# LIMITATIONS OF A SELF-DISTANCED PERSPECTIVE: ALEXITHYMIA AS A MODERATOR OF SELF-DISTANCING AND EMOTIONAL PROCESSING

by

Charlotte Elizabeth "Beth" Ready

A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Master of Arts in Psychology

Spring 2012

**LIMITATIONS OF A SELF-DISTANCED PERSPECTIVE: ALEXITHYMIA AS A MODERATOR OF SELF-DISTANCING AND EMOTIONAL PROCESSING**

by

Charlotte Elizabeth "Beth" Ready

Approved: _____
Adele M. Hayes, Ph.D.
Professor in charge of thesis on behalf of the Advisory Committee

Approved: _____
Paul C. Quinn, Ph.D.
Associate Chair for Research and Graduate Education

Approved: _____
Gregory A. Miller, Ph.D.
Chair of the Department of Psychology

Approved: _____
George H. Watson, Ph.D.
Dean of the College of Arts and Sciences

Approved: _____
Charles G. Riordan, Ph.D.
Vice Provost for Graduate and Professional Education

## ACKNOWLEDGMENTS

I would like to thank my advisor, Dr. Adele Hayes, for her guidance and thoughtful advice throughout this project, and Dr. Ethan Kross for his consultation and the use of his experimental materials. I am also appreciative for the statistical guidance provided by Jean-Philippe Laurenceau and Fang Fang Chen, for the support of Carly Yasinski, a fellow graduate student member of my lab, and for the helpful contributions of Alex Heinz and the other undergraduate research assistants who assisted with study implementation and data collection. Finally, I am thankful for the countless amounts of support and encouragement from my boyfriend, John Bedenbaugh, and the support and love of my parents, Michael and Charlotte Ready, who worked hard to give me this opportunity.

## TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

## ABSTRACT

Many researchers view cognition and emotion as interconnected components of emotional processing. Research indicates that adopting a "distanced" perspective, in which an individual explores an emotional experience from a cognitive distance, facilitates adaptive cognitive reappraisal and emotional processing of the experience. However, little is known about the benefits of self-distancing in individuals who have difficulties integrating their cognitive and emotional experiences. Alexithymia is a construct that characterizes a disconnect between cognitions and emotions, and individuals with high levels of alexithymia may not have the ability to fully engage and benefit from adopting a self-distanced perspective. Using a college-student population over-sampled for moderate to high alexithymia (N=211 study completers), the current study examined alexithymia as a moderator of the association between self-immersed and self-distanced perspectives and emotional processing when recalling an interpersonal rejection experience. Self-immersed and self-distanced perspectives were associated with higher negative affect compared to a distraction group, and alexithymia did not moderate the association between perspective and negative affect. However, alexithymia moderated the relationship of self-immersed and self-distanced perspectives with one of two measures of processing, indicating that higher levels of alexithymia may inhibit processing during self-distancing. Further examination identified the externally-oriented thinking factor of alexithymia as particularly relevant in self-distancing. Implications of these findings for the benefits of self-distancing, the conceptualization of alexithymia, and treatment are discussed.

## Chapter 1

## INTRODUCION

Affect is more than a subjective experience and includes a network of components such as physiological changes, cognitions, behavioral actions, and expressive language (Lang, 1968; 1994). Successful regulation of acute affective experiences requires communication across the components of the affect system to provide meaningful and adaptive responses that help balance contextual demands of the environment with personal goals. The process of regulating emotions includes awareness, understanding and tolerance of emotions, the ability to experience emotions, integrating emotion cues with rational thought, and utilizing emotion cues to inform an appropriate response for a particular situation (Mennin & Fresco, 2010). Emotional processing involves implementation of emotion regulation strategies in an adaptive way so that the individual can incorporate information from the environment, personal experiences, and emotions cues to make meaning of an affective experience (Foa, Hupper, & Cahill, 2006). Engagement with emotions and reappraisal of maladaptive thoughts are two important components of emotional processing that, together, enable the individual to engage and make meaning of upsetting experiences.

Many researchers view cognition and emotion as interconnected components of emotional processing (Foa et al., 2006; Greenberg, 2002; Lang, 1968; 1994).

Research indicates that adopting a "distanced" perspective, in which an individual explores an emotional event from a cognitive distance, such as recalling the event from the perspective of a third-party observer, facilitates adaptive cognitive reappraisal and emotional processing of the experience (Kross & Ayduk, 2008; Kross, Ayduk, & Mischel 2005; Teasdale, 1999). However, little is known about the benefits of self-distancing in individuals who have difficulties integrating their cognitive and emotional experiences. Alexithymia is a construct that characterizes a disconnect between cognitions and emotions that involves difficulty identifying, expressing, and analyzing feelings (Taylor, 2000). Alexithymia is also associated with deficits in adaptive emotion regulation. Together, these findings suggest that individuals with high levels of alexithymia may have notable difficulty engaging in adaptive emotion processing (Gohm & Clore, 2002; Mennin, Holaway, Fresco, Moore, & Heimberg, 2007). Adopting a methodology previously used with college students and mood disorder populations (Kross & Ayduk, 2008; 2009), we examined how alexithymia may interfere with adopting a self-distanced perspective in a sample of college students over-sampled for moderate to high levels of alexithymia.

## Self-Distancing Facilitates Adaptive Processing

Clinical theory, particularly cognitive behavioral theory, has proposed the importance of 'distancing' oneself from intense emotional experiences to facilitate processing and reappraisal of an emotional event (Alford & Beck, 1997; Foa et al., 2006; Teasdale, 1999). Distancing is similar to mindfulness-based techniques and the

concept of ‘acceptance’ used in Dialectical Behavior Therapy (Linehan, 1993) and a number of other ‘third-wave’ forms of cognitive behavioral treatment, such as Mindfulness-Based Cognitive Therapy (Segal, Williams, and Teasdale, 2002) and Acceptance and Commitment Therapy (Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004). These treatments emphasize the importance of focusing on the present rather than projecting into the future or past and on separating oneself somewhat from thoughts and feelings. This distancing allows the individual to observe these experiences more objectively and as part of a larger context rather than being swept away by these thoughts and feelings (Hayes, Strosahl, & Wilson, 1999; Segal, et al., 2002; Teasdale et al., 2002).

Basic emotion research suggests that this type of processing and cognitive reappraisal of experiences results in more positive, adaptive emotional and physical responses to emotional stimuli (Gross, 2002). In addition, laboratory studies have demonstrated that the perspective an individual adopts when analyzing an emotional event can facilitate or hinder the processing of that event (Kross & Ayduk 2008; Kross et al., 2005). In these studies, participants were instructed to adopt either an immersed or distanced perspective while recalling an extremely negative interpersonal encounter. Participants in the immersed perspective were first instructed to think about the event as if it were happening all over again and then were instructed to think about the underlying causes and reasons behind their feelings during that event. In the distanced group, participants were told to distance themselves from the situation by receiving

instructions to “take a few steps back” from the experience and let the event unfold from a distance. Distanced participants were then asked to think about the underlying causes and reasons behind the feelings their “distant self” experience in that event. The distancing condition represents a perspective that activates emotional responses while maintaining some distance from full experience of those emotions. Theoretically, this allows the individual greater opportunity to explore and analyze the situation for new insights without becoming stuck in the intense emotions associated with the event, thereby facilitating adaptive processing of the event (Kross & Ayduk, 2011; Mennin & Fresco, 2010).

Multiple studies show that participants who were instructed to recall a negative interpersonal experience from a self-distanced perspective endorsed less emotional reactivity and more adaptive self-reflection about the event than participants in the immersed group. Participants in the distanced group showed a similar low level of emotional reactivity as participants who were instructed to distract themselves after recalling a negative interpersonal experience (Kross & Ayduk, 2008; Kross et al., 2005). Similar findings have been found using a self-report measure of self-distancing to examine ‘spontaneous’ self-distancing. Participants who ‘spontaneously’ engaged in self-distancing when recalling a past emotional event or during a conflict with their partner showed more adaptive self-reflection and productive problem solving in response to relationship conflict (Ayduk & Kross, 2010). These results have been replicated in 5$^{th}$ grade children (Kross, Duckworth, Ayduk, Tsukayama, & Mischel,

2011), and similar results were also found when examining reactivity to positive events in participants with elevated symptoms of Bipolar Disorder (Gruber, Harvey, & Johnson, 2009).

Longitudinal examinations reveal that adopting a self-distanced perspective is associated with dampened emotional reactivity up to 7 days later. However, participants who used distraction showed increases in their emotional reactivity after 7 days, and their overall level of emotional reactivity was not significantly different from participants using an immersed perspective (Kross & Ayduk, 2008). Overall, both self-distancing and distraction appear to mitigate emotional reactivity when recalling an emotional situation, but self-distancing appears to be associated with more sustainable improvement in emotional reactivity compared to distraction or immersion perspectives. Similar to cognitive behavioral and emotion-focused treatment theories (Alford & Beck, 1997; Beck, 1970; Carryer & Greenberg, 2010), these findings suggest that the best outcomes occur when people are able to approach their feelings without becoming overengaged (immersion) or avoiding their emotions all together (distraction).

Further examination of the association between self-distancing and emotional reactivity reveals that this association is mediated by the content of self-reflections (Ayduk & Kross, 2010; Kross & Ayduk, 2008; 2009). Kross and colleagues focus on two distinct types of self-reflections: recounting and reconstruing. *Recounting* focuses on the "what" of the event, including description of the event, chain of events, and the

emotions felt and expressed during the event. *Reconstruing* includes new realizations or insights that help create a shift in the way the person understands or interprets the event and the ability of the person to move on from the event. Multiple studies have demonstrated that the self-distanced perspective is associated with lower levels of recounting and higher levels of reconstruing, suggesting that a self-distanced perspective enables people to analyze an emotional event in a way that facilitates a change in the understanding and meaning they placed on the event. Interestingly, the absolute amount of recounting and reconstruing do not appear to mediate the relationship between self-distancing and emotional reactivity. Rather, it is the proportion of recounting to reconstruing that mediates this relationship (Ayduk & Kross, 2010; Kross & Ayduk, 2008; 2009).

In addition, mixed results have been reported for the relationship between self-distancing, recounting, and reconstruing. Some studies have found that self-distancing is significantly associated with less recounting (Kross et al., 2005) but not with reconstruing; other studies have found that self-distancing is significantly associated with both lower recounting and higher reconstruing (Kross & Ayduk, 2009). Kross and Ayduk (2008) reported that self-distancing was associated with higher reconstruing and with a trend toward lower recounting in the first experiment, and then found the opposite results in the second experiment (self-distancing was significantly associated with lower recounting and with a trend toward more reconstruing). These

inconsistencies suggest that the thought-content categories of recounting and reconstruing may not fully capture emotion processing.

