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Emotional Clarity in Young Adults: Operationalization, Measurement, and Associations with Mental Health Outcomes

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Emotional Clarity in Young Adults: Operationalization, Measurement, and Associations with Mental Health Outcomes

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Abstract

Emotional clarity (EC) refers to the ability to identify, understand, and distinguish one's emotions (Gohm & Clore, 2000). The literature suggests that EC is highly related to emotion regulation (ER), such that individuals with higher EC are more likely to use adaptive ER strategies and individuals with lower EC are more likely to use maladaptive ER strategies (Vine & Aldao, 2014). EC has been measured with both self-report measures and physiological tasks. Due to the limitations of both self-report measures and physiological tasks, I aimed to develop a behavioral measure of EC using the concordance between change in individuals' physiological responding and change in their subjective emotional states before and during a stressor task. In part one of the study, I created a behavioral measure and compared it to individuals' self-reported emotional clarity. In part two, I examined the concurrent validity of the behavioral EC measure by assessing its relationships with maladaptive ER, adaptive ER, and non-suicidal self-injury (NSSI, a maladaptive ER strategy). Participants were 127 (90% female, M_{age} = 19.51, SD_{age} = 1.31) young adults. Participants completed questionnaires of self-reported emotional clarity and ER strategies. Then, participants completed a modified Trier Social Stress Test in the laboratory (TSST; Waugh, Panage, Mendes, & Gotlib, 2010). Heartbeat was measured throughout and self-rated negative affect was measured before and after stress. Results indicated that behavioral EC was not associated with self-reported EC (r = .14, p = .178). Furthermore, structural equation modeling results indicated that behavioral EC did not predict maladaptive ER (β = .18, p = .733), adaptive ER (β = .61, p = .497), or NSSI (β = .40, p = .618). Examinations of the relations between study variables suggested that self-reported EC may have been a more accurate measure of EC in the current sample. Limitations of the current study may have

impacted the ability for the behavioral measure to properly capture the construct of EC. Future research is needed to more fully understand whether a behavioral measure of EC is feasible.

Chapter I: Introduction and Literature Review

Emotional clarity (EC) refers to the ability to identify, understand, and distinguish one's emotions (Gohm & Clore, 2000). EC has primarily been measured with self-report measures, in which participants report what they believe their ability to identify, understand, and distinguish their emotions to be. However, there are many limitations to using self-report measures, including the influence of wording, format, and context on participant response (Schwartz, 1999) and their susceptibility to recall and social desirability bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Given that physiological responses may be one index of changes in emotional states (Damasio, 1994), others have utilized physiological tasks to measure EC. The heartbeat detection task (Schandry, 1981), in which participants are asked to count their heartbeats for a specified duration, has been used as a measure of ability to identify physiological cues. However, this task does not measure one's ability to connect physiological changes with subjective emotions, missing an essential component of EC. Furthermore, this task does not assess changes in physiological responding due to environmental demands, thus lacking ecological validity. One alternative would be to examine physiological responding to a stressor task, in which physiology would be expected to change. The first purpose of the current study was to examine whether EC can be operationalized using a behavioral task that investigated the concordance between change in individuals' physiological responding and change in their subjective emotional states before and during a stressor task and comparing it to individuals' self-reported emotional clarity.

The literature suggests that EC is highly related to emotion regulation (see Vine & Aldao, 2014). Individuals with high EC require fewer attentional resources to understand their emotions and more resources can be directed at regulating emotions or engaging in other goal directed behavior (Barrett, Gross, Christensen, & Benvenuto, 2001; Gross & Jazaieri, 2014). Conversely, deficits in EC have been related to greater time and attentional resources needed to understand emotions and fewer constructive strategies and lower ability to regulate emotions (Gohm & Clore, 2000; Gohm, Corser, & Dalsky, 2005). Individuals with deficits in EC may feel overwhelmed by their emotions and turn to maladaptive strategies to regulate aversive emotions. While research indicates that deficits in EC have been related to rumination, a maladaptive regulation strategy (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995), EC may also be related to other adaptive and maladaptive regulation strategies. High EC should be associated with more adaptive emotion regulation strategies such as problem solving, reappraisal, and acceptance. Low EC should be associated with maladaptive emotion regulation strategies such as rumination, suppression, and avoidance. Low EC may also be associated with maladaptive behavioral emotion regulation strategies, like nonsuicidal self-injury (see Nock & Prinstein, 2004, 2005). Thus, the second purpose of this study was to examine how both self-report and behavioral EC relate to emotion regulation and to NSSI.

Part 1: Operationalizing Emotional Clarity

Defining EC

EC is currently defined as the ability to identify, characterize, and distinguish one's emotions (Boden & Thompson, 2017; Gohm & Clore, 2000) and have insight into emotional experiences (Gohm & Clore, 2000). Individuals high in EC have greater ability to know and be clear about the emotions they are experiencing; by contrast, individuals low in EC may be confused about their emotions and have less ability to distinguish between emotions. Models of emotional awareness (e.g., Bagby, Parker, & Taylor, 1994; Gohm & Clore, 2000; Salovey et al., 1995, Swinkels & Guiliano, 1995) suggest that EC is a distinct component of emotional experience that is trait-like, in that it shows stable individual differences (Boden & Thompson, 2017).

Theoretical Background of Emotion Clarity

EC, as described as the ability to identify and characterize emotions, hinges on the debate in the literature about emotion. This in turn impacts how EC would be measured most appropriately. It is necessary to understand emotion in order to inform measurement of emotional clarity. Theories of emotion differ in several ways, including differing on the components of an emotional episode, which components impact intensity, differentiation, and elicitation of emotion, the conditions and mechanisms that elicit emotions, and the temporal process of an emotion episode (see Moors, 2009 for review). However, many theories include similar main components: cognition, physiological response, and the subjective label of emotion.

There are several broad theories of emotion: James' theory (1884, 1890), appraisal theories (see Moors, Ellsworth, Scherer, & Frijda, 2013), network theories (e.g., Berkowitz, 1990, Bower, 1981, Leventhal, 1980, 1984), and conceptual act theory (Barrett, 2006). In order to illustrate these theories the example of a fear in the face of seeing a bear will be used to demonstrate differences in how each theory views emotion.

Some theories emphasize the cognitive component of emotion, including appraisal theories and network theories. Specifically, appraisal theories (see Moors et al., 2013) posit that the cognitive component occurs first, followed by the physiological response, which leads to a subjective label of the emotion. According to appraisal theory, after seeing a bear, first an evaluation of the situation would lead to appraisal that the situation was a threat. Then due to the threat appraisal, the physiological response would occur in the body, leading to the subjective label of fear. Similarly, network theories (e.g., Berkowitz, 1990, Bower, 1981, Leventhal, 1980,

1984) also emphasize the cognitive component of emotion, in that an emotional network or schema is activated during an emotional episode. Network theory would emphasize that upon seeing a bear, a schema for the bear would be activated, part of which would indicate that fear is the appropriate emotional response in that situation, which would lead to the subjective label of fear.

Other theories emphasize the importance of the physiological component. According to James' (1890) theory, physiological changes cause emotions. According to James (1890), seeing a bear would lead to a physiological response, like faster heart rate and faster breathing. These physiological changes would be indicative of a fear response and would result in a subjective label of fear. Damasio (1994) similarly emphasizes changes in body states (i.e., physiological changes) as the basis of emotions. However, his theory also includes an evaluative component, or appraisal of body changes that informs emotion, leading to a subjective emotion label. Similar to James, Damasio would suggest that seeing a bear would first trigger a physiological response. Then, Damasio would further state that the physiological changes in the context of the situation of seeing a bear would be cognitively evaluated to result in the subjective emotion label of fear.

