviors or histories of aggression or violence. A multidimensional assessment of aggression, including inventories of actual behaviors and observed by others, would be useful in further investigating the role of specific dimensions of emotion regulation difficulties in aggressive behavior. Each measure used in this study was self-report and administered in a web-based format; many of the constructs employed could be measured behaviorally in an experimental setting in order to get a more clear and accurate understanding of the roles of these processes in aggressive behavior. The findings in this study regarding verbal aggression may be applicable to better understanding bullying behavior that is not physical in nature, including cyberbullying. Given the aforementioned high reported rates of these behaviors among young people, exploring the role of experiential avoidance and the effectiveness of acceptance-based interventions for youth specifically focused on verbal aggression and bullying behavior may be useful.

The regression analyses discussed in this study were based on stepwise regressions where variables were entered as pairs of indices in the order of DERS subscale factor loadings from the

scale's developers (Gratz & Roemer, 2004) due to differences in patterns of correlations between DERS subscales and aggression and the alternative ER constructs employed in this study and aggression. This study's findings would benefit from the inclusion and comparison of multiple regressions that enter these pairs in varying orders.

Conclusion

This study sought to identify the relations among emotional experiencing, awareness, clarity, acceptance, and regulation skillfulness and aggression. Correlational findings indicated that the intensity of emotional experiencing (i.e., the subjective intensity of emotional experiences) does not appear to have a significant relationship with emotion regulation or with aggression. Regression analyses indicated that aggression is best predicted by experiential avoidance rather than other difficulties in emotion regulation and, in the cases of physical aggression and anger, impulse control. Hostility is predicted by experiential avoidance and access to emotion regulation strategies. Experimental studies should focus on further exploring experiential avoidance and aggressive behavior; investigating the efficacy of interventions that target experiential avoidance could be an important tool in reducing and in preventing aggressive behavior.

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Table 1*Means, Standard Deviations, and Reliability of Measures and Subscales*

<u>Measure/Scale</u>	<u>Number of Items</u>	<u>Response Scale</u>	<u>Mean</u>	<u>SD</u>	<u>Reliability (α)</u>
BSI—Global Severity	53	0 - 4	.57	.57	.97
Aggression Questionnaire	29	1 - 5	68.42	25.59	.92
<i>Physical Aggression</i>	9		20.24	8.84	.75
<i>Verbal Aggression</i>	5		14.24	6.46	.81
<i>Anger</i>	7		15.84	7.04	.74
<i>Hostility</i>	8		18.10	9.51	.86
DERS	36	1 - 5	78.03	22.91	.91
<i>Nonacceptance</i>	6		12.11	5.93	.92
<i>Goal-Directed</i>	5		12.81	5.12	.68
<i>Impulse</i>	6		10.54	4.40	.69
<i>Strategies</i>	8		15.92	6.96	.86
<i>Awareness</i>	6		15.71	5.38	.84
<i>Clarity</i>	5		10.93	3.92	.18
AAQ-II	7	1 - 7	16.47	9.04	.91
MEAQ— <i>Behavioral Avoidance</i>	11	1 - 6	37.48	12.23	.92
BIS	30	1 - 4	61.04	10.32	.78
MAAS	15	1 - 6	57.87	15.51	.92
NMR	30	1 - 5	101.95	18.67	.82
TAS-20	20	1 - 5	47.36	12.10	.81
<i>Difficulty Identifying</i>	7		14.23	5.86	.88
<i>Difficulty Describing</i>	5		13.01	4.81	.48
<i>Externally-Oriented Thinking</i>	8		20.12	4.34	.58
AIM	40	1 - 6	147.30	23.28	.94

Note. BSI—Global Severity = Brief Symptom Inventory, Global Severity Index score, DERS = Difficulties in Emotion Regulation Scale, AAQ-II = Acceptance and Action Questionnaire-II, MEAQ = Multidimensional Experiential Avoidance Questionnaire, BIS = Barratt Impulsiveness Scale, MAAS = Mindful Attention Awareness Scale, NMR = Generalized Expectancies for Negative Mood Regulation Scale, TAS-20 = Toronto Alexithymia Scale, AIM = Affect Intensity Measure; italic text indicates a subscale.

Table 2

Correlations Among Aggression, Physical Aggression, Verbal Aggression, Anger, Hostility, Overall DERS Score, DERS Nonacceptance, DERS Goals, DERS Impulse, DERS Strategies, DERS Awareness, and DERS Clarity

	1	2	3	4	5	6	7	8	9	10	11
1 Total Aggression											
2 Physical aggression	.79**										
3 Verbal aggression	.76**	.47**									
4 Anger	.85**	.59**	.57**								
5 Hostility	.81**	.43**	.50**	.61**							
6 DERS - Total	.42**	.21**	.13*	.46**	.50**						
7 Nonaccept	.26**	.06	.09	.28**	.39**	.78**					
8 Goals	.24**	.08	.10	.30**	.29**	.71**	.53**				
9 Impulse	.40**	.26**	.17**	.50**	.36**	.76**	.53**	.46**			
10 Awareness	.18**	.20**	-.03	.21**	.17**	.39**	.04	-.03	.18**		
11 Strategies	.39**	.17**	.14*	.39**	.50**	.88**	.68**	.64**	.67**	.13*	
12 Clarity	.34**	.20**	.12*	.31**	.43**	.78**	.52**	.41**	.49**	.46**	.60**

Note. ** $p < .001$; * $p < .05$; DERS = Difficulties in Emotion Regulation Scale; Nonaccept = DERS Nonacceptance subscale; Goals = DERS Goal-directed behavior subscale; Impulse = DERS Impulse control subscale; Awareness = DERS Awareness subscale; Strategies = DERS Access to strategies subscale; Clarity = DERS Clarity subscale.