In cognitive behavioral theory, processing includes a substantial perspective shift that leads to a higher level abstraction of the event and making new meaning of the experience. This type of perspective shift requires more than new insights or understanding of the situation. Rather, individuals must use the new insights and understandings to generate a change in beliefs and a reframe their experiences. Processing often involves examining a specific event in a larger context and adjusting perceptions of the experience to incorporate new information, and it is often accompanied by emotional and behavioral changes (Foa et al., 2006; Greenberg, 2002; Hayes, Feldman, Beevers, Laurenceau, Cardaciotto, & Lewis-Smith, 2007).

## Self-Distancing in Vulnerable Populations

Although the findings regarding benefits of self-distancing are robust, some populations may have difficulty adopting this perspective. Depression is characterized by severe negative affect and vulnerability to cognitive patterns of rumination and perseveration (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008), which could inhibit the ability to self-distance. Kross & Ayduk (2009) demonstrated that this might not be accurate. Participants who scored in the moderate to severe range on the Beck Depression Inventory (BDI) and were instructed to self-distance endorsed significantly less emotional reactivity when recalling a negative autobiographical experience than participants instructed to immerse. Further, self-distancing appeared to be more

beneficial for high BDI participants than for participants with low BDI scores. The difference in emotional reactivity between the immersed and distanced groups became larger at higher BDI scores. There was no significant difference in emotional reactivity between immersed and distanced groups at low BDI scores, but there was a significant difference in emotional reactivity between the groups at high BDI scores. Emotional reactivity in the immersion group appeared to be a particularly important contributor to this finding, with high BDI participants showing notably more emotional reactivity in the immersed group than low BDI participants. Although this was not a clinical sample, these results suggest that individuals with high levels of depression symptoms are capable of engaging in a self-distanced perspective and may benefit more from self-distancing than those with low levels of depression symptoms.

Similarly, Gruber et al. (2009) applied this paradigm to a sample of patients diagnosed with Bipolar Disorder and a group of normal control participants. Instead of focusing on negative events, this study examined whether self-distancing was associated with less emotional reactivity to positive memories in Bipolar Disorder patients. Both Bipolar Disorder participants and control participants showed less positive affect (measured by self-report and cardiovascular arousal) and fewer positive thoughts in the distanced condition compared to the immersed condition. These findings indicate that individuals with Bipolar Disorder can also self-distance when instructed to do so and that they can experience beneficial changes in emotions and

thoughts. Overall, mood disordered populations appear able to successfully engage in self-distancing and experience notable benefits from adopting this perspective.

These mental health disorders, however, are characterized by subjective experiences of extreme affect and the tendency to overanalyze thoughts and feelings, suggesting that these individuals may be responsive to guidance of how to analyze their thoughts and feelings from a self-distanced perspective. However, other populations who are not easily able to identify and analyze their thoughts may have difficulty adopting a self-distanced perspective and therefore not benefit from this approach. Individuals with high levels of alexithymia, a personality construct that reflects a lack of awareness about emotions and difficulty expressing emotional experiences to others (Nemiah & Sifneos, 1970), may represent such a population.

## Alexithymia

Initially introduced in the 1970's, alexithymia was originally observed and studied in patients with psychosomatic symptoms, but was soon applied to a range of other mental health diagnoses. Over the past several decades, researchers have refined the construct and definition of alexithymia, created and tested measures of it, and examined alexithymia in a series of experimental studies (Lumley, Neely, & Burger, 2007; Taylor, 2000). The most recent 20-item version of the Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994; Parker, Bagby, Taylor, Endler, & Schmitz, 1993; Taylor, Bagby, & Parker, 1992) is extensively validated, easy to use, and the most commonly used empirical measure of alexithymia (Lumley et al., 2007).

Current literature using the TAS-20 operationalizes alexithymia as a multifaceted, three-factor construct that includes 1) difficulty identifying feelings and distinguishing feelings from bodily sensations, 2) difficulty describing feelings, and 3) 'externally-oriented thinking' (Taylor, 2000). Confirmatory Factor Analyses using this measure provide support for this three-factor model across a range of community samples, psychiatric populations, and nationalities (Bagby, Parker, et al, 1994; Bressi, Taylor, Parker, & Bressi, 1996; Laos et al., 2001; Pandey, Mandal, Taylor, & Parker, 1996 ; Parker, Bagby, et al., 1993; Taylor, Bagby, & Parker, 2003), although some studies have found evidence that did not unequivocally support the three-factor model (Erni, Lotscher, & Modestin, 1997; Haviland & Reise, 1996). Taxometric studies with the TAS-20 across a variety of populations, including psychiatric patients, college students, and community samples demonstrate that alexithymia is best conceptualized as a dimensional rather than categorical construct (e.g. alexithymic vs. not-alexithymic; Parker, Keefer, Taylor, & Bagby, 2008). These results also have been replicated with non-English speaking populations from other countries (Mattila et al., 2010).

## Alexithymia, Emotion Processing, and Self-Distancing

Overall, literature suggests that alexithymia may represent a deficit in the ability to integrate cognitive and emotional experiences, which is a necessary component of adaptive emotional processing. For instance, high levels of alexithymia have been found to be associated with impaired verbal and nonverbal recognition of

emotional stimuli, including emotional facial expressions, compared to individuals with low levels of alexithymia h. Deficits in labeling affect may have important implications, as research has demonstrated that affect labeling is associated with neurological changes in amygdala and limbic responses and diminished emotional reactivity (Lieberman, et al., 2007). Affective labeling has also shown benefits when paired with exposure to negative or anxiety-provoking event (Tabibnia, Lieberman, & Craske, 2008). Although these authors did not study alexithymia directly, these results suggest that high alexithymia may inhibit cognitive emotional processing and that individuals with high levels of alexithymia might have limited abilities to fully engage in strategies aimed at facilitating reductions in emotional reactivity.

Findings from treatment literature offer some support for the notion that alexithymia may interfere with strategies to regulate and reduce emotional reactivity. Across studies using the TAS-20 or older versions of the Toronto Alexithymia Scale, there appear to be mixed results regarding the potential negative impact of alexithymia on psychotherapeutic outcomes. Some studies suggest that alexithymia is associated with worse treatment outcome across a variety of mental health symptoms, including anxiety, somatoform disorder, complicated grief, depression, eating disorder symptoms (Bach & Bach, 1995; Frewen, Dozois, Neufeld, & Lanius, 2008; Leweke, Bausch, Leichsenring, Walter, & Stingl, 2009; McCallum, Piper, Ogrodniczuk, & Joyce, 2003; Ogrodniczuk, Piper, & Joyce, 2004; Speranza, Loas, Wallier, & Corcos, 2007), and other studies suggest that alexithymia does not impact treatment outcome

(Rufer et al., 2004; Rufer, et al., 2006; Spek, Nyklicek, Cuijpers, & Pop, 2008) and may even decrease over treatment (Beresnevaite, 2000; Rufer et al., 2010). These mixed results suggest that more research is needed to elucidate the association between alexithymia and treatment processes. One possibility is that alexithymia may interfere with therapeutic efforts designed to promote cognitive-emotional processing and reappraisal of emotional experiences.

Emotion regulation and processing researchers often view emotion and cognition as interconnected components that work together to facilitate meaning making of emotional situations (Greenberg, 2002). These researchers have also identified alexithymia as important when examining emotion processing. Several studies have used the three factors from the 20-item Toronto Alexithymia Scale to assess deficits in emotion processing, including poor understanding and clarity of emotions (difficulty identifying feelings and difficulty describing feelings) and attention to emotions (externally-oriented thinking). Mennin et al. (2007) found poor understanding of emotions (which included the difficulty identifying feelings and difficulty describing feelings factors of the TAS-20), negative reactivity to emotional states, and maladaptive management of emotion responses to be part of a latent factor of Emotion Dysregulation. Further, poor understanding was associated with depression and social anxiety symptoms, suggesting that alexithymia, particularly difficulty identifying and expressing emotions, may contribute to emotion regulation problems.

Gohm and Clore (2002) identified a four-factor model of emotion processing and also included factors of the TAS-20 as measures of these emotion processing constructs. Difficulty identifying feelings and difficulty describing feelings were included as measures of emotional clarity, and externally-oriented thinking was included as a measure of attention to emotions. Findings indicate that attention to emotions was associated with coping style, including focusing on emotions, venting emotions in times of stress, and seeking social support to help with emotions. Similar findings emerged for clarity, which was partly measured with two factors of the TAS-20. Clarity was associated with active, planful coping styles including positive reinterpretation of the situation. Therefore, higher externally-oriented thinking (and consequently, low attention to emotions) and higher difficulty identifying/describing feelings (and consequently, low clarity of emotions), may interfere with the utilization of these adaptive coping strategies.

In a discussion of emotion-focused approaches to treatment of psychological symptoms, Greenberg (2002) describes successful emotional processing as "[transforming] emotions…, not through simple discharge, but by meaningfully connecting emotions to self and situation" (p.160, Greenberg, 2002). This description emphasizes the importance of integrating cognitions and emotions and is similar to the self-distancing perspective used by Kross and colleagues, which asks participants to take a step back from their experience of the situation, put the situation in a larger context, and make new connections between their subjective emotional experience, the

emotions of others, the situation, and the larger context. Individuals with high levels of alexithymia, which has been shown to be associated with deficits in the ability to integrate cognitions and emotions, may have difficulty engaging and subsequently benefitting from adaptive emotion processing strategies such as self-distancing.

To examine how alexithymia may inhibit self-distancing, the current study utilized the experimental paradigm from the previous work of Kross and colleagues (Kross & Ayduk, 2008; Kross et al., 2005) to examine alexithymia as a moderator of the association of self-distancing with emotional reactivity and cognitive processing of an interpersonal rejection experience. In light of previous research showing mixed results in the relationship of self-distancing with recounting and reconstruing (e.g. Kross & Ayduk, 2008), additional coding categories from an established coding system for narratives (CHANGE; Hayes, Feldman, & Goldfried, 2007) were included to provide more specific measures of cognitive emotional processing. The study sample consisted of undergraduate students recruited from introductory to psychology courses. Given the relatively low occurrence of high alexithymia scores in undergraduate populations (Parker et al., 2008), participants were prescreened using the TAS-20 to over-sample participants with moderate to high total alexithymia scores.