Finally, other theories place an equal emphasis on both the cognitive and physiological components of emotion. Barrett's (2006) conceptual act theory suggests that appraisal (cognitive component) and physiological responses together or separately lead to a subjective emotion label. Conceptual act theory would suggest that in the context of seeing a bear, both the situation would be cognitively appraised as a fear-inducing situation and physiological changes would occur. However, this theory would not distinguish between which came first, but that the combination lead to the subjective label of a fear emotion. A complete review of theories of emotion is beyond the scope of this paper (see Moors, 2009 for review).

The theories of emotion presented above demonstrate the debate in the literature. Some theorists emphasize a physiological component, others emphasize a cognitive component, and still others emphasize a combination of physiological and cognitive components that lead to a subjective emotion label. Further, even in theories presented above that emphasize the cognitive over a physiological aspect of emotion or vice versa most still include the other component as a key part of emotional experience. For example, in appraisal theories, a stimulus is appraised, but then is followed by a physiological response. In Damasio's (1994) theory of emotion, a physiological response occurs first, and then is appraised. Although theorists disagree about the temporal processes of emotion, there does seem to be a consensus that both physiological and cognitive components are essential to emotion. In fact, contemporary views on emotion (e.g., Gross & Jazaieri, 2014) suggest that emotion includes both objective processes (physiological changes) and subjective processes (i.e., cognitive components, like appraisal). Thus, I used the following definition of emotion to inform the operationalization of EC: an emotion is a process that involves coupled changes in physiological response, behavior, and cognitive appraisals of the situation or stimulus (Gross & Jazaieri, 2014).

The current conceptualization of EC is broad and lacks specificity. Being able to identify, characterize, and distinguish emotions in order to come up with a subjective emotion label is a complicated process. This process involves both a cognitive component and a physiological component. The existing literature on EC fails to capture both the physiological component and the necessary relationship between physiological changes and cognitive appraisals. My study aimed to fill this gap by incorporating physiological changes that occur in emotional experience into the conceptualization of EC. The conceptualization of EC in the current study was specifically the ability to identify, characterize, and connect objective physiological changes with subjective appraisals of emotional experiences. This conceptualization of EC in turn impacts measurement of EC.

Current Measurement of EC

EC has primarily been measured with self-report instruments, consistent with the majority of research conducted in clinical psychology (Kazdin, 2003). The most commonly used scales include the Trait Meta-Mood Scale – Clarity of Feelings subscale (TMMS-Clarity; Salovey et al., 1995), the Difficulties in Emotion Regulation Scale – Lack of Clarity subscale (DERS-Clarity; Gratz & Roemer, 2004), and the Toronto Alexithymia Scale – Difficulty Identifying and Difficulty Describing Feelings subscales (TAS; Bagby et al., 1994). While each of these measures varies slightly from the others in number of items and phrasing, the measures have some similarities. For example, the TMMS-Clarity and TAS-Identifying Feelings subscales both contain items asking about awareness of physical sensations (e.g., the following item is on both scales: "I am often puzzled by sensations in my body" [reverse scored]). Further, all three scales contain an item regarding confusion about emotions (e.g., TMMS-Clarity: ""I am rarely confused about how I feel;" DERS-Clarity: "I am confused about how I feel;" TAS-Identifying Feelings: "I am often confused about what emotion I am feeling" [reverse scored]). Thus, Gohm and Clore's (2000) meta-analysis concluded that the scales capture the same construct.

Self-report measures have both advantages and limitations in clinical research. Broadly, they are easy to administer, low-cost, may be brief, and can assess many diverse participant characteristics, including feelings, moods, and symptoms (Aldao, Nolen-Hoeksema, & Shcweizer, 2010; Kazdin, 2003). Self-report measures can also measure traits or dispositional tendencies (i.e. assessing what a participant does over time and across contexts, Aldao et al., 2010). On the other hand, self-report measures have limitations. Participant responses on self-report measures are influenced by wording of questions, format, and context (Schwartz, 1999). Some argue that individuals may not be able to accurately report on traits or behaviors that require insight and meta-cognition (Robinson & Clore, 2002). Subjective self-report may also be limited by participant's difficulties with reporting emotional phenomena (Koster, Soetens, Braet, & De Raedt, 2008; Robinson & Clore, 2002). Further, participant responses are susceptible to recall and social desirability bias (Podsakoff et al., 2003). Recall bias relates to the unreliability of memory, posing a threat to internal validity. Social desirability bias is participants' tendency to respond in a manner that slightly alters their image in order to appear in the best possible light. In assessing EC, self-report measures allow us to assess the participant's own perception of their ability to identify, characterize, and connect objective physiological changes with subjective appraisals of emotional experiences. However, as stated above, participant's subjective report of EC may by inaccurate, depends on their meta-cognitive ability, is impacted by a number of factors, and is susceptible to biases. Further, self-report is unable to assess participants' actual ability to connect physiological responses to subjective appraisals of emotion.

Given the physiological component of emotion, some researchers have used a physiological measure to index EC. The heartbeat perception task (Schandry, 1981) has been used to assess participants' awareness of physiological sensations. During this task, participants are instructed to count their heartbeats, without taking their pulse for a specified time period, typically 25-, 35-, and 45-seconds. Simultaneously, their heart beat responses are recorded via an electrocardiogram (ECG) signal. The number of reported beats is compared to the actual number of beats during the time period. Participants with a higher concordance between perceived and actual beats are *good perceivers* (Schandry, 1981). According to Pollatos, Herbert, Matthias, and Schandry (2007) the ability to accurately perceive one's heartbeats is an index of the ability to perceive physiological cues that are related to emotional stimuli. In other words, they propose that the heartbeat detection task is an index of EC.

Like self-report measures, physiological measures, including the heartbeat detection task, have strengths and limitations. Technological advances have allowed for improvements in physiological data collection and may result in greater ecological validity (Crowell, Price, Puzia, Yaptangco, & Cheng; 2017). In addition, physiological responses may be the most direct measure of a construct of interest, and they limit social desirability bias (Kazdin, 2003). The heartbeat detection task is strengthened by its incorporation of objective measurement (i.e., ECG) with participants' subjective perception of those responses, in order to understand the concordance between the two. Further the literature supports the validity of this task to measure perception of physiological responses (e.g., Pollatos et al., 2007, Wiens et al., 2000). Physiological measures also have several limitations and considerations. Historically, research has been unable to find straightforward associations between psychological constructs and physiological measures (Kazdin, 2003). Second, some physiological measures, like heart rate and electrodermal responding, are very sensitive to stimulus conditions and research design (Zisner & Beauchaine, 2016). For the heartbeat detection task, specifically, participant attention and motivation may influence their performance on the task (Pollatos et al., 2007). Finally, the heartbeat detection task is not performed during stressor tasks, so it does not assess changes in physiological responding to environmental demands. That is, participants are not required to connect their objective physiological changes to their subjective emotional states. These limitations impact the ecological validity of the heartbeat perception task.

Proposing a Behavioral Measure of EC

Integrating all perspectives on emotional clarity, I defined EC as the ability to identify, characterize, and connect objective physiological changes with subjective appraisals of emotional experiences. Neither self-report measures nor the heartbeat detection task measure both the objective and subjective components that comprise EC. In fact, no study to date has utilized a measure of EC that captures both the objective and subjective components. In order to accurately measure EC based on this definition, a behavioral measure is required. Using a stressor task or an emotion induction task that is designed to elicit an emotional response in the participant is necessary because it allows for the examination of the concordance between objective and subjective components of emotional experience. Many such tasks exist, and literature suggests that the Trier Social Stress Test (TSST) was a strong candidate for use in the current study due to its strong standardized protocol and design to elicit anxiety (Birkett, 2011). Further, the TSST was able to be modified to meet study requirements and often includes a measure of self-reported affect both before and after stress.