Table 3

Correlations Between Experiential Avoidance, Behavioral Avoidance, Impulsivity, Mindfulness, Negative Mood Regulation Expectancy, Alexithymia, Affect Intensity and the Difficulties in Emotion Regulation Scale

	AAQ-II	MEAQ BA	BIS-11	MAAS	NMR	TAS-20	AIM
Nonacceptance	.59**	.18**	.39**	-.39**	-.36**	.43**	.20**
Goal-directed	.55**	.25**	.33**	-.22**	-.48**	.29**	.17**
Impulse	.48**	.14*	.47**	-.36**	-.47**	.49**	.03
Awareness	.15*	-.05	.21**	-.22**	-.36**	.45**	-.33**
Strategies	.70**	.23**	.44**	-.37**	-.68**	.50**	.12*
Clarity	.57**	.12*	.49**	-.43**	-.53**	.73**	-.10
Overall DERS	.70**	.21**	.53**	-.46**	-.68**	.65**	.04

Note. ** $p < .001$; * $p < .05$; AAQ-II = Acceptance and Action Questionnaire; MEAQ BA = Behavioral Avoidance subscale of the Multidimensional Experiential Avoidance Questionnaire; BIS-11 = Barratt Impulsivity Scale; MAAS = Mindful Attention Awareness Scale; NMR = Negative Mood Regulation Expectancies Scale; TAS-20 = Toronto Alexithymia Scale; AIM = Affect Intensity Measure; bolded numbers indicate that these variables were paired.

Table 4

Correlations Between Aggression, Physical Aggression, Verbal Aggression, Anger, Hostility, Affect Intensity, Alexithymia, Negative Mood Regulation Expectancy, Mindfulness, Impulsivity, Behavioral Avoidance, and Experiential Avoidance

	Total Aggression	Physical Aggression	Verbal Aggression	Anger	Hostility
Affect intensity (AIM)	.02	-.08	.01	.05	.09
Experiential avoidance (AAQ-II)	.48**	.22**	.28**	.42**	.58**
Behavioral avoidance (MEAQ BA)	.09	-.03	.01	.10	.18**
Impulsivity (BIS-11)	.29**	.20**	.09	.33**	.30**
Mindful attention (MAAS)	-.24**	-.13**	-.11	-.23**	-.27**
Negative Mood Regulation (NMR)	-.32**	-.15*	-.08	-.36**	-.40**
Alexithymia (TAS-20)	.36**	.26**	.10	.34**	.42**

Note. ** $p < .001$; * $p < .05$; AIM = Affect Intensity Measure; AAQ-II = Acceptance and Action Questionnaire; MEAQ BA = Behavioral Avoidance subscale of the Multidimensional Experiential Avoidance Questionnaire; BIS-11 = Barratt Impulsivity Scale; MAAS = Mindful Attention Awareness Scale; NMR = Negative Mood Regulation Expectancies Scale; TAS-20 = Toronto Alexithymia Scale.

Table 5

Correlations Between Age and Global Severity of Mental Health Problems and Total Aggression, Physical Aggression, Verbal Aggression, Anger, and Hostility

	Total Aggression	Physical aggression	Verbal aggression	Anger	Hostility
Age	-.17**	-.14*	-.15*	-.13*	-.13*
BSI Global	.43**	.17**	.25**	.36**	.58**

Note. ** $p < .001$; * $p < .05$.

Table 6

Stepwise Regression Analysis Using Pairs of Indices as Predictors of Overall Aggression as an Outcome Variable

	Overall aggression								
	Step 1			Step 2			Step 3		
	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>
Age	-.86	-.11**	-2.17	-.80	-.11**	-2.09	-.77	-.10**	-2.06
Global Severity	19.25	.42**	7.88	8.91	.19**	2.78	8.67	.19**	2.78
AAQ-II				.94	.33**	4.77	.60	.21**	2.91
DERS Impulse							1.45	.24**	4.27
R^2	.04			.25			.30		
Adjusted R^2	.03			.24			.29		
ΔR^2	.04**			.21**			.05**		

Note. AAQ-II = Acceptance and Action Questionnaire-II (Experiential Avoidance), DERS Impulse = Impulse Control as measured by the Difficulties in Emotion Regulation Scale; * $p < 0.05$, ** $p < 0.01$.

