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Emotional Processing in an Expressive Writing Task on Trauma

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By

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September 13, 2012

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Abstract

The current study took a different approach to studying expressive writing by examining the emotional processes by which it confers its benefits. An archival sample of 110 undergraduates, who suffered traumas, were instructed to write based on differing theories of emotional processing. Participant narratives were coded for depth of emotional processing and the presence of key emotions. Outcome was assessed at baseline and four weeks following writing. Conditions differed in their presence of key emotions (χ^2 [4, N = 110] = 39.160, p < .001), though not as expected. Depth of emotional processing differed as a function of condition and writing session, F(4,105) = 6.056, p < .001. Depth of emotional processing was negatively correlated with anxiety, r(107) = -.209. The results suggest that writing instructions are not always adhered to, writing instructions might differentially promote emotional processing over time, and promoting deepened emotional processing might facilitate reductions in anxiety.

Dedication

To my parents:

Thank-you for instilling in me, at a young age, the importance of taking time to listen to others. Most of all, thank-you for your continued love and support.

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CHAPTER I

Introduction

Trauma and Expressive Writing

Expressive writing as a psychological intervention has garnered a great deal of research attention over the last few decades. Like the early study of psychotherapy, most expressive writing research has concentrated on client *outcome*. In particular, research has been focused on the evaluation of expressive writing's impact on psychological change and physical functioning of individuals following a traumatic event (Frattaroli, 2006). This area of inquiry has wide relevance since it is estimated that around 50-60% of individuals experience a traumatic event within their lifetime (Kessler et al., 1995). Events of this kind include, but are not limited to, sexual assault, physical assault, combat, witnessing violence, motor vehicle collisions, and natural disasters. Of those who experience a traumatic event, approximately 7-8% go on to develop post-traumatic stress disorder (PTSD; Kessler et al., 1995; Kessler et al., 2005). For a diagnosis of PTSD to be given, a specific event, which causes or threatens bodily harm or injury to the self or another, must occur. Yet, a study conducted by Mol and colleagues (2005) found that individuals who experienced a distressing life event (e.g., sudden unemployment, divorce, relational problems, theft from the home, death of a loved one) experienced higher PTSD symptomatology than individuals who had experienced a traumatic event as defined by the DSM-IV. Similarly, Shapiro and Maxfield (2002) distinguish between events considered to be traumatic by DSM criteria, referred to as capital "T" trauma, and equally traumatic events resulting from experiences of rejection, embarrassment, or attachment difficulties, referred to as small "t" trauma. Given the high lifetime prevalence

of traumatic and distressing life events and the resulting psychological consequences, expressive writing is an easily accessible and administered intervention that is both time and cost-effective.

Main Objective for the Study: What is the Role of Emotional Processing in Psychological Change?

The main purpose of this study, however, was not to add to the well-established outcome literature on expressive writing and trauma but to examine *processes* that are surmised to contribute to expressive writing's reliable impact as an intervention. Elucidating the processes that contribute to the gains of individuals in the expressive writing paradigm is important because such information can be used to improve the intervention; that is, to maximize the processes that best contribute to good outcome. Furthermore, research on curative processes in the expressive writing paradigm may also have further reaching implications for psychotherapy among other, more elaborate, interventions. Thus, the current research is an effort to investigate the processes that will strengthen the expressive writing task as an intervention for individuals who have experienced a psychological trauma.

Specifically, the current study examined emotional processing as a mechanism of change within the expressive writing paradigm. In the general framework of this study, the effect of different writing instructions promoting different types of emotional processing was examined. Manipulating writing instructions provide a way to examine different emotional processing types, which allows for conclusions to be drawn about the contribution of these processing types to psychological functioning. This study examined archival data to produce results that explore at least three issues. These issues were: (a)

whether or not it is possible to encourage different types of emotional processing in an expressive writing task; (b) whether one type of instruction for emotional processing produced deeper experiences of emotional processing; and (c) whether deepened emotional processing contributed to a better outcome for individuals who have experienced a distressing/traumatic event.