In order to examine the concordance between changes in objective physiological responses and subjective emotional appraisals during the stressor task, both must be measured across the task. To capture the objective physiological changes, several different measures were considered, and both heart rate and electrodermal responding were candidates for use in a behavioral measure of EC. Heart rate has been widely used in research of emotion, especially anxiety (see Zisner & Beauchaine, 2016 for review). To capture the subjective appraisals of emotional experiences, participants rated changes in emotion pre- and post-stress. Change scores in physiological (heart rate) and self-reported emotional responses were calculated by subtracting the pre-stress value from the post-stress value. Then, these change score scores were compared by subtracting the change in self-reported emotion from the change in physiological response (heart rate). This resulted in one score that indicated the concordance between self-reported emotional change and objective physiological change during stress. The absolute value was taken of this score to facilitate interpretation. This score was the behavioral EC score, and ranged from 0.03 to 2.23 with scores closer to 0 indicating better EC. The purpose Part 1 of the current study was to develop and validate this behavioral measure of EC. This measure was compared to a self-report measure of EC in order to assess concurrent validity.

Part 2: Concurrent Validity of Emotional Clarity as it Relates to Emotion Regulation

An important part of developing a new measure is testing its concurrent validity, or the relation between the new measure and external variables that are expected to be associated with the construct. In this case, EC has been shown to be associated with emotion regulation. Emotion regulation refers to the processes that modulate emotions to meet environmental demands (Bargh & Williams, 2007; Rottenberg & Gross, 2003) and is an important transdiagnostic marker that is involved in psychological wellbeing. Emotion regulation strategies can be categorized as being either adaptive or maladaptive. Adaptive emotion regulation strategies are associated with better emotion regulation ability, which in turn have been associated with positive health outcomes, improved relationship, and better academic and work performance (Aldao et al., 2010). Difficulties with emotion regulation and maladaptive emotion regulation strategies, on the other hand, have been implicated in a wide range of psychological disorders, including depression, anxiety, substance use disorders, eating disorders, borderline personality disorder, and bipolar disorder (Aldao et al, 2010). Maladaptive strategies may also lead to persistence and recurrence of unwanted emotions over time (Aldao et al., 2010;

Campbell-Sills & Barlow, 2007). Thus, it is essential to understand factors that predict emotion regulation strategy use, like EC.

The literature suggests that EC is highly related to emotion regulation. High EC is associated with better emotion regulation ability, while lower EC is associated with lower emotion regulation ability. Individuals high in EC require fewer attentional resources to understand their emotions, allowing more resources to be directed at regulating emotions (Barrett & Gross, 2001; Gross & Jazaieri, 2014). In other words, an individual who is easily able to identify, characterize, and connect objective physiological changes with subjective appraisals of emotional experiences will need to spend less time and energy figuring out their emotions, and be able to more easily regulate emotions when needed. On the other hand, individuals who have difficulty identifying and characterizing emotions will require more time and energy to understand their emotions. Further, these low EC individuals may turn to maladaptive emotion regulation strategies when they are unable to understand their emotions, but want to escape an aversive state. In fact, the literature supports the association between low EC and having fewer adaptive strategies and lower ability to regulate emotions (Gohm & Clore, 2000; Gohm et al., 2005).

Adaptive emotion regulation strategies include problem solving, reappraisal, and acceptance. Problem solving is a behavioral strategy that involves making conscious efforts to change a situation or its consequences (Aldao et al., 2010). It involves specific actions, like brainstorming solutions or planning a course of action. While this is not a direct attempt to modify an emotion, problem solving has been shown to have beneficial effects on emotions through modifying stressors (Aldao et al., 2010). Reappraisal refers to (re-)interpreting stressors as benign or positive in order to reduce distress (Gross, 1998). In fact, maladaptive appraisals are implicated in depression and anxiety. Acceptance is a component of mindfulness that refers to the non-judgmental, present moment awareness of emotions and accepting them as they are (Kabat-Zinn, 1990, Segal, Williams, & Teasdale, 2002; Shapiro & Shwarz, 1999). Acceptance has been found to promote adaptive outcomes (Aldao et al., 2010). EC would be expected to have a positive association with these adaptive emotion regulation strategies.

Maladaptive emotion regulation strategies include suppression, avoidance, rumination, and NSSI. Suppression refers to the suppression of emotional expression and unwanted thoughts (Gross, 1998; Wenzlaff & Wegner, 2000). Emotional suppression has been shown to reduce aversive emotion and physiological arousal on a short-term basis, but is less effective over a longer time period (Aldao et al., 2010). Further, thought suppression actually increases the availability of unwanted thoughts and increases physiological arousal (Wegner, Broome, & Blumberg, 1997; Wegner & Erber, 1992; Wegner, Schneider, Carter, & White, 1987). Avoidance refers to avoiding psychological experiences, including emotions, thoughts, and sensations (Hayes et al., 1999). Avoidance has been associated with increases in unwanted thoughts and reducing goal-directed behavior (Hayes et al., 2004). Rumination is the repetitive focus on emotional experience, including the causes and consequences of emotions (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). A wide body a literature shows that rumination is associated with psychopathology (Aldao et al., 2010). NSSI is a behavioral strategy that is aimed at escaping aversive emotions (Nock & Prinstein, 2004; 2005). While this strategy may be effective in the short term, in the long term it can lead to many negative outcomes, including serious injury, suicide attempts, and psychopathology (Nock, 2009). EC would be expected to be negatively associated with these maladaptive strategies. That is, individuals lower in EC would be expected to be more likely to use these maladaptive strategies to regulate their emotions.

Thus the purpose of Part 2 of my study was to validate the new measure of EC by examining the concurrent validity for expected ER strategy use. I expected that given the previous literature on EC and ER strategies, that higher EC as measured with the newly proposed behavioral measure would relate to adaptive ER strategies, including problem-solving, reappraisal, and acceptance. I also expected the lower EC would be related to maladaptive ER strategies, including suppression, avoidance, rumination, and NSSI.

The Current Study

Purpose

The current study had two parts. My aim in part one was to develop and validate a behavioral measure of EC. I used a modified Trier Social Stress Test (TSST), physiological responses (heart rate) before and during stress, and self-rated emotional change pre- to post-stress. This new behavioral measure was compared to an existing self-report measure of EC, the Trait Meta Mood Scale – Clarity subscale (Salovey et al., 1995). My aim in part two was to examine my behavioral measure of EC as it related to adaptive and maladaptive emotion regulation strategies, including rumination, suppression, avoidance, nonsuicidal self-injury, problem solving, reappraisal, and acceptance.

Hypotheses

I had two hypotheses in the current study. First, I hypothesized that the behavioral measure of EC would be correlated with self-reported EC. However, I did not expect a perfect correlation because the behavioral measure would detect EC in the moment and capture the physiological component of emotional responding, whereas self-reported EC captured the participant’s perception of their general EC ability. Second, I hypothesized that higher EC as measured with the behavioral task would relate to more adaptive emotion regulation strategies, whereas lower behavioral EC would relate to more maladaptive emotion regulation strategies.