The current study aimed to: 1) examine self-distancing and self-immersion in a college sample selected to over-represent moderate to high levels of alexithymia, 2) examine the relationship of self-distancing and self-immersion with the CHANGE

category of cognitive-emotional processing, and 3) examine alexithymia as a dimensional moderator of the association between self-distancing and self-immersion with self-reported mood reactivity, recounting, reconstruing, and cognitive emotional processing. Higher alexithymia is expected to be associated with dampened benefits following the self-distanced perspective such that individuals with higher levels of alexithymia demonstrate higher emotional reactivity, less reconstruing and cognitive processing, and more recounting than those with lower levels of alexithymia. Further, alexithymia is not expected to be associated with differences in emotional reactivity, self-reflection or processing for participants in the immersion group, but differences are expected to emerge in the distanced group.

# Chapter 2

# METHOD

## Participants

Participants were 252 Introduction to Psychology students recruited from the University of Delaware subject pool (125 women, 127 men), who completed the experiment to earn course credit. The sample was about half male (50.4%) and primarily Caucasian (70.5%) but also included Asian (15.5%), African-American (6.8%), and small percentage of Hispanic (0.8%), Native American or Alaskan (0.4%) participants, and those who endorsed, "unknown" (1.2%). Another twelve participants (4.8%) chose not to provide their ethnicity. The mean age of participants was 19.56 years (*SD* = 2.549, range = 18 to 50). An additional 28 of the participants reported during the experiment that English was not their first language, although they were informed in prescreening questions that participants must be native English speakers. Based on difficulties non-native English speakers may have following the recall task instructions and completing the experiment measures, these participants were not included in the analyses. This procedure is similar to previous research using the same methodology (e.g. Kross & Ayduk, 2008), which included only native English speakers in the study sample.

## Procedures

Upon arrival, participants were randomly assigned to one of three experimental conditions (immersed, distanced, or distraction) and briefly introduced to the study, which was entirely computerized and administered through Qualtrics, an online survey program. An overview of the study design is provided in Figure 1.

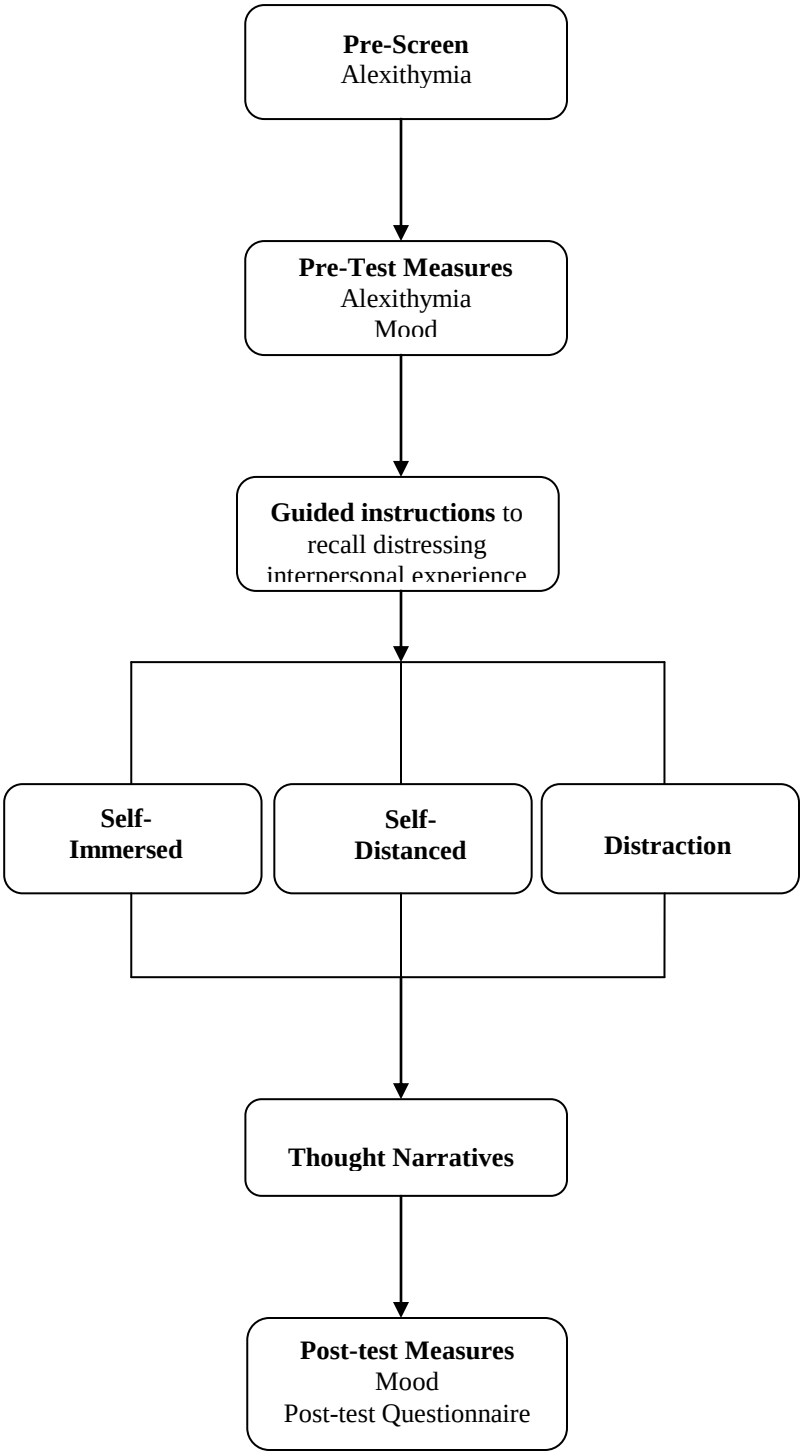


**Figure 1 Diagram of Study Methodology**

## Self Report Measures

After a brief introduction to the study, participants were asked to answer a battery of self-report questionnaires to gather demographic information and assess alexithymia and mood.

### Alexithymia: Toronto Alexithymia Scale 20-item version (TAS-20)

The TAS-20 is a 20 item self-report measure that assesses the presence and intensity of alexithymia characteristics. Current literature using the TAS-20 operationalizes alexithymia as a multifaceted construct characterized by difficulties with awareness, understanding, and analysis of emotions. Items are rated on five-point likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), and five items are reverse scored. In addition to a total alexithymia score, the TAS-20 also is comprised of three factors: difficulty identifying feelings (deficits in the ability to identify feelings and differentiate feelings from somatic sensations), difficulty describing feelings (deficits in the ability to describe feelings to others), and externally-oriented thinking (tendency to place little importance on understanding emotions and to refrain from self-reflection about feelings of self or others). Factor analyses using this measure provide support for this three-factor model across a range of community samples, psychiatric populations, and nationalities (Taylor et al., 2003). Internal consistency for the TAS-20 in the current sample was acceptable for the total score ($\alpha = .841$), the difficulty identifying feelings factor ($\alpha = .835$) and difficulty describing feelings ($\alpha = .795$). The alpha for the externally-oriented thinking factor ($\alpha = .630$) was

somewhat low. The TAS-20 has established validity and reliability as a measure of individual sensitivities in these domains in community, clinical, and college student samples (Bagby, Parker, et al., 1994; Bagby, Taylor, et al., 1994; Parker et al., 2008; Parker, Taylor, & Bagby, 2003).

**Negative Affect: Positive Affect Negative Affect Scale (PANAS)**

The PANAS assesses current mood by asking participants to rate the extent to which they are currently feeling 20 different emotions "*right now*" on a likert-type scale from 1 (*not at all*) to 5 (*extremely*). Ten items are used to create a measure of negative affect (the sum score of all negative affect items) and ten items are used to create a measure of positive affect (the sum score of all positive affect items). The negative affect scale was used in the current study to assess emotional reactivity following the memory recall task. The negative affect scale includes the emotion words distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid. The negative affect scale of the PANAS showed good reliability in the current sample ($\alpha = .867$). The PANAS has shown good psychometric properties, including internal consistency, validity, and reliability (Clark, Watson, & Tellegen, 1988; Crawford & Henry, 2004).

## Memory Recall Task

After completing the self-report questionnaires, participants were cued to recall an experience in which they felt intensely rejected, excluded, or abandoned. Once they identified such a memory, participants were instructed to recall their

experience through a guided imagery task adapted from previous research (Kross & Ayduk, 2008; Kross et al., 2005). Guided imagery instructions were provided orally, and participants listened to these instructions through a pair of headphones. Participants were assigned to one of three guided imagery scripts based on their experimental condition. The three conditions were: immersed, distanced, and distraction. Both immersed and distanced conditions included two phases: the first phase instructed participants to adopt a specific perspective, either immersed (e.g. "Go back to the time and place of the experience you just recalled…see the experience unfold…as if it were happening to you all over again") or distanced ("Go back to the time and place of the experience you just recalled…move away from the situation to point where you can now watch the event unfold from a distance and see yourself in the event"). Participants were then instructed to continue as soon as they had adopted the assigned perspective. Similar to previous research, which suggests that participants take longer to adopt a self-distanced perspective (e.g. Ayduk & Kross, 2008; Kross & Ayduk, 2008), participants in the current study were allowed as much time as they needed to adopt the assigned perspective. Participants were then instructed in the second phase of the guided imagery task, which asked them to analyze their feelings for 60 seconds from the perspective that they were told to adopt.

The distraction condition consisted of a series of 26 neutral statements (e.g "Florida produces many oranges," "Scotland is north of England"), which were presented through an audio recording that was matched in duration to the guided

imagery instructions for immersed and distanced groups. These statements were taken from Kross and Ayduk (2008), who conducted pilot work to establish a series of affectively neutral statements. In the present study, the statements were presented orally, and the number of statements was reduced to match the format and timing of the immersed and distanced analysis conditions. Similar to the immersed and distanced conditions, participants were instructed to close their eyes and visualize the statements that they heard (e.g. "spend a few moments visualizing and concentrating on each item").

## Thought Narratives and Coding

Next, participants wrote a narrative describing their thoughts as they completed the guided imagery or distraction task. Participants were instructed to write in "stream of consciousness style," describing the thoughts that flowed through their mind during the tasks. Each essay was coded for the types of thought content participants exhibited during the recall task.