Positive findings from the proposed study would provide evidence for the development of expressive writing as an efficacious, easily administered, and cost-effective intervention that is of interest to individuals in need of psychological services, organizations, and researchers and clinicians alike. Part of the appeal of developing an expressive writing task is that it is scalable. Specifically, it has the potential to have a small, but consistent, widespread positive impact on any sized population, especially if administered via the internet, with the added benefit of being cost-effective. Although the effects of expressive writing are small (i.e., r =.056 to .152) when compared to those of psychotherapy (i.e., d = .75 to .80; Lambert & Ogles, 2004; Wampold, 2001), the fact that an effect is present at all is impressive given the ease with which expressive writing is administered, the minimal length of time devoted to writing (i.e., one hour total), and the absence of guidance from a trained therapist (Frattaroli, 2006). Therefore, as suggested by Baikie and Wilhelm (2005), expressive writing might work best as an adjunct to psychiatric or psychological treatment or perhaps as treatment maintenance following the termination of psychological or psychiatric care. Finally, positive findings from the current study would appeal to researchers as they would represent a bridge in theory from the processes that contribute to successful psychotherapy to the similar processes that contribute to successful psychological interventions. In conclusion, the aim

of this study is to contribute to the knowledge of the most useful emotional processes in expressive writing in order to better facilitate psychological change following a trauma.

Benefits of Expressive Writing

An expressive writing task involves writing about a past or current traumatic experience or situation. Also known as the Pennebaker Trauma Narrative (Pennebaker & Beall, 1986), the original expressive writing task instructed individuals to write about their "deepest thoughts and feelings" related to a trauma over the course of three or more sessions. In the first study conducted on expressive writing, Pennebaker and Beall (1986) demonstrated that students who wrote about a personal traumatic event experienced fewer health-related visits in the six months following writing. Since then, several studies have extended Pennebaker and Beall's findings, demonstrating that expressive writing has a salutary effect on individuals experiencing a number of psychological and physical stressors (Frattaroli, 2006).

Psychological benefits of expressive writing. The expressive writing task was originally designed to help individuals who had experienced a psychological trauma. Since then, it has been well demonstrated that expressive writing contributes to a decrease in PTSD symptom severity (see for example, Possemato, Ouimette, & Geller, 2010; Sloan & Marx, 2004) among individuals who have experienced a traumatic stressor and an increase in PTSD-related growth among individuals meeting the DSM-IV-TR criteria for a PTSD diagnosis (Smyth, Hockemeyer, & Tulloch, 2008). With regard to other symptoms, expressive writing has led to a small but reliable decrease in depression symptomatology (e.g., Gortner, Rude, & Pennebaker, 2006; Sloan, Feinstein, & Marx,

2009) and other symptoms of anxiety not unique to PTSD (Graf, Gaudiano, & Geller, 2008).

The literature also suggests that expressive writing's positive psychological effects are evident among a range of populations. In a recent study involving expressive writing about trauma, Pachankis and Goldfried (2010) instructed a sample of gay men to either write about the most stressful or traumatic gay-related event in their life or a neutral topic (control). The authors found that gay men who wrote about a stressful or traumatic gay-related event experienced an increase in positive affect and openness with their sexual orientation at a three-month follow up when compared to their neutral topic counterparts. Results of this study also revealed that the men who wrote about a stressful or traumatic gay-related event evidenced deeper levels of emotional processing than controls, as measured by the experiencing scale (an index of good psychotherapy process). Conclusions like this echo Hunt's (1998) finding that emotional processing is a mechanism of change in a writing disclosure task, and that writing about emotions in this way is more helpful than more cognitively-oriented writing tasks.

Another study (Lepore & Greenberg, 2002) showed that among individuals who experienced a romantic break-up, those who completed an expressive writing exercise about their break-up were more likely to reunite with their partners than controls. Furthermore, expressive writers in the study also experienced a decrease in resentment towards their ex-partners and guilt for their role in events leading to the break-up over time. In yet another study, individuals who wrote expressively about the experience of losing a loved one to suicide reported less grief associated with the death than controls following the writing task (Kovac & Range, 2000). Expressive writing clearly confers a

number of psychological benefits for specific psychological symptoms and populations. Indeed, one of the largest meta-analyses to be completed on the topic examined 146 studies and indicated that the benefit of expressive writing for psychological health had an average effect size of r = .056 and an even larger effect (r = .152) for individuals' subjective evaluation of expressive writing's success in resolving the difficulties related to their trauma (Frattoroli, 2006).