Chapter II: Method

Participants and Sampling

Participants were 127 (90% female) young adults recruited from a private Christian university in the Pacific Northwest. Participants ranged from 18 to 24 years old, with a mean age of 19.51 years (*SD* = 1.31). Approximately 56.70% of participants identified as Caucasian, 14.40% identified as Asian-American, 1.00% identified as Hispanic or Latino, 4.80% identified as Native American or Pacific Islander, 4.80% identified as African-American, and 8.70% identified as biracial or other.

Target sample size for the current study was 100 participants. For part 1 of the current study, a power analysis for a correlation was performed using G*Power software. Given that previous unpublished research has suggested that among adolescents the relation between behavioral EC and self-reported EC has a small effect size (Wielgus & Mezulis, 2017, December), I aimed to achieve a power of .80 and an effect size of .29. The results of this analysis indicated that a sample size of 88 would be necessary to achieve the desired effect size. Thus, the actual sample size of 127 was deemed to have sufficient power for part 1.

For part 2 of the current study, structural equation modeling (SEM) was used given its ability to examine complex data with multiple dependent variables. Several current guidelines exist for estimating necessary sample size using SEM (Wolf, Harrington, Clark, & Miller, 2013). These guidelines include: using a minimum sample size of 100-200 participants (Boomsma, 1982; Boomsma, 1985), using 5 or 10 observations for each estimated parameter (Bollen, 1989), and using 10 cases per variable (Nunnally, Berstein, & Berge, 1967). Based on these guidelines and my planned analyses, a required sample size of at least 100 participants would be necessary. Thus, the actual sample size of 127 was deemed to have sufficient power for part 2.

Procedure

Participants who were 18 years or older were recruited from undergraduate psychology courses to participate in a larger study assessing affective, cognitive, and biological markers of depression, self-harm, and somatic symptoms in young adults. In the context of this larger study, participants completed a baseline, online questionnaire, regarding self-reported emotional clarity and ER strategies. Then, participants were invited to complete a laboratory visit at the university. During the laboratory visit, a trained research assistant placed the electrode sensors to the participant's torso in order to record physiological responses. Then, the participant completed a modified Trier Social Stress Test (TSST; Waugh, Panage, Mendes, & Gotlib, 2010). The TSST consisted of three phases: baseline, stressor, and recovery. Participants rated their negative affect (NA) prior to beginning the TSST. During the 4-minute resting baseline, participants viewed relaxing nature scenes on a computer. Next, during the 2-minute stressor, participants were asked to prepare a speech on the topic: "Why are you a good friend?" Participants were informed that they *may* have to give the speech to the research assistant. Following the stressor task, participants again rated their NA. At the end of the visit, participants were debriefed regarding the deception used in the study. That is, no participants were asked to actually give a speech. Participants were compensated with course credit.

Measures

Emotional Clarity

Self-reported emotional clarity. Self-reported emotional clarity was assessed with the Trait Meta-Mood Scale – Clarity of Feelings subscale (TMMS-Clarity; Salovey et al., 1995). The

TMMS-Clarity is an 11-item self-report questionnaire. Participants rated agreement to each statement on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items include: “I am rarely confused about how I feel” and “I can’t make sense out of my feelings” (reverse scored). The TMMS-Clarity yields an average score across all items that ranges from 1 to 5. This score indicates the participants impression of their EC ability. In previous studies, the TMMS-Clarity has demonstrated acceptable reliability (α = .80-.87). and validity (Goldman, Kraemer, & Salovey, 1996). In the current study, the internal consistency was found to be acceptable (α = .82).

Behavioral emotional clarity. Behavioral emotional clarity was assessed using the concordance between change in NA pre- to post-stress and the change in physiological responses from baseline to stressor task. Descriptions of the measures of NA and physiological responses are below. First, NA and physiological response scores were standardized in order to put the measurements into comparable units[1]. Then, change in NA was calculated by subtracting pre-stress NA from post-stress NA. Next, change in physiological response was calculated by subtracting physiological responses at baseline from physiological responses during stress. Then, the change in NA was subtracted from the change in physiological responses in order to calculate the two measures’ concordance. Finally, the absolute value of this score was taken for ease of interpretation. Scores ranged from .03 to 2.23. Scores closer to 0 indicated a greater concordance between self-reported affect and changes in physiological response, thus indicating better emotional clarity. Higher scores (i.e., those further from 0) indicated lower concordance

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[1] Analyses were also run with standardization performed after change scores were computed. Results did not substantially change due to standardization conducted before or after change scores were computed.

between self-reported affect and changes in physiological response, thus indicating lower emotional clarity.

NA. Self-reported NA was assessed with the Positive and Negative Affect Schedule for Children – NA subscale (PANAS-C-NA; Laurent et al., 1999). The PANAS-C-NA is a 15-item self-report questionnaire. This questionnaire was administered both before and after the stressor paradigm. Participants responded to items by indicating how much they were feeling each emotion or feeling right now on a scale from 1 (*very slightly or not at all*) to 5 (*extremely*). Sample items include: "Sad," "Nervous," and "Lonely." The PANAS-C-NA yields a total score across all items that ranges from 15 to 75. Higher scores indicate greater state NA. In previous studies, the PANAS-C-NA has demonstrated acceptable reliability (α = .92-.94) and validity (Laurent et al., 1999). In the current study, the internal consistency was found to be acceptable (α = .88 pre-stress and .88 post-stress).

Physiological responses. Physiological responses were assessed though heart rate. Participants' cardiac activity measured during the 4-minute resting baseline and 5-minute stressor task. Electrocardiography (ECG) and respiration data were measured continuously using Biopac MP150 Data Acquisition Unit (Goleta, CA) and sampled at 1000 Hz with the AcqKnowledge software package. Disposable pre-gelled Ag-AgCl electrodes were placed on participants' torsos using a Lead II placement. ECG data were processed offline using MindWare Technologies HRV 3.0.10 analysis program (Gahanna, OH). Trained researchers visually inspected data for movement artifacts or incorrect placement of markers by the automatic scoring algorithm. Data were corrected as necessary. Once the data were cleaned, heart rate was extracted using the number or heartbeats per 30-second epoch. The average number of heartbeats across the four-minute baseline and five-minute stressor were used for the baseline heart rate and stressor heart rate scores, respectively.

Maladaptive ER Strategies

Rumination. Rumination was assessed with the Ruminative Response Scale (RRS; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The RRS-B is a 5-item self-report questionnaire. Participants rated the frequency of response to each statement on a scale from 1 (*almost never*) to 4 (*almost always*). Sample items include: "When I feel sad or down, I think about recent situations, wishing they had gone better" and "When I feel sad or down, I think 'Why can't I handle things better.'" The RRS-B yields a total score across all items that ranges from 5 to 20, with higher scores indicating a greater level of brooding. In previous studies, the RRS-B has demonstrated acceptable reliability ($\alpha = .90$) and validity (Treynor et al., 2003). In the current study, the internal consistency was found to be acceptable ($\alpha = .91$).

Suppression. Suppression was assessed with the Emotion Regulation Questionnaire – Suppression subscale (ERQ-S; Gross & John, 2003). The ERQ-S is a 4-item self-report questionnaire. Participants rated agreement to each statement on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items include: "I control my emotions by not expressing them" and "When I am feeling negative emotions, I make sure not to express them." The ERQ-S yields an average score across all items that ranges from 1 to 7. Higher scores indicate greater suppression. In previous studies, the ERQ-S has demonstrated acceptable reliability ($\alpha = .68$-$.76$) and validity (Gross & John, 2003). In the current study, the internal consistency was found to be acceptable ($\alpha = .80$).