A team of coders, blind to condition, rated participant essays using two different coding systems. Coders were four undergraduate research assistants. They were first trained on the coding system, after which two coders rated each narrative with one of the two coding systems. Coding was organized so that no coder rated the same narrative with both coding systems and each coder rated each narrative only once. Raters applied one or the other rating system to a given narrative to minimize

conceptual carryover, as the Kross coding system (Kross & Ayduk, 2008; Kross et al., 2005) and the CHANGE (Hayes et al., 2007) include some similar variables.

Participants in the distraction condition also wrote narratives about the thoughts that flowed through their mind during the distraction task. However, these statements were not coded, as these narratives focused on the task itself (e.g. "The oranges were moist and bright in a Florida field;" "I thought of Scotland physically standing on top of England").

**CHANGE Coding System**

The CHANGE coding system (Hayes et al., 2007) was used to code the content of participant narratives. The CHANGE can be used to code narratives or therapy sessions. The coding system includes a range of variables that assess cognitive, affective, behavioral, somatic, and interpersonal aspects of functioning, as well as avoidance, cognitive-emotional processing, and unproductive processing. Each variable is coded on a scale from 0 to 3 (0= *not present or very low*, 1= *low*, 2= *medium*, 3= *high*). Variables are not mutually exclusive and can co-occur. The CHANGE category used in the current study is *cognitive emotional processing*, which is the extent to which the person attempts to question, explore, challenge, and make meaning of an experience. The category ranges from exploring and questioning a problem area (*low*) to showing substantial insight, understanding, and meaningful perspective shift (*high*). An example of cognitive emotional processing is:

> "After it happened I felt alone, abandoned and like no one would want to touch me again…. But after a little while I realized that it really wasn't my fault. Just because that man hurt me doesn't mean that every man will. It also didn't mean that no one would be interested in me again…it was a horrible experience but I am better. There is no point in thinking 'If only I…,' I can only move on. I am proud, confident, and joyful that I am alive."

Inter-rater agreement was good, with coders demonstrating ≥ 89.7% agreement within one point or less. Because agreement was good, the ratings of the two coders who rated a given narrative were averaged. Averaged ratings were used in all analyses.

**Thought Content Coding System: Recounting/Reconstruing**

The coding system for thought content was identical to the coding system used by Kross and colleagues in previous research (e.g Kross &Ayduk, 2008; Kross et al., 2005). The coding system includes a range of variables to assess recounting and reconstruing statements in participant essays. Recounting is defined as *what* statements that provide a description of the event, including emotions felt, the chain of events, behaviors of the participant and others involved, and unhelpful reasoning about the event, such as partner blame. An example of high recounting is;

> "I did feel some of the same emotions I did at that time; anger, abandonment, and rejection…Even now I feel anger. My other two friends did not stick up for me."

Reconstruing statements are defined as statements that (a) demonstrate a realization or helpful shift in the way the participant understood the event, including the cause of the event, his or her behavior and emotions, the behavior and emotions of others, and (b) the extent to which the participant indicates that he or she was able to move on from the event or think of the event in a broader context of past and current experiences. Examples of high reconstruing are:

> "Looking back, I was thinking 'Wow, I was being dumb and immature.' But at the time, I know I was asking myself what I could have possibly done wrong. My ex lied to me…. So then I began to think he is not as good of a person as I thought he was. I should have not put him on such a high pedestal as I did."

Inter-rater agreement was good, with coders demonstrating ≥ 93.59% agreement within one point or less. Because agreement was good, the ratings of the two coders who rated a given narrative were averaged. Averaged ratings were used in all analyses.

## Post-Task Mood and Possible Covariates

After completing the thought narrative, participants were given a series of post-task questionnaires to assess mood (PANAS), engagement in the experiment, and perceived closeness to the person(s) involved in the rejection experience ("How close are you to those individuals now?"). Following the methods of Kross and Ayduk (2008), task engagement was assessed based on previous research that has shown that higher levels of task engagement are associated with more intense affective responses

(Higgins, 2006). In addition, higher levels of perceived closeness to the person involved in the rejection could increase the salience of the event and affect their ability to process it.

# Chapter 3

# RESULTS

## Exclusions and Missing Data

Of the 224 native English-speaking students recruited, eight experienced computer malfunctions that either prevented them from completing the experiment or invalidated their results. An additional five participant essays could not be coded because they did not describe a specific emotional experience, leaving 211 participants who were included in the analyses.

## Content of Memories and Overall Thought Content

The most commonly reported rejection experiences included encounters with friends (38.9%) and romantic partners (26.1%). Other experiences included peer group/fraternity/sorority (9.5%), parents or other relative (10.9%), roommate (1.4%), professor (1.4%), or other (11.8%). Following the methods of Kross and Ayduk (2008), engagement was included as a covariate in the analyses. Participants' perceived closeness to person(s) involved in the rejection experience was an additional covariate. Descriptive statistics for all self-report variables and recounting, reconstruing, and cognitive emotional processing are provided in Table 1.

**Table 1 Descriptive Statistics of Study Variables across Experimental Groups**

| | Experimental Condition | | |
|---|---|---|---|
| | Immersion N=72 | Distanced N=68 | Distraction N=71 |
| | Mean (SD) | Mean (SD) | Mean (SD) |
| Mood Variables | | | |
| Pre-test PANAS | 15.403 (6.085) | 14.897 (5.255) | 15.774 (6.685) |
| Post-test PANAS | 17.069 (7.147) | 16.764 (6.506) | 14.817 (6.200) |
| Alexithymia Variables | | | |
| TAS-20 Total | 47.333 (10.836) | 48.015 (10.370) | 46.550 (11.510) |
| TAS-20 DIF | 15.222 (5.350) | 14.809 (5.337) | 14.761 (5.852) |
| TAS-20 DDF | 12.472 (4.447) | 12.691 (3.971) | 12.944 (4.641) |
| TAS-20 EOT | 19.634 (4.469) | 20.515 (4.083) | 18.845 (4.248) |
| Control Variables | | | |
| Closeness | 3.639 (2.171) | 3.721 (2.323)$_a$ | 2.802 (1.968)$_a$ |
| Engagement in experiment | 4.556 (1.491) | 4.456 (1.588) | 4.268 (1.549) |
| Processing Variables | | | |
| Recounting | 1.986 (0.610)$_a$ | 1.640 (0.651)$_a$ | -- |
| Reconstruing | 0.524 (0.719) | 0.577 (0.691) | -- |
| Cognitive Emotional Processing | 0.396 (0.660)$_a$ | 0.750 (.904)$_a$ | -- |

Note. SD = standard deviation. PANAS = Positive Affect Negative Affect Scale. TAS-20 = Toronto Alexithymia Scale, 20-item. DIF = difficulty identifying feelings factor of the TAS-20. DDF = difficulty describing feelings factor of the TAS-20. EOT = externally-oriented thinking factor of the TAS-20. Closeness = reported current closeness to person(s) involved in the rejection experience. Subscript a = significant differences between groups at $p < .05$.

## Mood Reactivity

### Pre- to Post-Test Changes in Mood

To examine mood across groups (immersed, distanced, and distraction) following the memory recall task, a Univariate ANCOVA was conducted. Post-test negative mood was the dependent variable. Pre-test negative mood, participant rated engagement, and current closeness to the person(s) involved in the rejection were covariates. Group (immersed vs. distanced vs. distraction) was the independent variable. There was a main effect for pre-test negative mood, $F(1, 205) = 235.34$, $p < .001$, $\eta^2 = .534$. Pre-test negative mood was associated with post-test mood, indicating that mood reactivity differed across groups. Neither participant engagement nor closeness to person(s) involved in the rejection were significantly associated with post-test negative mood. A main effect for group also emerged, $F(2, 205) = 8.37$, $p < .001$, $\eta^2 = .075$. Planned contrasts revealed that participants in both the immersion, $t(205) = 3.50$, $p = .001$, and distanced groups, $t(205) = 3.61$, $p < .001$, reported significantly higher negative mood following the memory recall task than participants in the distraction condition. The immersed and distanced groups, however, did not differ from each other, $t(205) = 0.17$, *ns*.

### Alexithymia as a Moderator of the Relationship between Group and Mood

To examine alexithymia as a moderator of the relationship between group (immersed vs. distanced vs. distraction) and mood, a series of linear regressions were conducted to test for moderation using Baron and Kenny's method (1986). Two

dummy codes were created for the group variable. One variable coded immersion as '1' and all other groups as zero, and the other variable coded distanced as '1' and all other groups as zero. Distraction was the reference variable in this equation. Both dummy code variables, alexithymia, and two interaction terms (interaction between alexithymia and each dummy code) were the independent variables. Post-test negative mood was the dependent variable, and the equation controlled for pre-test negative mood, participant rated engagement, and current closeness to person(s) involved in the rejection. As demonstrated in ANCOVA, there were main effects for both dummy variables, indicating that participants in the immersion ($\beta = .192$, $p < .001$) and distanced ($\beta = .195$, $p < .001$) groups reported higher post-test negative affect than participants in the distraction group. Neither interaction term was significant, indicating that alexithymia did not moderate the relationship between group (immersion vs. distraction and distanced vs. distraction) and post-test mood.

A second regression was conducted to examine alexithymia as a moderator of post-test mood between the immersed and distanced groups. Dummy codes were computed so that immersion was the reference variable (immersion was set to equal zero in both dummy codes), and two new alexithymia X group interaction terms were computed, one for each of the new dummy code variables. No significant differences in post-test mood or the alexithymia x group interaction emerged between the immersed and distanced conditions. Results of the regression equations are presented in Table 2.

**Table 2** **Regression Analyses Examining Alexithymia as a Moderator of the Relationship between Group and Post-Test Mood**

| Dependent variable<br>Independent variable | β | Squared Semi-partial *r* | $R^2/\Delta R^2$ | Model F (df) |
|---|---|---|---|---|
| Post-test Mood[a] | | | | 31.27 (8,202)*** |
| 1. Pre-test mood | .707*** | .413 | .509*** | |
| 2. Closeness | -.077 | .006 | .002 | |
| Engagement | .038 | .001 | | |
| 3. Group1 (Immersion vs. Distraction) | .192*** | .027 | .039*** | |
| Group2 (Distanced vs. Distraction) | .195*** | .028 | | |
| Alexithymia | -.014 | .000 | | |
| 4. Alexithymia X Group 1 | .051 | .001 | .003 | |
| Alexithymia X Group 2 | .068 | .003 | | |
| Post-test Mood[b] | | | | 31.27 (8,202)*** |
| 1. Pre-test mood | .707*** | .413 | .509*** | |
| 2. Closeness | -.077 | .006 | .002 | |
| Engagement | .038 | .001 | | |
| 3. Group2 (Distanced vs. Immersion) | .006 | .000 | .039*** | |
| Group3 (Distraction vs. Immersion) | -.191*** | .027 | | |
| Alexithymia | .074 | .002 | | |
| 4. Alexithymia X Group 2 | .021 | .000 | .003 | |
| Alexithymia X Group 3 | -.054 | .001 | | |

Note. Closeness = reported current closeness to person(s) involved in the rejection experience. [a]Regression equation using dummy variables to represent the three experimental groups, coded so that each immersion (Group 1) and distanced (Group 2) are compared to distraction. [b] Regression equation using dummy variables to represent the three experimental groups, coded so that each distanced (Group 2) and distraction (Group 3) are compared to immersion. Group variable results indicate no significant differences in post-test mood between immersion and distanced, and significant differences between immersion and distraction and distanced and distraction. *$p$<.05. **$p \leq$.01. ***$p \leq$.001.