Table 7

Stepwise Regression Analysis Using Pairs of Indices as Predictors of Physical Aggression as an Outcome Variable

	Physical aggression											
	Step 1			Step 2			Step 3			Step 4		
	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>
Age	-.31	-.12**	-2.05	-.30	-.11**	-1.99	-.29	-.11*	-1.96	-.25	-.10	-1.74
Global Severity	2.42	.15**	2.63	.40	.03	.33	.33	.02	.27	.02	.01	.02
AAQ-II				.18	.19**	2.40	.08	.08	.95	.09	.09	1.06
DERS Impulse							.46	.22**	3.44	.41	.20**	3.08
DERS Aware										.21	.12**	2.17
R ²	.04			.06			.10			.11		
Adjusted R ²	.03			.05			.08			.10		
ΔR^2	.04**			.02*			.04**			.01*		

Note. AAQ-II = Acceptance and Action Questionnaire-II (Experiential Avoidance), DERS Impulse = Impulse Control as measured by the Difficulties in Emotion Regulation Scale, DERS Aware = Awareness as measured by the Difficulties in Emotion Regulation Scale; * $p < 0.05$, ** $p < 0.01$.

Table 8

Stepwise Regression Analysis Using Pairs of Indices as Predictors of Verbal Aggression as an Outcome Variable

	Verbal aggression					
	Step 1			Step 2		
	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>
Age	-.21	-.11*	-1.93	-.20	-.11	-1.87
Global Severity	2.68	.23**	4.04	1.17	.10	1.31
AAQ-II				.14	.19**	2.50
R ²	.07			.09		
Adjusted R ²	.06			.08		
ΔR^2	.07**			.02**		

Note. AAQ-II = Acceptance and Action Questionnaire-II (Experiential Avoidance); * $p < 0.05$, ** $p < 0.01$.

Table 9*Stepwise Regression Analysis Using Pairs of Indices as Predictors of Anger as an Outcome Variable*

	Anger								
	Step 1			Step 2			Step 3		
	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>	<i>B</i>	<i>B</i>	<i>t</i>
Age	-.19	-.09	-1.70	-.18	-.09	-1.61	-.16	-.08	-1.59
Global Severity	4.44	.35**	6.39	1.64	.13	1.79	1.53	.12	1.81
AAQ-II				.26	.33**	4.53	.10	.13	1.82
DERS Impulse							.65	.40**	7.10
R ²	.14			.19			.31		
Adjusted R ²	.13			.19			.30		
ΔR^2	.14**			.06**			.12**		

Note. AAQ-II = Acceptance and Action Questionnaire-II (Experiential Avoidance), DERS Impulse = Impulse Control as measured by the Difficulties in Emotion Regulation Scale; * $p < 0.05$, ** $p < 0.01$.

Table 10*Stepwise Regression Analysis Using Pairs of Indices as Predictors of Hostility as an Outcome Variable*

	Hostility								
	Step 1			Step 2			Step 3		
	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>
Age	-.15	-.05	-1.13	-.13	-.05	-1.01	-.10	-.04	-.76
Global Severity	9.71	.57**	11.79	5.70	.33**	5.34	5.45	.32**	5.14
AAQ-II				.36	.07**	5.55	.25	.23**	3.13
DERS Strategies							.24	.17**	2.68
R^2	.33			.40			.41		
Adjusted R^2	.33			.39			.40		
ΔR^2	.33**			.06**			.02**		

Note. AAQ-II = Acceptance and Action Questionnaire-II (Experiential Avoidance), DERS Strategies = Access to emotion regulation strategies as measured by the Difficulties in Emotion Regulation Scale; * $p < 0.05$, ** $p < 0.01$.

Appendices

Appendix A: Informed Consent

Appendix B: Demographics Questionnaire

Appendix C: CAGE-AID Questionnaire

Appendix D: The Brief Symptom Inventory

Appendix E: Buss-Perry Aggression Questionnaire

Appendix F: Difficulties in Emotion Regulation Scale

Appendix G: Acceptance and Action Questionnaire - II

Appendix H: Multidimensional Experiential Avoidance Questionnaire – Behavioral avoidance subscale

Appendix I: Barratt Impulsiveness Scale

Appendix J: Mindful Attention Awareness Scale

Appendix K: Generalized Expectancy for Negative Mood Regulation Scale

Appendix L: Toronto Alexithymia Scale

Appendix M: Affect Intensity Measure

Appendix N: IRB Letter of Approval

Appendix A

Informed Consent

Purpose of Study: You are invited to participate in a research study that is investigating emotion and behavior. The purpose of this project is to better understand the relationship between emotion and behavior among college students. The results of this study may help researchers better understand the impact of different facets of emotion on behaviors.

Funding: This research is unfunded.

Study Procedures: Your participation will involve completing several surveys with questions about your behavior and your emotions. In addition, your participation will involve completing a short demographic survey that asks questions about your age, gender, and ethnicity. In total, your participation will take approximately 45-60 minutes.

Risks: The primary risk of participation in this study is a potential loss of confidentiality. Some of the survey questions are personal in nature and may make you feel uncomfortable. You do not have to answer any questions that make you uncomfortable or that you do not want to answer. If you feel a need to talk to someone about how you feel, please contact one of the following resources: Counseling and Psychological Services, located at Snow Health Center, Telephone No.: 734-487-1118; College of Education Counseling Clinic, located at 135 Porter Building, Telephone No.: 734-487-4410; the EMU Psychology Clinic, located at 611 W. Cross St., Telephone No.: 734-487-4987; or the Crisis Call Center, Telephone No.: 1-800-273-8255.