Physical benefits of expressive writing. The benefits of expressive writing have been shown to extend to the improvement of physiological functioning, including increasing lung and liver functioning, decreasing hypertension (e.g., Davidson et al., 2002; Francis & Pennekbaker, 1992; Smyth et al., 1999; as cited in Baikie & Wilhelm, 2005) and promoting positive immune functioning (e.g., Pennebaker, Kiecolt-Glaser, & Glaser, 1988; Petrie, Fontanilla, Thomas, Booth, & Pennebaker, 2004).The salubrious effects of expressive writing on physiological functioning have further been corroborated by a meta-analysis, which showed the effect size for positive physiological effects (r = .059), as measured by objective physiological assessments (e.g., enzyme levels, lung volume, blood pressure), to be comparable to psychological effects with an even greater effect (r = .072) for self-reported health outcomes (Frattaroli, 2006).

Expressive writing has also been shown to benefit specific clinical populations in the way of symptom reduction and improved physical functioning. For example, studies have established expressive writing's small effect in reducing self-reported somatic symptoms among cancer patients (Henry, Schlegl, Talley, Molix, & Bettencourt, 2010; Rosenberg et al., 2002; Stanton et al., 2002). Symptom reduction was similarly found among individuals with rheumatoid arthritis (Danoff-Burg, Agee, Romanoff, Kremer, &

Strosberg, 2006; Smyth, Stone, Hurewitz, & Kale, 1999) and asthma (Smyth et al., 1999; Warner et al., 2006). In summary, the overall benefit of expressive writing on health, at large, has been supported by both the meta-analyses of Frisin, Borod, and Lepore (2004) and by Frattaroli (2006).

Processes of Emotional Change

In the specific context of expressive writing, King (2002) summarized the research when she stated, "Two strong conclusions can be made with regard to the benefits of writing. First, expressive writing has health benefits. Second, no one really knows" (p. 119). Though the general sentiment of her statement is true, it is important to recognize that King was being hyperbolic in order to call attention to the need for more research on the processes that contribute to expressive writing's impact as a psychological intervention. As mentioned earlier, an abundance of research corroborates her contention that both physical and psychological health benefits result from expressive writing with an average overall effect size of $r = .075$ (Frattaroli, 2006).

Although this is a small effect in comparison to the large effect of psychotherapy, for example (see Wampold, 2001), this effect must be considered in the context of the intervention itself. Indeed, given that the task only requires participants to write about their experiences for around 20 minutes at a time, and on just a few occasions, it is noteworthy that there is any effect at all. Meanwhile, the brief writing intervention is extremely scalable and cost-effective. Even so, as King posits, the question of *how* changes in symptomatology and functioning occur as a result of writing should be further explored. Though a limited number of studies have examined this question, more

research is necessary to uncover the processes that contribute to expressive writing's small, but consistent effects.

Within the realm of psychotherapy research, the investigation of how a particular intervention produces a successful outcome, or the mechanisms by which an intervention produces a successful outcome for a client, is referred to as psychotherapy process research. One of the client processes that have been extensively studied is emotional processing (e.g., Foa & Kozak, 1986; Fosha, 2000; Pascual-Leone & Greenberg, 2007). However, research has not reached a consensus on the definition of emotional processing, such that different theoretical perspective have led to different interpretations of what really constitutes emotional processing. As we will see in the literature review that follows, there is reason to consider emotional processing from a multiplicity of perspectives. Emotional processing is understood as experiencing emotion, and diminishing or transforming the effect of that emotion, so that it is no longer distressing (Rachman, 1980). Emotional processing has been characterized as essential to change in short-term psychodynamic approaches to therapy (Fosha, 2002; McCullough et al., 2003), behavioural, exposure-based therapies (Foa & Kozak, 1998; Foa et al., 2006), and cognitive-behavioural therapies (Borkovec, Alcaine, & Behar, 2004; Samoilov & Goldfried, 2000). Within the literature, emotional processing, in its broadest sense, has received the most research attention and theoretical speculation as an explanation for expressive writing's successful results.