## Thought Content

### Group Differences in Thought Content

A series of Univariate ANOVAS were conducted to examine group differences in thought content. Group (immersed vs. distanced) was entered as the independent variable and participant-rated engagement and current closeness to person(s) involved in the rejection were entered as covariates. Engagement was not a significant predictor any of the thought content variables, and closeness to person(s) involved in the rejection was significantly associated with reconstruing, $F(1,136) = 4.245$, $p = .041$, and cognitive emotional processing, $F(1,136) = 5.249$, $p = .024$, but not with recounting. Significant group differences emerged for both recounting, $F(1, 136) = 10.184$, $p = .002$, and cognitive emotional processing, $F(1, 136) = 6.885$, $p = .01$, indicating that participants in the immersed group showed significantly more recounting and less cognitive emotional processing than participants in the distanced group. Reconstruing did not differ between groups, $F(1, 136) = 0.141$, *ns*.

#### Recounting vs. Reconstruing

Following Kross and Ayduk's (2008) method, a Repeated Measures ANOVA was conducted to examine differences in the proportion of reconstruing to recounting across the immersed and distanced groups. Thought content was entered as the within-subjects factor, with recounting entered as the first level and reconstruing entered as the second level. Group (immersed vs. distanced) was entered as the independent variable, while controlling for participant-rated engagement and current closeness to

person(s) involved in the rejection experience. Results indicated a main effect of Thought Content, $F$ (1, 136) = 12.547, $p < .001$, $\eta^2 = .084$, suggesting that participants in both conditions demonstrated more recounting than reconstruing. A Group X Thought Content interaction, $F$ (1, 136) = 4.371, $p = .038$, $\eta^2 = .031$, qualified this finding, showing group differences in the proportion of recounting to reconstruing. Reconstruing was similar across groups, but the distanced group demonstrated less recounting, which resulted in a larger proportion of reconstruing to recounting in the distanced group compared to the immersed group.

**Recounting vs. Cognitive Emotional Processing**

A second Repeated Measures ANOVA was conducted to examine differences in the proportion of cognitive emotional processing to recounting across the immersed and distanced groups. Thought content was entered as the within-subjects factor, with recounting entered as the first level and cognitive emotional processing as the second level. Group (immersed vs. distanced) was entered as the independent variable, while controlling for participant rated engagement and current closeness to person(s) involved in the rejection experience. A main effect of thought content emerged, $F$ (1, 136) = 12.400, $p = .001$, $\eta^2 = .084$, suggesting that participants in both conditions demonstrated more recounting than cognitive emotional processing. However, the significant Group X Thought Content interaction, $F$ (1, 136) = 12.248, $p = .001$, $\eta^2 = .083$, indicated that the proportion of recounting to cognitive emotional processing was

different between groups, with participants in the distanced group engaging in less recounting and more processing than participants in the immersed group.

### Alexithymia as a Moderator of the Relationship between Group and Thought Content

To examine alexithymia as a moderator of the relationship between (immersed vs. distanced) and thought content, a series of multiple regressions were conducted to test for moderation using Baron and Kenny's method (1986). Group (immersed vs. distanced), total alexithymia score, and the interaction of group and total alexithymia score were the independent variables, and participant rated engagement and current closeness to person(s) involved in the rejection experience were again entered as covariates. Thought content variables were the dependent variables in each equation. See Table 3 for results of the regression equations.

**Table 3** **Regression Analyses Examining Alexithymia as a Moderator of the Relationship between Self-Immersed or Self-Distanced Groups and Thought Content Variables**

| Dependent variable<br>Independent variable | β | Squared Semi-partial *r* | $R^2/\Delta R^2$ | Model F (df) |
|---|---|---|---|---|
| Recounting | | | | 3.11 (5,134)* |
| 1. Closeness | -.088 | .008 | .030 | |
| Engagement | .136 | .017 | | |
| 2. Group | -.259** | .067 | .070** | |
| Alexithymia | -.108 | .006 | | |
| 3. Group X Alexithymia | .085 | .004 | .004 | |
| Reconstruing | | | | 1.62 (5,134) |
| 1. Closeness | .186* | .034 | .036 | |
| Engagement | -.116 | | | |
| 2. Group | .034 | .013 | .010 | |
| Alexithymia | .004 | .000 | | |
| 3. Group X Alexithymia | -.148 | .012 | .012 | |
| Cognitive Emotional Processing | | | | 4.10 (5,134)** |
| 1. Closeness | .206* | .042 | .040 | |
| Engagement | -.103 | .010 | | |
| 2. Group | .219** | .048 | .066** | |
| Alexithymia | .004 | .000 | | |
| 3. Group X Alexithymia | -.224* | .027 | .027* | |
| Cognitive Emotional Processing | | | | 7.63 (5,134)*** |
| 1. Closeness | .194* | .038 | .040 | |
| Engagement | -.095 | .009 | | |
| 2. Group | .245** | .060 | .114*** | |
| EOT | -.030 | .000 | | |
| 3. Group X EOT | -.351*** | .068 | .068*** | |

Note. EOT = externally-oriented thinking factor of the TAS 20. Closeness = reported current closeness to person(s) involved in the rejection experience. Engagement = participant rated engagement in the experiment. *$p<.05$. **$p \leq .01$. ***$p \leq .001$.

**Recounting**

Group emerged as a significant predictor of recounting (β = -.259, *p* = .002), showing that participants in the distanced group showed significantly less recounting than participants in the immersed group. There was no main effect for alexithymia (β = -.108 *ns*), and the Group X Alexithymia interaction was not significant (β = .085, *ns*), indicating that alexithymia was not associated with recounting and did not moderate the relationship between group and recounting.

**Reconstruing**

There was no main effect of group (β = .034, *ns*) or alexithymia (β = .004, *ns*), and the Group X Alexithymia interaction was not significant (β = -.148, *ns*). These findings indicate that reconstruing was not associated with group or alexithymia and that alexithymia did not moderate the association between group and reconstruing.

**Cognitive Emotional Processing**

A main effect for group (β = .219, *p* = .007) indicated that individuals in the distanced group showed significantly more cognitive emotional processing than the immersed group. There was no main effect of alexithymia (β = .004, *ns*), but the Alexithymia X Group interaction was significantly associated with cognitive emotional processing (β = -.224, *p* =.044). A series of post hoc regressions were conducted to probe the significant interaction effect. Following Holmbeck's (2002) method, we examined the significance of the conditional effects of group on cognitive emotional processing by testing the simple slopes of participants with high levels (1

SD above the mean) and low levels (1 SD below the mean) of alexithymia. The simple slope was significant in the low alexithymia group (β = .384, *p* =.001), indicating that low alexithymia participants in the distanced group showed significantly more cognitive emotional processing than low alexithymia participants in the immersed group. However, there were no significant group differences in cognitive emotional processing in high alexithymia participants (β = .054, *ns*), suggesting that high alexithymia participants in the distanced group showed similar levels of cognitive emotional processing as those in the immersed group (see Figure 2).

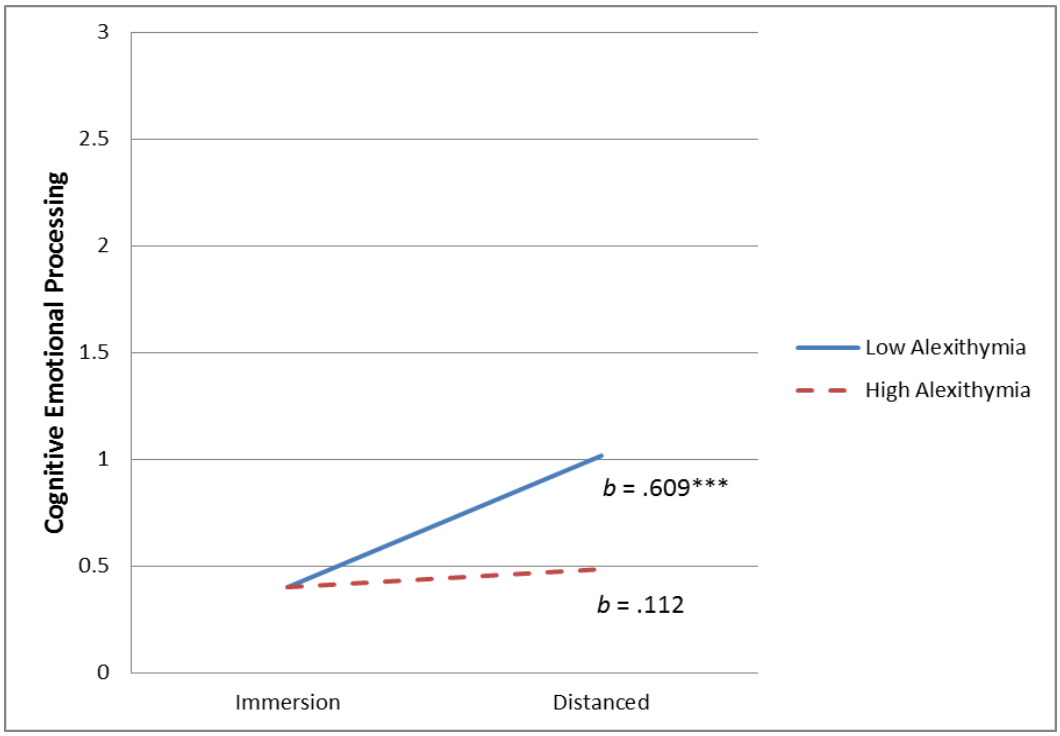


**Figure 2** **The Association of Self-Immersed and Self-Distanced Perspectives with Cognitive Emotional Processing Moderated by Total Alexithymia**

**Note. *b* = unstandardized regression coefficient, representing the simple slope of low (1 SD below the mean) and high (1 SD above the mean) alexithymia scores. *** $p \leq .001$.**

**Externally-Oriented Thinking Alexithymia Factor**

Additional regression analyses were conducted to deconstruct this finding and explore each of the three TAS-20 alexithymia factors as moderators of the relationship between group and cognitive emotional processing. Neither the difficulty identifying feelings nor the difficulty describing feelings factors of alexithymia emerged as significant main effects or moderators of cognitive emotional processing. Significant results emerged, however, when the externally-oriented thinking alexithymia factor (EOT) was entered as the moderator. There was no significant main effect of EOT ($\beta$ = -.030, *ns*), but a significant Group X EOT interaction emerged ($\beta$ = -.351, $p$ =.001). Post hoc regressions of the simple slopes of participants with high and low levels of alexithymia revealed a pattern of findings similar to those found with total alexithymia scores. As demonstrated in Figure 3, low EOT participants in the distanced group showed significantly more cognitive emotional processing compared to low EOT participants in the immersed group ($\beta$ = .511, $p$ < .001), but high EOT participants did not show group differences in cognitive emotional processing ($\beta$ = -.021, *ns*).