Avoidance. Avoidance was assessed with the Brief Experiential Avoidance Questionnaire (BEAQ; Gámez, Chmielewski, Kotov, Ruggero, Suzuki, & Watson, 2014). The BEAQ is a 15-

item self-report questionnaire. Participants rated agreement to each statement on a scale from 1 (*strongly disagree*) to 6 (*strongly agree*). Sample items include: "I try to put off unpleasant tasks for as long as possible" and "I would give up a lot not to feel bad." The BEAQ yields a total score that is calculated by taking the sum of all items and ranges from 15 to 90. Higher scores indicate greater avoidance. In previous studies, the BEAQ has demonstrated acceptable reliability (α = .80 - .89) and validity (Gámez et al., 2014). In the current study, the internal consistency was found to be acceptable (α = .88).

NSSI. NSSI was assessed with one item from the Inventory of Statements about Self Injury (ISAS; Klonsky & Olino, 2008). The ISAS is a self-report questionnaire that queries about the frequency participants have purposefully engaged in 12 different self-harm behaviors in their life. Participants reported the frequency they had engaged in each of the behaviors (e.g., "cutting" and "burning") on a scale from 1 (*never*) to 5 (*more than 50 times*). The ISAS yields an average score across all methods of self-injury. This score ranges from 0 to 5, which indicates the lifetime frequency of NSSI. In previous studies, the ISAS has demonstrated acceptable reliability (α = .84) and validity (Klonsky & Olino, 2008). In the current study, the internal consistency was found to be low (α = .66).

Adaptive ER Strategies

Problem-solving. Problem-solving was assessed with the Good Behavioral Self-Control Measure – Problem Solving subscale (GBSCM-PS; Wills et al., 2013). The GBSCM-PS is an 8-item self-report questionnaire. Participants rated how often they use each problem solving strategy when they have a problem at home or at school on a scale from 1 (*never*) to 5 (*usually*). Sample items include: "I think hard about what steps to take" and "I make a plan of action and follow it." The GBSCM-PS yields an average score across all items that ranges from 1 to 5.

Higher scores indicate greater problem-solving ability. In previous studies, the GBSCM-PS has demonstrated acceptable reliability (α = .75-.78; Wills et al., 1996) and validity (Wills et al., 2013). In the current study, the internal consistency was found to be acceptable (α = .89).

Reappraisal. Suppression was assessed with the Emotion Regulation Questionnaire – Reappraisal subscale (ERQ-R; Gross & John, 2003). The ERQ-R is a 6-item self-report questionnaire. Participants rated agreement to each statement on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items include: “When I’m faced with a stressful situation, I make myself think about it in a way that helps me stay calm” and “When I want to feel less negative emotion, I change the way I’m thinking about the situation.” The ERQ-R yields an average score across all items that ranges from 1 to 7. Higher scores indicate greater reappraisal. In previous studies, the ERQ-R has demonstrated acceptable reliability (α = .75-.82) and validity (Gross & John, 2003). In the current study, the internal consistency was found to be acceptable (α = .85).

Acceptance. Acceptance was assessed with the Cognitive Emotion Regulation Questionnaire – Acceptance subscale (CERQ-Acceptance; Garnefski & Kraaij, 2007). The CERQ-Acceptance is a 4-item self-report questionnaire. Items presented ways of thinking and feeling in negative or stressful situations. Participants responded to each statement by rating how often they think or feel that way on a scale from 1 (*almost never*) to 5 (*almost always*). Sample items include: “I think I have to accept that this has happened” and “I think that I must learn to live with it.” The CERQ-Acceptance yields an average score across all items that ranges from 1 to 5. Higher scores indicated a greater level of acceptance during negative or stressful situations. In previous studies, the CERQ-Acceptance has demonstrated acceptable reliability (α = .76). and validity (Garnefski & Kraaij, 2007). In the current study, the internal consistency was found to be acceptable ($\alpha = .74$).

Data Analytic Plan

For part 1 of the current study, I used SPSS 25 to perform a correlation between the behavioral measure of EC and self-reported EC. This showed the association between the two measures. For part 2 of the current study, I tested the concurrent validity of the behavioral EC measure by assessing its relation to maladaptive and adaptive ER strategies. Behavioral EC was the independent variable, and the dependent variables were maladaptive ER strategies (a latent variable consisting of rumination, suppression and avoidance), NSSI (an observed variable), and adaptive ER strategies (a latent variable consisting of problem-solving, reappraisal, and acceptance). First, I used M*plus* version 8.1.5 (Muthén & Muthén, 2017) to perform a confirmatory factor analysis (CFA) to test the hypothesized latent variable structure. See Figure 1 for proposed CFA analysis. Then, I used M*plus* to conduct structural equation modeling (SEM) with a hybrid model that included both measurement components (NSSI) as well as structural components (maladaptive and adaptive ER). See Figure 2 for proposed analysis.

Figure 1. Proposed CFA model testing model fit of latent variables.

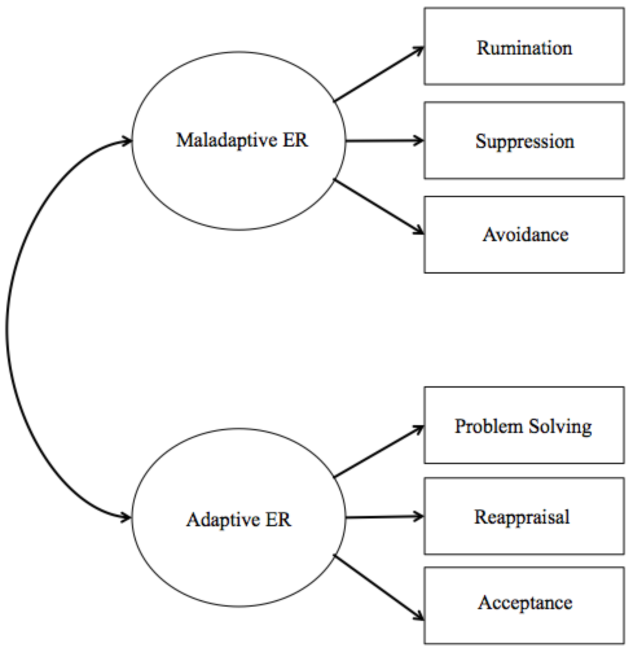
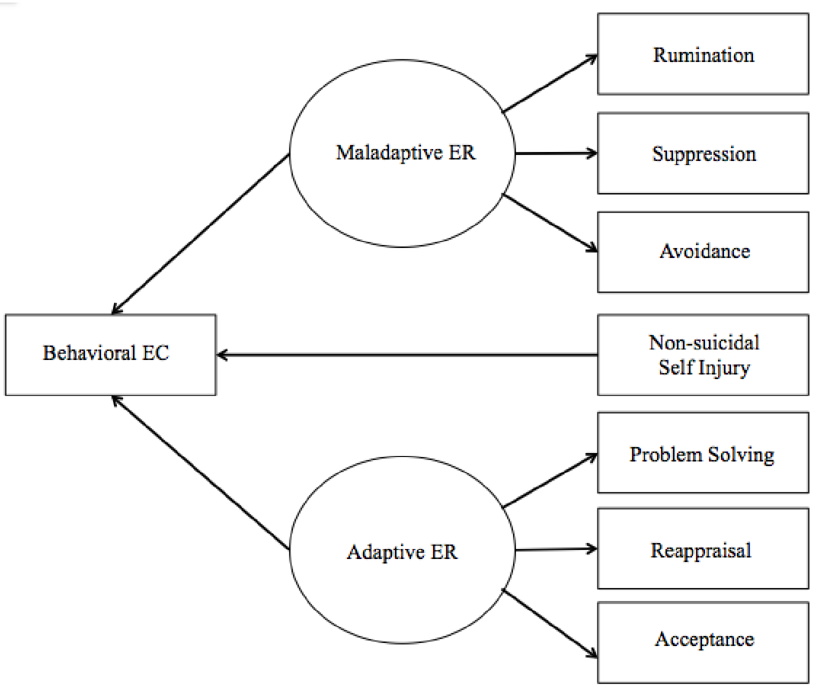


Figure 2. Proposed hybrid SEM model including observed and latent variables to be used in analysis in the current study.