Catharsis. One of the first proposed emotional processing mechanisms by which expressive writing produces successful outcomes was the Freudian concept of catharsis (Baikie & Wilhelm, 2005). The idea is that the mere disclosure of previously undisclosed emotions would lead to a decrease in negative affect, an increase in positive affect, and, consequently, a decrease in physical symptoms. The reasoning behind this hypothesis was that undisclosed thoughts and emotions resulted in stress and subsequent physical and psychological symptoms (Frattaroli, 2006).

Although it may still be one of several factors contributing to a successful expressive writing outcome, research conducted since this hypothesis was put forth clearly refutes catharsis as a sole and sufficient mechanism responsible for positive effects following expressive writing for at least three reasons. First, writing solely about emotions related to a trauma is not as beneficial as writing about the events of the trauma in addition to the associated emotions (Pennebaker & Beall, 1986), indicating that catharsis is not an isolated process contributing to success in expressive writing. Second, according to the concept of catharsis, one would expect to see an immediate decrease in negative affect and an increase in positive affect following the purging of negative thoughts and feelings – but this has not been shown to be the case. In fact, individuals have evidenced increased negative affect immediately following writing disclosure tasks (Murray & Segal, 1994) and the proportion of negative affect words in such writing tasks seems to be unrelated to their overall benefit (Smyth, 1998). Third, those who have previously disclosed their written trauma topic do not differentially benefit from those who have not previously disclosed their trauma topic (Frattaroli, 2006). However, if catharsis was the causal mechanism in producing good outcomes among expressive

writers, one would expect that those whose traumas were previously undisclosed would benefit more than those who had already disclosed their traumas. For these and other reasons, it seems untenable that catharsis be considered a sole change mechanism in expressive writing, although it may still be a mediating or moderating factor in the final outcomes of expressive writing.

Exposure, venting, and habituation as forms of emotional processing.

Another emotional processing mechanism proposed to account for the salutary effects of expressive writing is the behavioural process of repeated exposure. In general, repeated exposure is believed to be successful as a form of emotional processing because it repeatedly subjects individuals to a feared stimulus, which allows them to see that the characteristics of the stimulus that they fear are actually incongruent or at least disproportionate with the stimulus (Foa & Kozak, 1986). When individuals experience high physiological arousal upon the presentation of a feared stimulus and then go on to endure subsequent repeated exposures to it, they begin to experience an attenuation of the arousal response. The process of reduced physiological arousal over repeated exposure to the feared stimulus is referred to as habituation, and is understood by behavioural therapists as a form of emotional processing (Rachman, 1980). Exposure and habituation can often be thought of in terms of "venting" because it represents the repeated venting of one's relatively undifferentiated emotions. This particular conceptualization does not see emotional processing as occurring as the result of movement from more undifferentiated to more differentiated emotions. Instead, it views emotional processing as occurring from the repeated "venting" of one's primary, undifferentiated emotions, which results in reduced physiological arousal.

Exposure and habituation in psychotherapy has been positively related to overall therapeutic outcome (Foa, 1983; Jaycox, Foa, & Moral, 1998). Taken together, the evidence of habituation over time and its positive relationship with overall outcome suggests that repeated exposure is a mechanism of emotional processing. In the case of expressive writing, the feared stimuli are the thoughts and emotions associated with the traumatic experience and having three or more writing sessions serve as a context for repeated exposure. Indeed, there is evidence to suggest that expressive writing facilitates an increase in physiological arousal during the first writing session followed by decreased physiological arousal in subsequent writing sessions, characteristic of habituation, in addition to a reduction in psychological symptoms (Sloan & Marx, 2004). Therefore, preliminary evidence suggests that repeated exposure as a mechanism of emotional processing might be responsible for the positive effects of expressive writing.