Participation Withdrawal: Participation in this study is voluntary. If you do not wish to participate or withdraw from participating, you may quit the survey at any time without penalty or negative consequence. Refusal to participate in this online survey will not affect your standing at EMU. You may quit the study by closing the browser at any time.

Expected Benefits: There are no direct expected benefits to you for participating in the study. The knowledge that we obtain from your participation will help us understand the influence of emotion on behavior among college students.

Compensation: You may be eligible to receive participation/extra credit for your psychology class in exchange for your participation. If you would like to be considered for extra credit in exchange for your participation, please be sure you accessed this study through the SONA system and your extra credit will be credited automatically.

Confidentiality: Your confidentiality while participating in this research study is very important. All responses to these surveys and all personally identifiable information will be kept confidential within the confines of SurveyMonkey's privacy policy (see http://www.surveymonkey.com/Monkey_Privacy.aspx for further information). All responses will only be available to researchers directly involved in this project, who will download all of the responses at the end of the study and delete the information from SurveyMonkey.com. Data will then be stored on a password-protected computer and any information that could have been used to identify you will be removed. Information from this study may be reported or published in aggregated form so that your anonymity will be maintained.

Contact: If you have any questions concerning your participation in this study now or in the future, you can contact Jessica Baker, at jbaker56@emich.edu or Tamara Loverich at tpenix@emich.edu. For questions about your rights as a research participant, contact the Eastern Michigan University Human Subjects Review Committee (UHSRC) at human.subjects@emich.edu or 734-487-3090.

Consent to Participate: If you have read and understand all of the above and would like to take part in this study, click the NEXT button below. By doing so, you are giving informed consent for us to use your responses in this study. By completing and submitting the questionnaires present, you will be giving informed consent for the researchers to use the information that you provide.

Appendix B

Demographics Questionnaire

Please indicate your responses to the questions by checking the appropriate answer.

Gender: _____ Female _____ Male _____ Transgender

Age (in years): _____

Ethnic background (Check all that apply):

01 – White or Caucasian (Not Hispanic)

02 – Black or African-American (Not Hispanic)

03 – Hispanic or Latino

04 – American Indian

05 – Alaska Native

06 – Asian

07 – Pacific Islander

08 – Middle Eastern

Other (please specify): _____

Marital status

_____ 1 - Married

_____ 5 - Divorced

_____ 2 - Remarried

_____ 6 - Never Married

_____ 3 - Widowed

_____ 7 - Living with same sex partner

_____ 4 - Separated

_____ 8 - Living with opposite sex partner

Education

How many years of education have you completed? (Completing High School or its equivalent = 12 years) _____ years of education

Employment Status

_____ 1 – Full Time (>35hrs/wk)

_____ 5 – Unemployed, Full Time Student

_____ 2 – Part Time (regular hours)

_____ 6 – Unemployed, Part Time Student

_____ 3 – Part Time (irregular hours)

_____ 7 – Retired/Disability

_____ 4 – Military Service

Annual Household Income (if you are a dependent of your parents, please include their income)

- | | |
|-----------------------------|--|
| _____ 1 – ≥ \$150,000 | _____ 5 – \$25,000-49,000 |
| _____ 2 – \$100,000-149,000 | _____ 6 – \$10,000-24,000 |
| _____ 3 – \$75,000-99,000 | _____ 7 – ≤ \$9,000 |
| _____ 4 – \$50,000-74,000 | _____ 8 – Don't know, or prefer not to say |

Economic Status of Household (if you are a dependent of your parents, please include their income)

- | | |
|---|--|
| _____ 1 – Barely enough to get by | _____ 4 – Plenty of “extras” |
| _____ 2 – Enough to get by, but no more | _____ 5 – Plenty of “luxuries” |
| _____ 3 – Solidly middle class | _____ 6 – Don't know/prefer not to say |

Appendix C

CAGE-AID Questionnaire

When thinking about drug use, include illegal drug use and the use of prescription drugs other than prescribed.

Questions:	YES	NO
1. Have you ever felt that you ought to cut down on your drinking or drug use?		
2. Have people annoyed you by criticizing your drinking or drug use?		
3. Have you ever felt bad or guilty about your drinking or drug use?		
4. Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to get rid of a hangover?		

Appendix D

The Brief Symptom Inventory (BSI)

The BSI test consists of a list of problems people sometimes have. Read each one carefully and circle the number of the response that best describes HOW MUCH THAT PROBLEM HAS DISTRESS OR BOTHERED YOU DURING THE PAST 7 DAYS INCLUDING TODAY. Circle only one number for each problem. Do not skip any items.