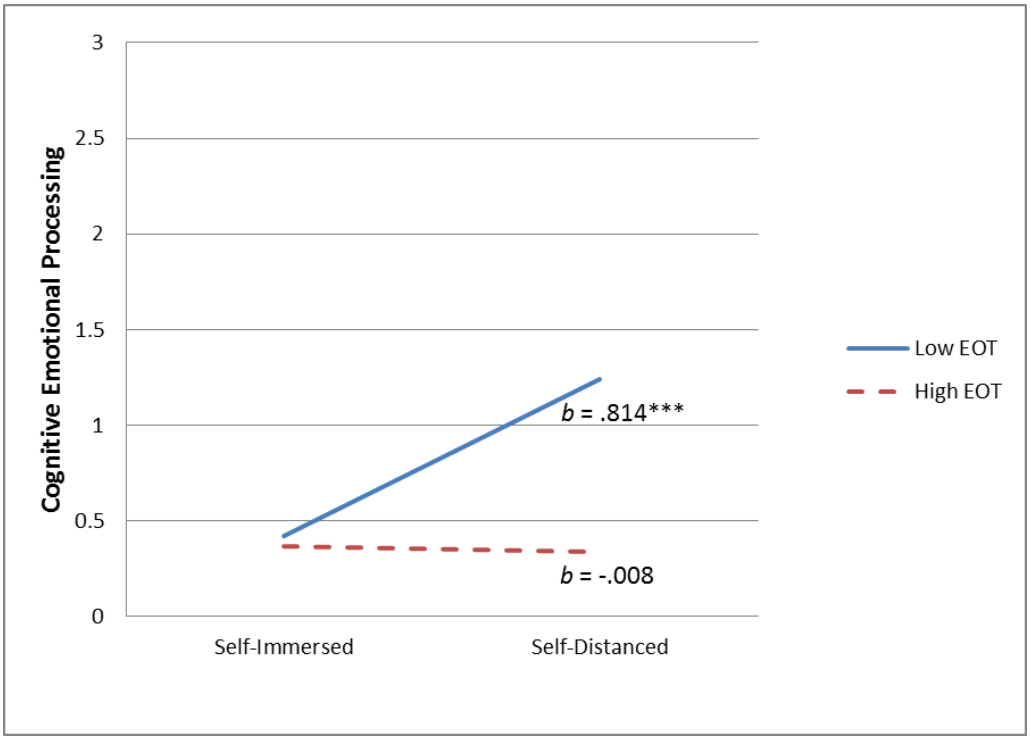


**Figure 3** **The Association of Self-Immersed and Self-Distanced Perspectives with Cognitive Emotional Processing Moderated by the Externally-Oriented Thinking Factor of the TAS-20.**
**Note. *b* = unstandardized regression coefficient, representing the simple slope of low (1 SD below the mean) and high (1 SD above the mean) externally- oriented thinking scores. EOT = Externally-oriented thinking factor. *** $p \leq .001$.**

# Chapter 4

# DISCUSSION

## Mood

The current study examined how alexithymia may inhibit the ability to process and make meaning of emotionally distressing events. Using a college-student population over-sampled for moderate to severe levels of alexithymia, we found that negative mood worsened when participants were instructed to analyze a previous rejection experience using either self-immersed or self-distanced perspectives, but negative mood improved when participants completed a task to distract them from their memory of the rejection experience. These findings are contrary to our hypotheses and diverge from previous literature demonstrating that mood was significantly higher in participants who self-immersed compared to participants who self-distanced or distracted and that there were no significant differences in mood between self-distanced and distraction participants (Kross & Ayduk, 2008).

It is possible that the characteristics of our sample may explain some of the divergence in findings. College populations are typically characterized by relatively low alexithymia scores on the TAS-20, with the distribution of TAS-20 scores showing a notable positive skew, particularly in the difficulty identifying feelings and difficulty describing feelings factors (Parker et al., 2008). However, the current study

over-sampled for individuals with moderate to severe levels of alexithymia on the TAS-20, and the distribution of TAS-20 scores indeed was less skewed and more normally distributed than those reported in Parker et al. (2008). Overall, more alexithymic participants in the current sample may have had more difficulty engaging in the self-distanced perspective than those in the Kross sample (Kross & Ayduk, 2008) and therefore might not have experienced the mood improvements associated with distancing. Consistent with this, higher post-test negative mood ratings were significantly correlated with higher TAS-20 total scores ($r = .361$, $p = .01$).

It is important to note that, contrary to our predictions, total alexithymia scores did not directly moderate the relationship between group and mood, suggesting that other factors may also contribute to the low post-test mood reported by the distanced group. The discrepancy between the current mood findings and those of previous research may also reflect limitations of using a self-report mood measure, particularly with moderate to high alexithymia participants characterized by deficits in awareness of their emotions. Subsequently, many participants in the current sample may not have been fully accurate reporters of their mood or noticed changes in their mood, which may have obscured our findings regarding post-test differences in mood. Future research utilizing non-self report measures of mood, such as psychophysiological measures, may help to clarify this potential issue.

## Thought Content

Overall group differences emerged for thought content. Specifically, the distanced group demonstrated significantly less recounting and more cognitive emotional processing than the immersed group. However, there were no significant group differences in reconstruing. These findings are both similar to and different from previous research, which has reported mixed results regarding significant group differences in recounting and reconstruing, sometimes between two experiments within a single study. For instance, Kross & Ayduk (2008) found that reconstruing was significantly higher in the self-distanced group compared to the self-immersed group and reported no significant group differences in recounting (although there was a trend toward less recounting in the self-distanced group of $p < .1$) in their first study. In their second study, they found the opposite, with the self-distanced group demonstrating less recounting than the self-immersed group and only a trend ($p < .1$) for more reconstruing in the self-distanced group. Our results were unique in that there was not even a trend for greater reconstruing in the self-distanced group compared to the self-immersed group. Interestingly, we found significant effects with the cognitive emotional processing variable. Similar to previous research (Ayduk & Kross, 2010; Kross & Ayduk, 2008), participants showed more recounting than reconstruing. This finding was replicated with cognitive emotional processing, such that participants in both the self-immersed and self-distanced groups showed more recounting than cognitive-emotional processing.

## Alexithymia as a Moderator of the Relationship between Group and Thought Content

Alexithymia was not directly associated with any of the thought content variables. However, alexithymia did emerge as a moderator of self-immersed and self-distanced perspectives and cognitive-emotional processing. As predicted, we found evidence that high levels of alexithymia were associated with less processing in the self-distanced group and no differences in processing in the immersed group. Specifically, participants with low levels of alexithymia showed significantly higher levels of cognitive emotional processing in the distanced group compared to the immersed group, suggesting that the instructions to self-distance facilitated processing of rejection memories in those with low alexithymia scores. Although participants with high alexithymia scores had low levels of processing in the immersion condition that were similar to those with low alexithymia scores, participants with high levels of alexithymia did not show more processing in the self-distanced condition. These results suggest that high levels of alexithymia may interfere with the ability to engage in self-distancing, even when provided with guided instructions on how to do so.

To further examine the moderating effect of alexithymia on processing in the self-distanced group, we deconstructed the total alexithymia score into the three factors of the TAS-20. Only the externally-oriented thinking factor emerged as a significant moderator of the relationship between self-immersed and self-distanced perspectives and processing. Difficulty identifying feelings and difficulty describing

feelings did not emerge as significant moderators, indicating that externally-oriented thinking may be the most salient component of alexithymia for self-distancing and emotional processing. Based on theoretical and empirical literature, externally-oriented thinking represents reluctance and/or difficulty analyzing and reflecting on one's own feelings or the feelings of others (Nemiah & Sifneos, 1970; Taylor et al., 1992). Theoretically, this type of self-reflection and analysis of emotion cues is an important component of emotional processing, as it facilitates insight and understanding of a situation and the ability to examine this information in a larger context (Foa et al., 2006; Mennin & Fresco, 2010; Park, 2010). Together with previous literature regarding the benefits of self-distancing (Kross & Ayduk 2008; 2009; Kross et al., 2005), these findings suggest that a self-distanced perspective facilitates emotional processing but that alexithymia characteristics, particularly the diminished ability to analyze or reflect on emotion cues, interfere with full engagement and benefit from a self-distanced perspective.

Contrary to our predictions, alexithymia did not emerge as a significant moderator of the relationship between group and reconstruing or the relationship between group and recounting. Overall, these findings provide evidence that alexithymia interferes with emotional processing during self-distancing, but alexithymia has little effect on less productive forms of self-reflection. It is interesting that the findings for cognitive emotional processing were not replicated with reconstruing, as both measures are considered to assess emotional processing. An

exploration of the differences in these variables may help clarify the current findings. The category of reconstruing assesses the amount of insight or acceptance of the situation, representing an understanding of the event within a larger context and the development of new connections between one's own emotional experience, the emotions of others, and the event itself.