Cognitive re-evaluation and meaning-making as forms of emotional processing. Cognitive reappraisal as a mechanism of emotional processing has also been thought to play a causal role in the success of emotional processing as a psychological intervention. In this conceptualization of emotional processing, cognition plays a key role in the "absorption" of emotional difficulties, as Rachman (1980) described it. To that end, cognitive theorists posit that emotional processing occurs when emotionally distressing material is ascribed new meaning by thinking of it in a different light (e.g., by using a cognitive re-frame; Greenberg et al., 1996; Samoilov &Goldfried, 2000). Thinking of the emotionally distressing material in a more meaningful way carries with it an appraisal of the material as less harmful than previously thought and the result is a reduction in stress.

In this sense, cognitive re-evaluation can be thought of as "meaning-making;" that is, the generation of meaning associated with the experience of a distressing event.

A change in personal meaning from pre-to-post writing task has been associated with a decrease in reported stress, suggesting that cognitive reappraisal could be responsible for this reduction in stress (Park & Blumberg, 2002). A more recent study (Lu & Stanton, 2010) examined the effects of cognitive reappraisal by manipulating writing task instructions. Results of the study revealed that those who wrote in the *cognitive reappraisal* condition reported a decrease in physical symptoms following the task. However, contrary to findings expected from the cognitive reappraisal hypothesis, participants did not benefit from either a decrease in negative affect or an increase in positive affect as compared to the contrasting condition of *emotional disclosure* or a combined condition (i.e., emotional disclosure and cognitive reappraisal). Hunt (1998) had a similar finding, and, like Lu and Stanton, suggests that cognitive reappraisal actually results in increased negative affect if individuals attempt to suppress their negative affect while engaging in cognitive reappraisal. On the whole, evidence seems to support cognitive reappraisal as an emotional processing mechanism responsible for the psychological and physical benefits that expressive writing has been empirically demonstrated to confer. In spite of this, further research needs to be conducted to better determine the physical and psychological effects that are attributable to the process of cognitive reappraisal.

Experiential processes as forms of emotional processing. From the humanistic-experiential perspective at least two constructs have been suggested as forms of emotional processing. The first is the "depth" with which people experience aspects of

their narratives. Specifically, depth of experience refers to the degree to which people are engaged with the emotional experience and its meaning stemming from distress. The second is sequential patterns of emotion that seem to be related to progression toward resolving distress. In this conceptualization, people move through sequences of different emotional and meaning states in an effort to resolve their personal difficulties.

The depth of experiencing as an indicator of processing. From this vantage point, one conceptualization of experiential emotional processing is *depth of experiencing* (Gendlin, 1996). A client's level of experiencing within psychotherapy refers to the degree to which clients engage and explore their feelings and meaning related to personal distress (Klein, Mathieu-Coughlan, & Kiesler, 1986). It is a measure of "depth," where certain kinds of processing are considered deeper and more meaningful than others. At the lowest level of experiencing, clients do not speak about their internal experience, including emotions, and refer to external events in a removed manner. At the highest level of experiencing, not only are clients engaged with all aspects of their internal experience, but these elements are integrated in an insightful, meaningful manner. In the context of experiential psychotherapy, changes in client experiencing have been shown to be predictive of overall treatment outcomes (Goldman, Greenberg, & Pos, 2005). Furthermore, the prediction was even stronger when the segments being rated on depth of experience had been already identified as *emotional* episodes as opposed to simply being thematic (Pos, Greenberg, Goldman, & Korman, 2003). Similarly, client depth of emotional processing predicted an improvement in clinical symptomatology (Greenberg & Malcolm, 2002; Pos et al., 2003) and resolution of the presenting traumatic issue (Greenberg & Malcolm, 2002).The success of depth of experiencing in predicting

outcomes in psychotherapy suggests that it will likely be effective in evaluating emotional processing within an expressive writing paradigm. The only studies known to examine depth of experiencing in expressive writing to date (Mundorf & Paivio, 2011; Pachankis & Goldfried, 2010) have shown promising results. In their study, Mundorf and Paivio examined narratives written by adult victims of childhood abuse and found that their depth of experiencing within the narratives increased over time, when their narratives were compared from before to after a 16-20 session treatment of emotion-focused therapy for complex trauma. In a study of the benefits of expressive writing for gay men who experienced gay-related trauma, Pachankis and Goldfried found that men who wrote about a trauma evidenced significantly deeper levels of experiencing when compared to a control group, consisting of gay men who experienced a gay-related trauma but wrote about a neutral topic.