0 = Not at all 1 = A little bit 2 = Moderately 3 = Quite a bit 4 = Extremely

HOW MUCH WERE YOU DISTRESSED BY:

1. Nervousness or shakiness inside
2. Faintness or dizziness
3. The idea that someone else can control your thoughts
4. Feeling others are to blame for most of your troubles
5. Trouble remembering things
6. Feeling easily annoyed or irritated
7. Pains in heart or chest
8. Feeling afraid in open spaces or on the streets
9. Thoughts of ending your life
10. Feeling that most people cannot be trusted
11. Poor appetite
12. Suddenly scared for no reason
13. Temper outbursts that you could not control
14. Feeling lonely even when you are with people
15. Feeling blocked in getting things done
16. Feeling lonely
17. Feeling blue
18. Feeling no interest in things
19. Feeling fearful
20. Your feelings being hurt easily
21. Feeling that people are unfriendly or dislike you
22. Feeling inferior to others
23. Nausea or upset stomach
24. Feeling that you are watched or talked about by others
25. Trouble falling asleep
26. Having to check and double-check what you do
27. Difficulty making decisions
28. Feeling afraid to travel on buses, subways, or trains
29. Trouble getting your breath

30. Hot or cold spells
31. Having to avoid certain things, places, or activities because they frighten you
32. Your mind going blank
33. Numbness or tingling in parts of your body
34. The idea that you should be punished for your sins
35. Feeling hopeless about the future
36. Trouble concentrating
37. Feeling weak in parts of your body
38. Feeling tense or keyed up
39. Thoughts of death or dying
40. Having urges to beat, injure, or harm someone
41. Having urges to break or smash things
42. Feeling very self-conscious with others
43. Feeling uneasy in crowds, such as shopping or at a movie
44. Never feeling close to another person
45. Spells of terror or panic
46. Getting into frequent arguments
47. Feeling nervous when you are left alone
48. Others not giving you proper credit for your achievements
49. Feeling so restless you couldn't sit still
50. Feelings of worthlessness
51. Feeling that people will take advantage of you if you let them
52. Feelings of guilt
53. The idea that something is wrong with your mind

Appendix E

Buss-Perry Aggression Questionnaire (AQ)

Please rate each of the following items in terms of how characteristic they are of you. Use the following scale for answering these items.

1 2 3 4 5 6 7

extremely extremely
uncharacteristic characteristic
of me of me

- 1) Once in a while I can't control the urge to strike another person.
- 2) Given enough provocation, I may hit another person.
- 3) If somebody hits me, I hit back.
- 4) I get into fights a little more than the average person.
- 5) If I have to resort to violence to protect my rights, I will.
- 6) There are people who pushed me so far that we came to blows.
- 7) I can think of no good reason for ever hitting a person.
- 8) I have threatened people I know.
- 9) I have become so mad that I have broken things.
- 10) I tell my friends openly when I disagree with them.
- 11) I often find myself disagreeing with people.
- 12) When people annoy me, I may tell them what I think of them.
- 13) I can't help getting into arguments when people disagree with me.
- 14) My friends say that I'm somewhat argumentative.
- 15) I flare up quickly but get over it quickly.
- 16) When frustrated, I let my irritation show.
- 17) I sometimes feel like a powder keg ready to explode.
- 18) I am an even-tempered person.
- 19) Some of my friends think I'm a hothead.
- 20) Sometimes I fly off the handle for no good reason.
- 21) I have trouble controlling my temper.
- 22) I am sometimes eaten up with jealousy.
- 23) At times I feel I have gotten a raw deal out of life.
- 24) Other people always seem to get the breaks.
- 25) I wonder why sometimes I feel so bitter about things.
- 26) I know that "friends" talk about me behind my back.
- 27) I am suspicious of overly friendly strangers.
- 28) I sometimes feel that people are laughing at me behind my back.
- 29) When people are especially nice, I wonder what they want.

1-9 Physical Aggression; 10-14 Verbal Aggression; 15-21 Anger; 22-29 Hostility

Appendix F

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by clicking the circle underneath the appropriate number from the scale below (1-5) next to each item.

[administration note: each of the following questions will be accompanied by choice menu with the following options]

- 1- Almost never (0-10%)**
- 2- Sometimes (11-35%)**
- 3- About half the time (36-65%)**
- 4- Most of the time (66-90%)**
- 5- Almost always (91-100%)**

1. I am clear about my feelings
2. I pay attention to how I feel
3. I experience my emotions as overwhelming and out of control
4. I have no idea how I am feeling
5. I have difficulty making sense out of my feelings
6. I am attentive to my feelings
7. I know exactly how I am feeling
8. I care about what I am feeling
9. I am confused about how I feel
10. When I'm upset, I acknowledge my emotions
11. When I'm upset, I become angry with myself for feeling that way
12. When I'm upset, I become embarrassed for feeling that way
13. When I'm upset, I have difficulty getting work done
14. When I'm upset, I become out of control
15. When I'm upset, I believe that I will remain that way for a long time
16. When I'm upset, I believe that I'll end up feeling very depressed
17. When I'm upset, I believe that my feelings are valid and important
18. When I'm upset, I have difficulty focusing on other things
19. When I'm upset, I feel out of control
20. When I'm upset, I can still get things done
21. When I'm upset, I feel ashamed with myself for feeling that way
22. When I'm upset, I know that I can find a way to eventually feel better
23. When I'm upset, I feel like I am weak
24. When I'm upset, I feel like I can remain in control of my behaviors
25. When I'm upset, I feel guilty for feeling that way
26. When I'm upset, I have difficulty concentrating
27. When I'm upset, I have difficulty controlling my behaviors
28. When I'm upset, I believe that there is nothing I can do to make myself feel better
29. When I'm upset, I become irritated with myself for feeling that way
30. When I'm upset, I start to feel very bad about myself
31. When I'm upset, I believe that wallowing in it is all I can do