Chapter III: Results

Data Preparation and Descriptive Analyses

Prior to testing hypotheses, the data was prepared and screened for normality. Variable skewness and kurtosis were all within recommended ranges (Kline, 2005). Histograms were examined, and visual inspection indicated normally distributed data. Missing data were managed through multiple imputation in SPSS 25. Missing data analyses indicated 9.32% of my data was missing. Little's MCAR test failed to converge. In accordance with recommendations by Olinsky, Chen, and Harlow (2003), participants with greater than 24% data missingness were removed from the data set. This resulted in 23 participants being removed, leaving a sample size of 104. Data were multiply imputed to maximize power to detect significant relationships. Following this, the data were examined for outliers. Four participants were identified as outliers due to extreme values on NA or heart rate, leaving a final sample size of 100.

A manipulation check was conducted using paired samples t-tests to ensure that the stressor task resulted in changes in NA and heart rate in the expected directions. The change in NA from pre- to post-stress was significant ($t(99) = -4.19$, $p < .001$), indicating increased NA following stress. The change in heart rate from baseline to stressor was also significant ($t(99) = -10.75$, $p < .001$), indicating significantly higher heart rate during the stressor task.

Part One: Correlation

Correlation analysis in SPSS 25 examined the relationship between the behavioral EC and self-reported EC. Analysis indicated that the measures were not correlated ($r = .14$, $p = .178$). Correlations between all study variables can be found in Table 1.

Table 1

Correlations between study variables

Variable	1	2	3	4	5	6	7	8	M	SD
1. Behavioral EC	--								.77	.53
2. Self-report EC	.14	--							3.38	.71
3. Rumination	.02	-.29**	--						12.79	3.83
4. Suppression	.06	-.39***	.28**	--					3.78	1.39
5. Avoidance	.06	-.48***	.68***	.46***	--				48.46	13.30
6. NSSI	.21	-.48**	.32	.31	.47**	--			8.09	17.74
7. Problem Solving	.25*	.20	-.06	-.02	-.18	-.13	--		30.56	5.81
8. Reappraisal	.13	.21*	-.31**	-.19	-.33**	-.23	.32**	--	4.88	1.17
9. Acceptance	.02	-.31**	.21*	.21*	.15	.27	.11	.05	14.56	3.20

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. EC = emotional clarity. NSSI = non-suicidal self-injury.

Part Two: Concurrent Validity

Confirmatory Factor Analysis. First, I tested the model fit for my latent variables, maladaptive ER and adaptive ER, in M*plus* (see Figure 1). Guidelines proposed by Schreiber, Nora, Stage, Barlow, and King (2006) were used to assess model fit. Schreiber and colleagues proposed the following guidelines for assessing model fit: Chi-Square has a non-significant *p*-value, RMSEA < .06, CFI > .95, and TLI > .95. Results from the confirmatory factor analysis, indicated my model had an adequate fit ($\chi^2 = 13.10$, $p = .11$; RMSEA = .08, CFI = .95, TLI = .91). The first observed variable for each latent variable was constrained to 1.00 (i.e., rumination and reappraisal for maladaptive ER and adaptive ER, respectively), in order to estimate the model. Suppression ($b = .25$, $p < .001$) and avoidance ($b = 4.92$, $p < .001$) both significantly loaded onto the maladaptive ER latent variable. Problem solving ($b = 2.45$, $p = .184$) and acceptance ($b = .12$, $p = .784$) both did not significantly load onto the adaptive ER latent variable. Maladaptive ER was significantly negatively correlated with adaptive ER ($r = -.42$, $p = .013$). See Figure 3 for CFA model with path weights. Estimates associated with each path represent standardized regression coefficients. Table 2 presents standardized and unstandardized path weights for the CFA.

Given the particularly poor loading of acceptance onto the adaptive ER latent variable, a second model was run to examine whether excluding acceptance would improve overall model fit. Model fit was not substantively improved by eliminating acceptance, so further analyses were conducted with acceptance in the model. Based on this analysis, my model for the latent variables had an adequate fit, so I next conducted my hybrid SEM analysis.

Figure 3. Results of CFA testing model fit of latent variables.