The variable of cognitive emotional processing not only includes new insights, but also a perspective shift or coming to a new meaning of the situation. Emotional processing and the cognitive-behavioral treatment literature suggest that this type of perspective shift or cognitive restructuring is important for successful processing of emotions (Foa et al., 2006; Greenberg, 2002; Hayes et al., 2007; Park, 2010). In the current study, the perspective shift captured by the cognitive emotional processing variable appeared to more clearly differentiate emotional processing in the self-immersed and self-distanced groups, indicating that while both self-immersed and self-distanced participants may have shown comparable levels of insight and acceptance, self-distanced participants were more likely to demonstrate notable, adaptive shifts in their perspective.

Overall, these findings have important implications regarding the generalizability of the benefit of self-distancing. These results provide evidence that self-distancing may not be as effective for individuals with high alexithymia, particularly those with difficulty engaging in reflection of their emotions and the emotions of others (e.g. externally-oriented thinking). These findings are interesting in

light of previous research which has examined self-distancing in vulnerable populations. Kross and Ayduk (2009) found self-distancing to be beneficial for individuals with depression symptoms, such that participants with high levels of depression symptoms experienced greater improvements in mood and reconstruing in the self-distanced condition compared to those with low BDI scores. Similarly, Gruber et al. (2009) found that patients with Bipolar Disorder who were instructed to self-distance from a positive memory showed less positive emotional reactivity and fewer positive thoughts than those instructed to self-immerse.

Mood disorders, particularly depression, are characterized by overengagement in attempts to analyze and process feelings, which quickly become rumination (Nolen-Hoeksema et al., 2008). Further, research indicates that many individuals who engage in rumination do so because they believe it will be helpful in solving their emotional distress (Lyubomirsky & Nolen-Hoeksema, 1993). Thus, individuals with elevated mood disorder symptoms are likely quite adept at reflecting on their emotions, even if this reflection is not adaptive. Conversely, alexithymia is characterized by deficits in emotional awareness and reflection, indicating that these individuals have difficulty engaging in any type of emotional reflection. Self-distanced instructions may provide helpful guidance for adaptive reflection in individuals who already have the ability to analyze their emotions, but it may not be as useful for alexithymic individuals who are not as adept at emotional reflection. Indeed, the TAS-20 factor that measures difficulties reflecting on emotions (externally-oriented thinking) appears to be

particularly salient in the moderating relationship of alexithymia with self-distancing and cognitive emotional processing. These findings also provide implications for treatment of patients with high alexithymia, suggesting that these patients may benefit from first completing treatment components that aim to increase emotional awareness and processing, such as the components of Mennin and Fresco's Emotion Regulation Therapy (e.g. Mennin, 2006), before being introduced to techniques that emphasize meta-cognitive self-distancing and cognitive restructuring.

## Limitations and Future Directions

The current study showed that alexithymia moderated the association of the self-distanced perspective with cognitive emotional processing. It would be interesting for future research to investigate these findings in clinical populations, where high levels of alexithymia are typically more frequent and severe (Parker et al., 2008). Given the mixed research findings on the association of alexithymia and treatment outcome (Rufer et al., 2010), research explicitly examining the association of alexithymia, emotional processing, and outcome over the course of treatment may provide additional information regarding alexithymia in a treatment context. Further, these findings suggest that alexithymia is not directly associated with processing but that it interferes with processing by diminishing an individual's ability to engage in adaptive reflection and restructuring of maladaptive thoughts and emotions. Collecting session-to-session data on emotional processing and treatment outcomes would

facilitate further examination of the relationship of alexithymia with the trajectory of emotional processing and outcome over the course of treatment.

The TAS-20 externally-oriented thinking factor showed questionable reliability ($\alpha = .63$) in the current study, suggesting that findings with the externally-oriented factor should be interpreted with caution. It is important to note, however, that this factor has performed better in other studies and that the psychometric properties of the TAS-20, particularly the total score, are strong (Bagby, Parker, et al., 1994; Laos et al., 2001; Lumley et al., 2007; Parker, Bagby, et al. 1993; Taylor et al., 1992).

## Conclusions

Overall, the current findings provide information regarding self-distancing and emotional processing in individuals with high levels of alexithymia. Results offer evidence that alexithymia, particularly the externally-oriented thinking factor, may interfere with cognitive emotional processing during self-distanced analysis of an emotionally distressing event. These findings raise questions about the generalizability of self-distancing as an adaptive treatment intervention strategy across individual patients and mental health diagnoses. Future research should examine the relationship of alexithymia, self-distancing, and emotional processing in clinical settings and across the course of treatment to further clarify the implications of these findings for clinical populations and treatment interventions.

## REFERENCES


Alford, B. A., & Beck, A. T. (1997). *The integrative power of cognitive therapy*. New York, NY, US: Guilford Press.

Ayduk, Ö., & Kross, E. (2008). Enhancing the pace of recovery: Self-distanced analysis of negative experiences reduces blood pressure reactivity. *Psychological Science, 19*(3), 229-231. doi:10.1111/j.1467-9280.2008.02073.x

Ayduk, Ö., & Kross, E. (2010). Analyzing negative experiences without ruminating: The role of self-distancing in enabling adaptive self-reflection. *Social and Personality Psychology Compass, 4*(10), 841-854. doi:10.1111/j.1751-9004.2010.00301.x

Ayduk, Ö., & Kross, E. (2010). From a distance: Implications of spontaneous self-distancing for adaptive self-reflection. *Journal of Personality and Social Psychology, 98*(5), 809-829. doi:10.1037/a0019205

Bach, M., & Bach, D. (1995). Predictive value of alexithymia: A prospective study in somatizing patients. *Psychotherapy and Psychosomatics, 64*, 43-48.

Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The twenty-item toronto alexithymia scale: I. item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research, 38*(1), 23-32. doi:10.1016/0022-3999(94)90005-1

Bagby, R. M., Taylor, G. J., & Parker, J. D. A. (1994). The twenty-item toronto alexithymia scale: II. convergent, discriminant, and concurrent validity. *Journal of Psychosomatic Research, 38*(1), 33-40. doi:10.1016/0022-3999(94)90006-X

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182. doi:10.1037/0022-3514.51.6.1173

Beck, A. T. (1970). Cognitive therapy: Nature and relation to behavior therapy. *Behavior Therapy, 1*(2), 184-200. doi:10.1016/S0005-7894(70)80030-2

Beresnevaite, M. (2000). Exploring the benefits of group psychotherapy in reducing alexithymia in coronary heart disease patients: A preliminary study. *Psychotherapy and Psychosomatics, 69*(3), 117-122. doi:10.1159/000012378

Bressi, C., Taylor, G., Parker, J., & Bressi, S. (1996). Cross validation of the factor structure of the 20-item toronto alexithymia scale: An italian multicenter study. *Journal of Psychosomatic Research, 41*(6), 551-559. doi:10.1016/S0022-3999(96)00228-0

Carryer, J. R., & Greenberg, L. S. (2010). Optimal levels of emotional arousal in experiential therapy of depression. *Journal of Consulting and Clinical Psychology, 78*(2), 190-199. doi:10.1037/a0018401

Crawford, J. R., & Henry, J. D. (2004). The positive and negative affect schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 43*(3), 245-265. doi:10.1348/0144665031752934

Erni, T., Lötscher, K., & Modestin, J. (1997). Two-factor solution of the 20-item toronto alexithymia scale confirmed. *Psychopathology, 30*(6), 335-340.

Foa, E. B., Huppert, J. D., & Cahill, S. P. (2006). Emotional processing theory: An update. In B. O. Rothbaum (Ed.), (pp. 3-24). New York, NY, US: Guilford Press.

Frewen, P. A., Dozois, D. J. A., Neufeld, R. W. J., & Lanius, R. A. (2008). Meta-analysis of alexithymia in posttraumatic stress disorder. *Journal of Traumatic Stress, 21*(2), 243-246. doi:10.1002/jts.20320

Gohm, C. L., & Clore, G. L. (2002). Four latent traits of emotional experience and their involvement in well-being, coping, and attributional style. *Cognition and Emotion, 16*(4), 495-518. doi:10.1080/02699930143000374

Greenberg, L. S. (2002). Integrating an emotion-focused approach to treatment into psychotherapy integration. *Journal of Psychotherapy Integration, 12*(2), 154-189. doi:10.1037/1053-0479.12.2.154

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39*(3), 281-291. doi:10.1017/S0048577201393198

Gruber, J., Harvey, A. G., & Johnson, S. L. (2009). Reflective and ruminative processing of positive emotional memories in bipolar disorder and healthy controls. *Behaviour Research and Therapy, 47*(8), 697-704. doi:10.1016/j.brat.2009.05.005

Haviland, M. G., & Reise, S. P. (1996). Structure of the twenty-item toronto alexithymia scale. *Journal of Personality Assessment, 66*(1), 116-125. doi:10.1207/s15327752jpa6601_9

Hayes, A. M., Feldman, G. C., Beevers, C. G., Laurenceau, J., Cardaciotto, L., & Lewis-Smith, J. (2007). Discontinuities and cognitive changes in an exposure-based cognitive therapy for depression. *Journal of Consulting and Clinical Psychology, 75*(3), 409-421. doi:10.1037/0022-006X.75.3.409

Hayes, A. M., Feldman, G. C., & Goldfried, M. R. (2007). The change and growth experiences scale: A measure of insight and emotional processing. In L. G. Castonguay, & C. Hill (Eds.), (pp. 231-253). Washington, DC, US: American Psychological Association. doi:10.1037/11532-011

Hayes, S. C., Masuda, A., Bissett, R., Luoma, J., & Guerrero, L. F. (2004). DBT, FAR and ACT: How empirically oriented are the new behavior therapy technologies? *Behavior Therapy, 35*, 35-54. doi:10.1016/S0005-7894(04)80003-0

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York, NY, US: Guilford Press.

Higgins, E. T. (2006). Value from hedonic experience *and* engagement. *Psychological Review, 113*(3), 439-460. doi:10.1037/0033-295X.113.3.439

Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology. Special Issue on Methodology and Design, 27*(1), 87-96. doi:10.1093/jpepsy/27.1.87

Kross, E., & Ayduk, O. (2008). Facilitating adaptive emotional analysis: Distinguishing distanced-analysis of depressive experiences from immersed-analysis and distraction. *Personality and Social Psychology Bulletin, 34*(7), 924-938. doi:10.1177/0146167208315938

Kross, E., & Ayduk, Ö. (2009). Boundary conditions and buffering effects: Does depressive symptomology moderate the effectiveness of self-distancing for facilitating adaptive emotional analysis? *Journal of Research in Personality, 43*(5), 923-927. doi:10.1016/j.jrp.2009.04.004

Kross, E., & Ayduk, O. (2011). Making meaning out of negative experiences by self-distancing. *Current Directions in Psychological Science, 20*(3), 187-191. doi:10.1177/0963721411408883

Kross, E., Ayduk, O., & Mischel, W. (2005). When asking "why" does not hurt: Distinguishing rumination from reflective processing of negative emotions. *Psychological Science, 16*(9), 709-715. doi:10.1111/j.1467-9280.2005.01600.x

Kross, E., Duckworth, A., Ayduk, O., Tsukayama, E., & Mischel, W. (2011). The effect of self-distancing on adaptive versus maladaptive self-reflection in children. *Emotion, 11*(5), 1032-1039. doi:10.1037/a0021787

Lane, R. D., Sechrest, L., Reidel, R., & Weldon, V. (1996). Impaired verbal and nonverbal emotion recognition in alexithymia. *Psychosomatic Medicine, 58*(3), 203-210.