- 32. When I'm upset, I lose control over my behaviors
- 33. When I'm upset, I have difficulty thinking about anything else
- 34. When I'm upset, I take time to figure out what I'm really feeling
- 35. When I'm upset, it takes me a long time to feel better
- 36. When I'm upset, my emotions feel overwhelming

SCORING THE DERS

Reverse-scored items: 1, 2, 6, 7, 8, 10, 17, 20, 22, 24 and 34. Higher scores suggest greater problems with emotion regulation. The measure yields a total score (SUM) as well as scores on six sub-scales:

- 1. Nonacceptance of emotional responses (NONACCEPT)
Item numbers: 25, 21, 12, 11, 29, 23
- 2. Difficulties engaging in goal directed behaviour (GOALS)
Item numbers: 26, 18, 13, 33, 20
- 3. Impulse control difficulties (IMPULSE)
Item numbers: 32, 27, 14, 19, 3, 24
- 4. Lack of emotional awareness (AWARE)
Item numbers: 6, 2, 10, 17, 8, 34
- 5. Limited access to emotion regulation strategies (STRATEGIES)
Item numbers: 16, 15, 31, 35, 28, 22, 36, 30
- 6. Lack of emotional clarity (CLARITY)
Item numbers: 5, 4, 9, 7, 1

Appendix G

Acceptance and Action Questionnaire—II

AAQ-II

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

	1	2	3	4	5	6	7
	never true	very seldom true	seldom true	sometimes true	frequently true	almost always true	always true
1. My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
2. I'm afraid of my feelings.	1	2	3	4	5	6	7
3. I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
4. My painful memories prevent me from having a fulfilling life.	1	2	3	4	5	6	7
5. Emotions cause problems in my life.	1	2	3	4	5	6	7
6. It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
7. Worries get in the way of my success.	1	2	3	4	5	6	7

This is a one-factor measure of psychological inflexibility, or experiential avoidance. Score the scale by summing the seven items. Higher scores equal greater levels of psychological inflexibility.

Appendix H

Multidimensional Experiential Avoidance Questionnaire—Behavioral Avoidance Subscale

Please indicate the extent to which you agree or disagree with each of the following statements

1-----2-----3-----4-----5-----6

strongly moderately slightly slightly moderately strongly
disagree disagree disagree agree agree agree

Behavioral avoidance items:

1, 8, 14, 20, 26, 32, 39, 45, 51, 55, 59

1. I won't do something if I think it will make me uncomfortable 1 2 3 4 5 6
8. I avoid activities if there is even a small possibility of getting hurt 1 2 3 4 5 6
14. I rarely do something if there is a chance that it will upset me 1 2 3 4 5 6
20. I work hard to avoid situations that might bring up unpleasant thoughts and feelings in me
1 2 3 4 5 6
26. I prefer to stick to what I am comfortable with, rather than try new activities 1 2 3 4 5 6
32. If I have any doubts about doing something, I just won't do it 1 2 3 4 5 6
39. If I am starting to feel trapped, I leave the situation immediately 1 2 3 4 5 6
45. I go out of my way to avoid uncomfortable situations 1 2 3 4 5 6
51. If I am in a slightly uncomfortable situation, I try to leave right away 1 2 3 4 5 6
55. I avoid situations if there is a chance that I'll feel nervous..... 1 2 3 4 5 6
59. I'm quick to leave any situation that makes me feel uneasy 1 2 3 4 5 6

Appendix I

Barratt Impulsiveness Scale (BIS-11)

DIRECTIONS: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and put an X on the appropriate circle on the right side of this page. Do not spend too much time on any statement. Answer quickly and honestly.				
	1 Rarely/Never	2 Occasionally	3 Often	4 Almost Always/Always
1 I plan tasks carefully.	1	2	3	4
2 I do things without thinking.	1	2	3	4
3 I make-up my mind quickly.	1	2	3	4
4 I am happy-go-lucky.	1	2	3	4
5 I don't "pay attention."	1	2	3	4
6 I have "racing" thoughts.	1	2	3	4
7 I plan trips well ahead of time.	1	2	3	4
8 I am self controlled.	1	2	3	4
9 I concentrate easily.	1	2	3	4
10 I save regularly.	1	2	3	4
11 I "squirm" at plays or lectures.	1	2	3	4
12 I am a careful thinker.	1	2	3	4
13 I plan for job security.	1	2	3	4
14 I say things without thinking.	1	2	3	4
15 I like to think about complex problems.	1	2	3	4
16 I change jobs.	1	2	3	4
17 I act "on impulse."	1	2	3	4
18 I get easily bored when solving thought problems.	1	2	3	4
19 I act on the spur of the moment.	1	2	3	4
20 I am a steady thinker.	1	2	3	4
21 I change residences.	1	2	3	4
22 I buy things on impulse.	1	2	3	4
23 I can only think about one thing at a time.	1	2	3	4
24 I change hobbies.	1	2	3	4
25 I spend or charge more than I earn.	1	2	3	4
26 I often have extraneous thoughts when thinking.	1	2	3	4

27 I am more interested in the present than the future.	1	2	3	4
28 I am restless at the theater or lectures.	1	2	3	4
29 I like puzzles.	1	2	3	4
30 I am future oriented.	1	2	3	4

Appendix J

Mindfulness Attention Awareness Scale

Below is a collection of statements about your everyday experience. Using the 1–6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what *really reflects* your experience rather than what you think your experience should be.