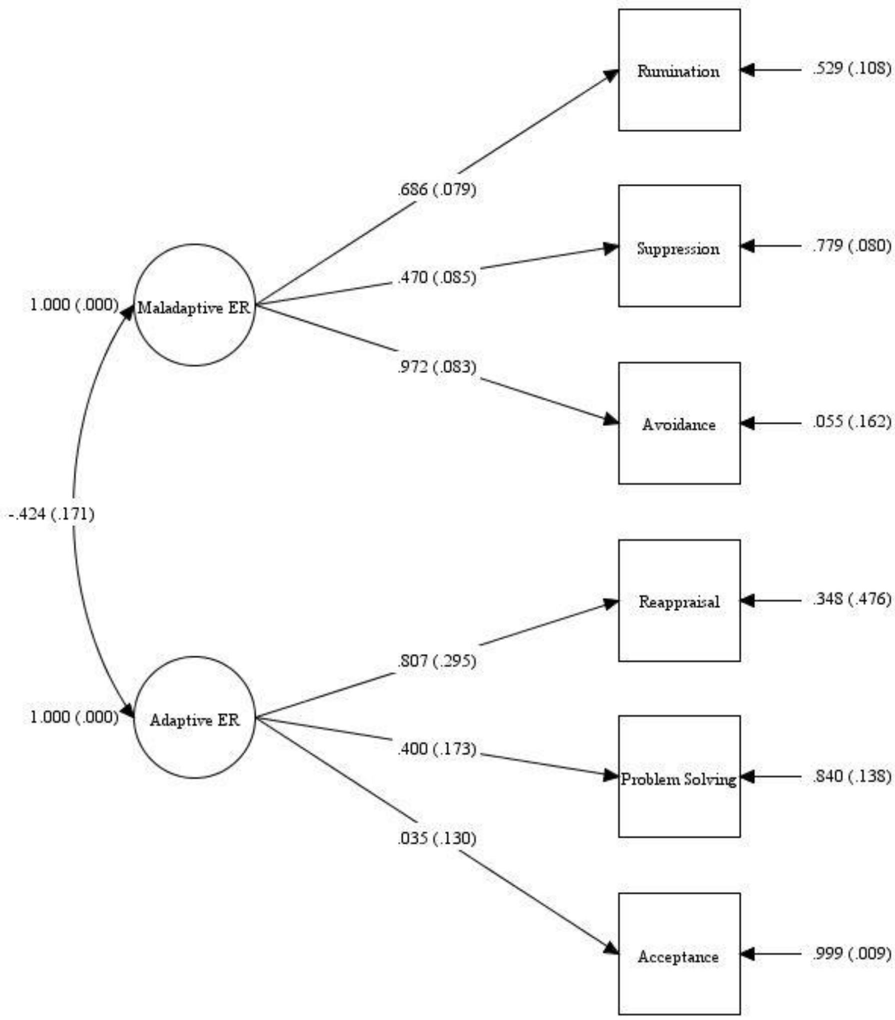


Table 2

Standardized and unstandardized coefficients for CFA

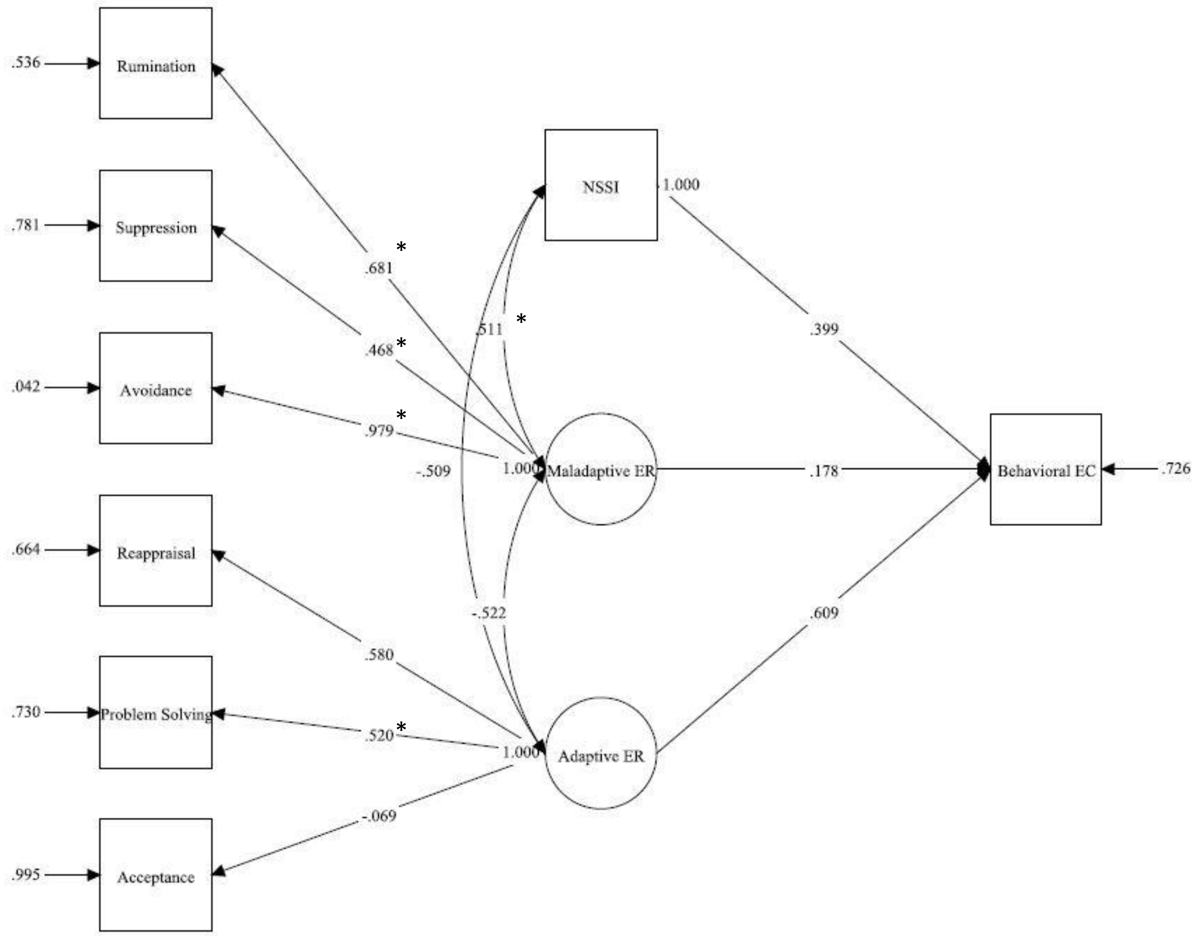
Observed Variable	**Latent Construct**	**Standardized Coefficient (b)**	**Unstandardized Coefficient**	**Standard Error**
Rumination	Maladaptive ER	.69***	1.00	.08
Suppression	Maladaptive ER	.47***	.25***	.09
Avoidance	Maladaptive ER	.97***	4.92***	.08
Reappraisal	Adaptive ER	.81**	1.00	.30
Problem Solving	Adaptive ER	.40*	2.45	.17
Acceptance	Adaptive ER	.04	.12	.13

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

Hybrid Structural Equation Model. I assessed my hypothesized hybrid SEM model (see Figure 2) using M*plus* version 8.1.5. I allowed maladaptive ER, adaptive ER, and NSSI to correlate with one another, given my expectation that they are related constructs. Maladaptive ER was significantly positively correlated with NSSI (r = .51, p = .007), but was not significantly correlated with adaptive ER (r = -.52, p = .264). Adaptive ER was not significantly correlated with NSSI (r = -.51, p = .285). I examined the fit statistics to evaluate model fit. My model had adequate fit (χ^2 = 18.67, p = .29, RMSEA = .04, CFI = .98, TLI = .96).

After confirming adequate model fit, I assessed the model path values of maladaptive ER, adaptive ER, and NSSI on behavioral EC. None of the paths to behavioral EC were significant: maladaptive ER (β = .18, p = .733), adaptive ER (β = .61, p = .497), and NSSI (β = .40, p = .618). See Figure 4 for complete model with results. Estimates associated with each path represent standardized regression coefficients. Table 3 presents path weights for the hybrid SEM analysis.

Figure 4. Structural equation model with standardized path weights.



Note. * = p < .05.

Table 3

Results from hybrid SEM analysis

Variable Relationships	**Standardized Coefficient (b)**	**Unstandardized Coefficient**	**Standard Error**
Behavioral EC ➔ Maladaptive ER	.18	.04	.34
Behavioral EC ➔ NSSI	.40	.01	.50
Behavioral EC ➔ Adaptive ER	.61	.48	.68

Chapter IV: Discussion

My dissertation aimed to develop and validate a behavioral measure of EC. In part one, I developed a measure by combining physiological responses and self-rated emotional change during the TSST. In part two, I examined my behavioral EC measure as it related to adaptive and maladaptive emotion regulation strategies. Results for part one indicated that the behavioral measure of EC was not correlated with an existing measure of EC, the Trait Meta Mood Scale – Clarity subscale, contrary to my hypothesis. In examining correlations between study variables (see Table 1), it appears that the behavioral measure was not associated in the correct direction with any ER strategies, as I would have expected. In contrast, self-reported EC was associated with many ER strategies in the expected directions. Self-reported EC was positively correlated with reappraisal, indicating that higher EC was associated with greater reappraisal use, and was negatively correlated with rumination, suppression, avoidance, and, indicating that lower EC was associated with greater use of those strategies. Interestingly, higher self-reported EC was associated with lower acceptance, which is opposite of what I would expect. Due to the behavioral EC measure not being associated with ER strategies as expected, and self-reported EC being significantly associated with individual ER strategies and the maladaptive ER latent variable as expected, in this sample self-reported EC seems to be a more accurate measure of EC.

Given the associations between EC and emotion regulation in the literature, I further investigated the relationships between behavioral EC and ER strategies through hybrid structural equation modeling in part two. Results from the confirmatory factor analysis that tested the model for the latent variables (adaptive ER and maladaptive ER) had an adequate fit. Problem solving and reappraisal significantly loaded onto adaptive emotion regulation, while rumination, suppression, and avoidance significantly loaded on maladaptive emotion regulation. Further, maladaptive ER was significantly, negatively associated with adaptive ER, as I would expect. Results from the hybrid structural equation modeling analysis also indicated adequate model fit. However, behavioral EC did not significantly relate to adaptive ER, maladaptive ER, or NSSI (observed variable). These results do not support the concurrent validity of the behavioral EC measure and do not support my part two hypothesis.