Lang, P. J. (1968). Fear reduction and fear behavior: Problems in treating a construct. In J. M. Shlien (Ed.), *Research in psychotherapy conference, may 1966, chicago, US* (pp. 90-102). Washington, DC, US: American Psychological Association. doi:10.1037/10546-004

Lang, P. J. (1994). The motivational organization of emotion: Affect-reflex connections. In S. H. M. van Goozen, N. E. Van de Poll & J. A. Sergeant (Eds.), (pp. 61-93). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.

Leweke, F., Bausch, S., Leichsenring, F., Walter, B., & Stingl, M. (2009). Alexithymia as a predictor of outcome of psychodynamically oriented inpatient treatment. *Psychotherapy Research, 19*(3), 323-331. doi:10.1080/10503300902870554

Lieberman, M. D., Eisenberger, N. I., Crockett, M. J., Tom, S. M., Pfeifer, J. H., & Way, B. M. (2007). Putting feelings into words: Affect labeling disrupts amygdala activity in response to affective stimuli. *Psychological Science, 18*(5), 421-428. doi:10.1111/j.1467-9280.2007.01916.x

Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, NY, US: Guilford Press.

Loas, G., Corcos, M., Stephan, P., Pellet, J., Bizouard, P., Venisse, J. L., . . . Jeammet, P. (2001). Factorial structure of the 20-item toronto alexithymia scale confirmatory factorial analyses in nonclinical and clinical samples. *Journal of Psychosomatic Research, 50*(5), 255-261. doi:10.1016/S0022-3999(01)00197-0

Lumley, M. A., Neely, L. C., & Burger, A. J. (2007). The assessment of alexithymia in medical settings: Implications for understanding and treating health problems. *Journal of Personality Assessment, 89*, 230-246.

Lyubomirsky, S., & Nolen-Hoeksema, S. (1993). Self-perpetuating properties of dysphoric rumination. *Journal of Personality and Social Psychology, 65*(2), 339-349. doi:10.1037/0022-3514.65.2.339

Mann, L. S., Wise, T. N., Trinidad, A., & Kohanski, R. (1994). Alexithymia, affect recognition, and the five-factor model of personality in normal subjects. *Psychological Reports, 74*(2), 563-567.

Mattila, A. K., Keefer, K. V., Taylor, G. J., Joukamaa, M., Jula, A., Parker, J. D. A., & Bagby, R. M. (2010). Taxometric analysis of alexithymia in a general population sample from finland. *Personality and Individual Differences, 49*(3), 216-221. doi:10.1016/j.paid.2010.03.038

McCallum, M., Piper, W. E., Ogrodniczuk, J. S., & Joyce, A. S. (2003). Relationships among psychological mindedness, alexithymia and outcome in four forms of short-term psychotherapy. *Psychology and Psychotherapy: Theory, Research and Practice, 76*(2), 133-144. doi:10.1348/147608303765951177

Mennin, D. S. (2006). Emotion regulation therapy: An integrative approach to treatment-resistant anxiety disorders. *Journal of Contemporary Psychotherapy, 36*(2), 95-105. doi:10.1007/s10879-006-9012-2

Mennin, D. S., & Fresco, D. M. (2010). Emotion regulation as an integrative framework for understanding and treating psychopathology. In A. M. Kring, & D. M. Sloan (Eds.), (pp. 356-379). New York, NY, US: Guilford Press.

Mennin, D. S., Holaway, R. M., Fresco, D. M., Moore, M. T., & Heimberg, R. G. (2007). Delineating components of emotion and its dysregulation in anxiety and mood psychopathology. *Behavior Therapy, 38*(3), 284-302. doi:10.1016/j.beth.2006.09.001

Nemiah, J. C., & Sifneos, P. E. (1970). Psychosomatic illness: A problem in communication. *Psychotherapy and Psychosomatics, 18*, 154-160.

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science, 3*(5), 400-424. doi:10.1111/j.1745-6924.2008.00088.x

Ogrodniczuk, J. S., Piper, W. E., & Joyce, A. S. (2004). Alexithymia as a predictor of residual symptoms in depressed patients who respond to short-term psychotherapy. *American Journal of Psychotherapy, 58*, 150-161.

Pandey, R., Mandal, M. K., Taylor, G. J., & Parker, J. D. A. (1996). Cross-cultural alexithymia: Development and validation of a hindi translation of the 20-item toronto alexithymia scale. *Journal of Clinical Psychology, 52*(2), 173-176. doi:10.1002/(SICI)1097-4679(199603)52:2<173::AID-JCLP8>3.0.CO;2-V

Park, C. L. (2010). Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin, 136*(2), 257-301. doi:10.1037/a0018301

Parker, J. D. A., Bagby, R. M., Taylor, G. J., & Endler, N. S. (1993). Factorial validity of the 20-item toronto alexithymia scale. *European Journal of Personality, 7*(4), 221-232. doi:10.1002/per.2410070403

Parker, J. D. A., Keefer, K. V., Taylor, G. J., & Bagby, R. M. (2008). Latent structure of the alexithymia construct: A taxometric investigation. *Psychological Assessment, 20*(4), 385-396. doi:10.1037/a0014262

Parker, J. D., Taylor, G. J., & Bagby, R. M. (1993). Alexithymia and the recognition of facial expressions of emotion. *Psychotherapy and Psychosomatics, 59*(3-4), 197-202.

Parker, J. D. A., Taylor, G. J., & Bagby, R. M. (2003). The 20-item toronto alexithymia scale III. reliability and factorial validity in a community population. *Journal of Psychosomatic Research, 55*(3), 269-275. doi:10.1016/S0022-3999(02)00578-0

Rufer, M., Albrecht, R., Zaum, J., Schnyder, U., Mueller-Pfeiffer, C., Hand, I., & Schmidt, O. (2010). Impact of alexithymia on treatment outcome: A naturalistic study of short-term cognitive-behavioral group therapy for panic disorder. *Psychopathology, 43*(3), 170-179. doi:10.1159/000288639

Rufer, M., Hand, I., Braatz, A., Alsleben, H., Fricke, S., & Peter, H. (2004). A prospective study of alexithymia in obsessive-compulsive patients treated with multimodal cognitive-behavioral therapy. *Psychotherapy and Psychosomatics, 73*(2), 101-106. doi:10.1159/000075541

Rufer, M., Ziegler, A., Alsleben, H., Fricke, S., Ortmann, J., Brückner, E., . . . Peter, H. (2006). A prospective long-term follow-up study of alexithymia in obsessive-compulsive disorder. *Comprehensive Psychiatry, 47*(5), 394-398. doi:10.1016/j.comppsych.2005.12.004

Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York, NY, US: Guilford Press.

Spek, V., Nyklíček, I., Cuijpers, P., & Pop, V. (2008). Alexithymia and cognitive behaviour therapy outcome for subthreshold depression. *Acta Psychiatrica Scandinavica, 118*(2), 164-167. doi:10.1111/j.1600-0447.2008.01199.x

Speranza, M., Loas, G., Wallier, J., & Corcos, M. (2007). Predictive value of alexithymia in patients with eating disorders: A 3-year prospective study. *Journal of Psychosomatic Research, 63*(4), 365-371. doi:10.1016/j.jpsychores.2007.03.008

Tabibnia, G., Lieberman, M. D., & Craske, M. G. (2008). The lasting effect of words on feelings: Words may facilitate exposure effects to threatening images. *Emotion, 8*(3), 307-317. doi:10.1037/1528-3542.8.3.307

Taylor, G. J., & Bagby, R. M. (2000). *An overview of the alexithymia construct*. San Francisco, CA, US: Jossey-Bass.

Taylor, G. J., Bagby, R. M., & Parker, J. D. (1992). The revised toronto alexithymia scale: Some reliability, validity, and normative data. *Psychotherapy and Psychosomatics, 57*, 34-41.

Taylor, G. J., Bagby, R. M., & Parker, J. D. A. (2003). The 20-item toronto alexithymia scale IV. reliability and factorial validity in different languages and cultures. *Journal of Psychosomatic Research, 55*(3), 277-283. doi:10.1016/S0022-3999(02)00601-3

Teasdale, J. D. (1999). Emotional processing, three modes of mind and the prevention of relapse in depression. *Behaviour Research and Therapy. Special Issue: Cognitive Behaviour Therapy: Evolution and Prospects. A Festschrift in Honour of Dr. S.Rachman, Editor of Behavior Research and Therapy, 37*(Suppl 1; Supplement), S53-S77. doi:10.1016/S0005-7967(99)00050-9

Teasdale, J. D., Moore, R. G., Hayhurst, H., Pope, M., Williams, S., & Segal, Z. V. (2002). Metacognitive awareness and prevention of relapse in depression: Empirical evidence. *Journal of Consulting and Clinical Psychology, 70*(2), 275-287. doi:10.1037/0022-006X.70.2.275

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063-1070. doi:10.1037/0022-3514.54.6.1063

# Appendix

## IRB APPROVAL LETTER

RESEARCH OFFICE

210 Hullihen Hall
University of Delaware
Newark, Delaware 19716-1551
*Ph:* 302/831-2136
*Fax:* 302/831-2828

DATE: October 21, 2010

TO: C. Beth Ready, BA
FROM: University of Delaware IRB

STUDY TITLE: [192863-1] Alexithymia and cognitive processes: Does increasing emotional awareness improve cognitive functioning following an emotional event?
IRB REFERENCE #:
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: October 21, 2010
EXPIRATION DATE: October 20, 2011
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # 7

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

If you have any questions, please contact Elizabeth Peloso at 302-831-8619 or epeloso@udel.edu. Please include your study title and reference number in all correspondence with this office.