1	2	3	4	5	6
Almost always	Very frequently	Somewhat frequently	Somewhat infrequently	Very infrequently	Almost never

1. ____ I could be experiencing some emotion and not be conscious of it until some time later.
2. ____ I break or spill things because of carelessness, not paying attention, or thinking of something else.
3. ____ I find it difficult to stay focused on what's happening in the present.
4. ____ I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.
5. ____ I tend not to notice feelings of physical tension or discomfort until they really grab my attention.
6. ____ I forget a person's name almost as soon as I've been told it for the first time.
7. ____ It seems I am "running on automatic" without much awareness of what I'm doing.
8. ____ I rush through activities without being really attentive to them.
9. ____ I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.
10. ____ I do jobs or tasks automatically, without being aware of what I'm doing.
11. ____ I find myself listening to someone with one ear, doing something else at the same time.
12. ____ I drive places on "automatic pilot" and then wonder why I went there.
13. ____ I find myself preoccupied with the future or the past.
14. ____ I find myself doing things without paying attention.
15. ____ I snack without being aware that I'm eating.

Appendix K

Generalized Expectancy for Negative Mood Regulation Scale

This is a questionnaire to find out what people believe they can do about upsetting emotions or feelings. Please answer the statements by giving as true a picture of your own beliefs as possible. Of course, there are no right or wrong answers. Remember, the questionnaire is about what you believe you can do, not about what you actually or usually do. Be sure to read each item carefully and show your beliefs by marking the appropriate number.

If you strongly disagree with an item, fill in the number 1. Mark the space numbered 2 if you mildly disagree with the item. That is, mark the space numbered 2 if you think the item is more generally untrue than true according to your beliefs. Fill in the space numbered 3 if you feel the item is about equally true as untrue. Fill in the space numbered 4 if you mildly agree with the item. That is, mark number 4 if you think the item is more true than untrue. If you strongly agree with an item fill in the space numbered 5.

1. Strongly disagree
 2. Mildly disagree
 3. Agree and disagree equally
 4. Mildly agree
 5. Strongly agree
-

When I'm upset, I believe that...

1. I can usually find a way to cheer myself up.
2. I can do something to feel better.
3. Wallowing in it is all I can do. (n)
4. I'll feel okay if I think about more pleasant times.
5. Being with other people will be a drag. (n)
6. I can feel better by treating myself to something I like.
7. I'll feel better when I understand why I feel bad.
8. I won't be able to get myself to do anything about it. (n)
9. I won't feel much better by trying to find some good in the situation. (n)
10. It won't be long before I can calm myself.
11. It will be hard to find someone who really understand. (n)
12. Telling myself it will pass will help me calm down.
13. Doing something nice for someone else will cheer me up.
14. I'll end up feeling really depressed. (n)
15. Planning how I'll deal with things will help.
16. I can forget about what's upsetting me pretty easily.
17. Catching up with my work will help me calm down.
18. The advice friends give me won't help me feel better. (n)
19. I won't be able to enjoy the things I usually enjoy. (n)
20. I can find a way to relax.
21. Trying to work the problem out in my head will only make it seem worse. (n)
22. Seeing a movie won't help me feel better. (n)

23. Going out to dinner with friends will help.
24. I'll be upset for a long time. (n)
25. I won't be able to put it out of my mind. (n)
26. I can feel better by doing something creative.
27. I'll start to feel really down about myself. (n)
28. Thinking that things will eventually be better won't help me feel any better. (n)
29. I can find some humor in the situation and feel better.
30. If I'm with a group of people, I'll feel "alone in a crowd." (n)

Note. Negative items are denoted by (n); scoring is reversed.

Appendix L

Toronto Alexithymia Scale (TAS-20)

1	2	3	4	5
Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree

- _____ 1. I am often confused about what emotion I am feeling.
- _____ 2. It is difficult for me to find the right words for my feelings.
- _____ 3. I have physical sensations that even doctors don't understand.
- _____ 4. I am able to describe my feelings easily
- _____ 5. I prefer to analyze problems rather than just describe them.
- _____ 6. When I am upset, I don't know if I am sad, frightened, or angry
- _____ 7. I find it hard to describe how I feel about people.
- _____ 8. I prefer to just let things happen rather than to understand why they turned out that way.
- _____ 9. I have feelings that I can't quite identify.
- _____ 10. Being in touch with emotions is essential.
- _____ 11. I am often puzzled by sensations in my body.
- _____ 12. People tell me to describe my feelings more.
- _____ 13. I don't know what's going on inside me.
- _____ 14. I often don't know why I am angry.
- _____ 15. I prefer talking to people about their daily activities rather than their feelings.
- _____ 16. I prefer to watch "light" entertainment shows rather than psychological dramas.
- _____ 17. It is difficult for me to reveal my innermost feelings, even to close friends.
- _____ 18. I can feel close to someone, even in moments of silence.
- _____ 19. I find examination of my feelings useful in solving personal problems
- _____ 20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

Appendix M

Affect Intensity Measure (AIM)

The following questions refer to emotional reactions to typical life events. Please indicate how YOU react to these events by placing a number from the following scale in the blank space preceding each item. Please base your answers on how YOU react, not on how you think others react or how you think a person should react.