The results of my dissertation do not support the use of this behavioral measure of EC. In contrast, another study (Wielgus & Mezulis, 2017, December), found that a similar measure of behavioral EC did significantly correlate with self-reported EC and that it was significantly associated with rumination, such that better EC was associated with lower levels of rumination and depressive symptoms. When I compare these two studies, a few factors stand out. First, the previous study was conducted in a sample of young adolescents. Previous research shows that children and adults have similar ability to accurately perceive bodily sensations, like heart rate (Koch & Pollatos, 2014). However, a review conducted by Rawana, Flett, McPhie, Nguyen, and Norwood (2014) suggests that there are important developmental factors to consider when investigating emotional clarity in these two groups. Children and young adolescents begin to develop awareness of their emotions, develop conceptualizations of their internal states, and use externally based ER strategies (Rawana et al., 2014). As individuals age, they shift to using more cognitively-based ER strategies, and when they enter the emerging adulthood period (ages 18-25), individuals begin to develop self-efficacy around their ability to use ER strategies effectively (Rawana et al., 2014). In regards to the Wielgus and Mezulis (2017, December) study, the behavioral measure may have been a more accurate measure because participants were in the period of development characterized by beginning to understand internal states (i.e. physiological responses to stress) and connect them to their emotions. In contrast, in the current study, the young adult participants may have developed beyond that stage and begun to develop self-efficacy in their abilities to be aware of and regulate their emotions. This shift to a more cognitive approach to EC and ER strategy use may have led to the young adult participants being more accurate reporters on the self-report measure of EC. Further, it may also partially explain the disconnect in the current study between the behavioral measure and the ER strategies in that it may be more important for these older participants to feel efficacious in their ability to recognize and regulate emotions rather than to be able to connect to their physiological responses.

Second, while the behavioral EC measure was calculated in the same way as the 2017 study (Wielgus & Mezulis, 2017, December), the stressor task was different. In the previous study, a failure-based stressor task was employed for five minutes, whereas in my dissertation, the stressor was a social stressor task that was employed for two minutes. Although results suggest that the stressor task in the current study did lead to elevated heart rate and increases in negative affect, the short duration of the stressor task may not have been long enough to induce sufficient stress that would result in appraisal of the stressor that would lead to different self-rated affect following stress. In the traditional application of the TSST, tasks on average last 18.8 minutes (Dickerson & Kemeny, 2004), which is much longer than the task used in the current study. In modified applications of the TSST, the speech preparation time varies from two minutes to five minutes (e.g., LeMoult, Arditte, D'Avanzato, & Joormann, 2013; Yoon & Joormann, 2011); however, many studies utilizing a modified TSST still include an evaluative component, such as giving the speech, or a cognitive component, such as a working memory task to induce stress (Dickerson & Kemeny, 2004, LeMoult et al., 2013, Yoon & Joormann, 2011). According to a meta-analysis, short-duration stressors using the TSST are adequate but not sufficient to induce stress (Dickerson & Kemeny, 2004). Rather Dickerson and Kenney argue that elements of uncontrollability or social-evaluative threat are necessary for a stressor task. The stressor used deception in order to elicit social-evaluative threat, and perhaps participants were able to deduce that they would not be made to give the speech, eliminating the social-evaluative threat and limiting the perception of changes in affect following the stressor. Another possibility is that participants discussed the study with each other, so participants who completed the study later knew that they would not have to give their speech, which may have impacted how they rated their emotion after the stressor task.

Another possible explanation for why the behavioral EC measure did not relate to self-reported EC or the ER strategies is that historically research has been unable to find straightforward associations between psychological constructs and physiological measures (Kazdin, 2003). For example, in a reanalysis of multiple studies across multiple ages that used the TSST, Kudielka, Buske-Kirschbaum, Hellhammer, and Kirschbaum (2004) found that increases in heart rate were not related to any subjective emotion ratings in either young or older adults. Unfortunately, no data were available for children's subjective emotion ratings. The association between physiological cues, emotion labels, and cognitive appraisals is complex, leading to much debate in the literature. The behavioral measure used in the current study attempted to utilize multiple sources of data to more accurately capture emotional clarity. Unfortunately, the results suggest that this measure did not accurately measure EC in the current sample.

Limitations and Future Directions

Several limitations must be considered in the current study. First, the stressor task was only two minutes in duration and may not have adequately induced social-evaluative threat, as discussed above. Second, the sample was primarily composed of female students. Previous research suggests that young adult women have larger heart rate responses to stress than men (Kudielka et al., 2004), which may have impacted results. Future research should recruit a greater proportion of males in order to have greater variability in the sample. Third, change in emotion pre- to post-stress was measured as general change in negative affect. Given that the stressor task, the modified TSST, is designed to elicit anxiety in a social context, general changes in negative affect may not have accurately captured the change in emotion that participants experienced. Further, negative affect was only measured before and after stress. Measuring negative affect or anxiety during the stressor task period may get a “real time” assessment of the emotion participants are perceiving during the stressor. Future research may consider using a state measure of change in anxiety or social anxiety.

Clinical Implications

Clinically, EC is important to understand due to its relationship with emotion regulation. Use of maladaptive ER strategies has, in turn, been linked to psychopathology (Aldao et al., 2010). Young adults are at increased risk for developing psychopathology (Patel, Flisher, Hetrick, & McGorry, 2007), so accurate assessment of risk factors is essential in this population. Results suggested that among young adults, one’s self-perception of their ability to understand emotions may be a necessary condition for their ability to use adaptive ER skills. Further, the results of this study suggest that one’s perception of their EC ability may be assessed adequately via self-report in a young adults. Should patients endorse lower EC, clinicians may consider further assessing for maladaptive ER strategy use in order to have a better understanding of their patient’s psychopathology or risk for developing psychopathology.

Improving awareness and understanding around emotions (i.e., improving a patient's EC) may reduce risk and symptoms of psychopathology (Hill & Updegraff, 2012). Research suggests that mindfulness, or observing and attending to internal experiences (Bishop et al., 2004), is helpful in increasing emotional awareness (Erisman & Roemer, 2010). In particular, it has been shown to improve awareness of subtle differences in emotional experiences (Hill & Updegraff, 2012). In fact, using a sample of undergraduate students, Hill and Updegraff (2012) found that mindfulness improved participants' emotion regulation through increasing ability to differentiate between emotions, or improving their emotional clarity. Many different evidence-based therapies include a mindfulness training component, especially third-wave cognitive behavioral therapies, such as acceptance and commitment therapy (ACT; Luoma, Hayes, & Walser, 2007) and dialectical behavioral therapy (DBT; Linehan, 2014). For patients with low EC and high utilization of maladaptive ER strategies, clinicians may consider utilizing these types of therapies to reduce symptoms and future risk for development of psychopathology.

Conclusions

My dissertation aimed to develop a behavioral measure of EC by combining physiological responses and self-rated change in affect in relation to a stressor. I then aimed to investigate the concurrent validity of the behavioral EC measure by examining its relationship with ER strategies. The results of the current study do not support the behavioral measure of EC as accurately capturing participants' EC ability, nor did it relate to ER strategies. However, previous research has found that this behavioral measure of EC correlates with self-reported EC and is significantly associated with rumination and depression (Wielgus & Mezulis, 2017, December). Given the mixed results in studies using the behavioral measure of EC, more research is needed to clarify how best to measure EC, including appropriate stressor tasks, measures of self-reported affect, and whether behavioral EC will outperform self-reported EC.

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