1 = Never

2 = Almost never

3 = Occasionally

4 = Usually

5 = Almost always

6 = Always

1. _____ When I accomplish something difficult I feel delighted or elated.
2. _____ When I feel happy it is a strong type of exuberance.
3. _____ I enjoy being with other people very much.
4. _____ I feel pretty bad when I tell a lie.
5. _____ When I solve a small personal problem, I feel euphoric.
6. _____ My emotions tend to be more intense than those of most people.
7. _____ My happy moods are so strong that I feel like I'm in heaven.
8. _____ I get overly enthusiastic.
9. _____ If I complete a task I thought was impossible, I am ecstatic.
10. _____ My heart races at the anticipation of some exciting event.
11. _____ Sad movies deeply touch me.
12. _____ When I'm happy it's a feeling of being untroubled and content rather than being zestful and aroused.
13. _____ When I talk in front of a group for the first time my voice gets shaky and my heart races.
14. _____ When something good happens, I'm usually much more jubilant than others.
15. _____ My friends might say I'm emotional.
16. _____ The memories I like the most are of those times when I felt content and peaceful rather than zestful and enthusiastic.
17. _____ The sight of someone who is hurt badly affects me strongly.
18. _____ When I'm feeling well it's easy for me to go from being in a good mood to being really joyful.
19. _____ "Calm and cool" could easily describe me.
20. _____ When I'm happy I feel like I'm bursting with joy.
21. _____ Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.
22. _____ When I'm happy I feel very energetic.

23. _____ When I receive a reward I become overjoyed.
24. _____ When I succeed at something, my reaction is calm and contentment.
25. _____ When I do something wrong I have strong feelings of shame and guilt.
26. _____ I can remain calm even on the most trying days.
27. _____ When things are going good I feel 'on top of the world'.
28. _____ When I get angry it's easy for me to still be rational and not overreact.
29. _____ When I know I have done something very well, I feel relaxed and content rather than excited and elated.
30. _____ When I do feel anxiety it is normally very strong.
31. _____ My negative moods are mild in intensity.
32. _____ When I am excited over something I want to share my feelings with everyone.
33. _____ When I feel happiness, it is a quiet type of contentment.
34. _____ My friends would probably say I'm a tense or 'high-strung' person.
35. _____ When I'm happy I bubble over with energy.
36. _____ When I feel guilty, this emotion is quite strong.
37. _____ I would characterize my happy moods as closer to contentment than joy.
38. _____ When someone compliments me, I get so happy I could 'burst'.
39. _____ When I am nervous I get shaky all over.
40. _____ When I am happy the feeling is more like contentment and inner calm than one of exhilaration and excitement.

Appendix N

IRB Letter of Approval

RESEARCH @ EMU

UHSRC Determination: EXEMPT

DATE: March 10, 2016

**TO: Jessica Baker, BA
Department of Psychology
Eastern Michigan University**

**Re: UHSRC: #873326-1
Category: Exempt category 2
Approval Date: March 10, 2016**

Title: Relations among dimensions of emotion regulation and aggressive behavior

Your research project, entitled **Relations among dimensions of emotion regulation and aggressive behavior**, has been determined **Exempt** in accordance with federal regulation 45 CFR 46.102. UHSRC policy states that you, as the Principal Investigator, are responsible for protecting the rights and welfare of your research subjects and conducting your research as described in your protocol.

Renewals: Exempt protocols do not need to be renewed. When the project is completed, please submit the **Human Subjects Study Completion Form** (access through IRBNet on the UHSRC website).

Modifications: You may make minor changes (e.g., study staff changes, sample size changes, contact information changes, etc.) without submitting for review. However, if you plan to make changes that alter study design or any study instruments, you must submit a **Human Subjects Approval Request Form** and obtain approval prior to implementation. The form is available through IRBNet on the UHSRC website.

Problems: All major deviations from the reviewed protocol, unanticipated problems, adverse events, subject complaints, or other problems that may increase the risk to human subjects **or** change the category of review must be reported to the UHSRC via an **Event Report** form, available through IRBNet on the UHSRC website.

Follow-up: If your Exempt project is not completed and closed after **three years**, the UHSRC office will contact you regarding the status of the project.

Please use the UHSRC number listed above on any forms submitted that relate to this project, or on any correspondence with the UHSRC office.

Good luck in your research. If we can be of further assistance, please contact us at 734-487-3090 or via e-mail at human.subjects@emich.edu. Thank you for your cooperation.

Sincerely,

Alissa Huth-Bocks, Ph.D.
Chair
CAS Human Subjects Review Committee