***Sequential patterns of experience as emotional processing*.** Based on more recent theory from emotion focused therapy, a step-by-step model of emotion processing whereby client emotional distress is resolved has been developed (Pascual-Leone & Greenberg, 2007; see Figure 1). In this model, which was developed in the context of psychotherapy sessions and based on Greenberg's (2002) broader theory of emotional change, clients move through a sequence of different affective and meaning states, which facilitate the resolution of personal distress.

Early phase emotional states in the model (i.e., global distress, rejecting anger, and fear/shame) were present in client sessions wherein emotional distress was resolved and in sessions where it was not resolved. In contrast, later phase emotional states in the model (i.e., assertive anger, self-soothing, and grief/hurt) were evidenced in client

sessions wherein emotional distress was resolved, going beyond the early phase emotions. According to empirical research by Pascual-Leone and Greenberg (2007), the early phase emotional states are often characterized by high arousal and undifferentiated "bad" feelings or by differentiated but maladaptive states (i.e., traumatic fear, core shame). That is, individuals experiencing these emotional states show signs of high affective arousal (e.g., crying and yelling) and the emotional states are poorly defined and/or not directed towards the resolution of their distress. On the other hand, individuals in later phase emotional states tend to have more regulated emotional arousal and the emotional states themselves are more differentiated and focused towards the resolution of distress. Furthermore, it is worth noting that while "anger" and "sadness," are categories of emotion, they are each represented (albeit in qualitatively different ways) among both early phase and later phase steps in the model; such that the Darwinian "emotion category" or its original conceptualization as one emotion type, as such is less central to this model of processing than the quality with which certain emotions are experienced. That is to say the "type" (i.e., quality) of anger or sadness, for example, is more important than the all-encompassing "emotion category" as is often defined in basic emotion research (i.e., Ekman & Friesen, 1975).

The process model presented in Figure 1 follows four major developments in terms of emotional processing. First, all clients in a state of global distress begin by expressing their distress with high arousal and a very low meaning as to what the object of their distress is about, or where to orient their concern. Second, as clients start to articulate their concern in general terms they move towards resolution by progressing to more differentiated, but still early phase emotional states (i.e., rejecting anger or

fear/shame). Third, in order for clients to move from an early phase to a later phase emotional state, they usually first identify an unmet existential need (e.g., to be loved, to feel safe) or a negative self-evaluation (i.e., a core dysfunctional belief). Fourth, following the identification of an existential need or a negative self-evaluation, new meaning can be ascribed to the problem resulting in a positive evaluation of the self (i.e., "I *am* deserving/entitled to having my core needs met…") and thereby a movement towards the advanced meaning-making states such as assertive anger, grief, or self-soothing. Then in a final step, from the synthesis of several later phase emotional states comes the experience of resolution. This sense of agency and acceptance is produced through a second positive evaluation of the self: "it is possible to cope and thrive." Singh (2008) confirms the emotional processing model's utility in predicting good within-session outcomes among clients. In his study, Singh demonstrated that advanced client emotional states (i.e., assertive anger, grief, self-soothing) mediated the relationship between a therapist's experiential focus and the outcome of a client's within-session event. In short, the impact of a therapist's intervention was contingent on identified client states as described in the Pascual-Leone and Greenberg model. Singh's findings suggest that this type of emotional processing may also be applicable as a causal mechanism that contributes to psychological change among expressive writers.

Given the promising findings that emotional processing mechanisms responsible for change in psychotherapy (e.g., catharsis, repeated exposure and cognitive reappraisal) also seem to be responsible for change within the expressive writing paradigm, it is worth investigating whether or not a more humanistic, experiential emotional processing mechanism may be responsible for personal change in expressive writers. While this line

of inquiry has an established tradition in psychotherapy research (see Greenberg & Pascual-Leone, 2006) there are only a few isolated examples of this being explored in the expressive writing paradigm.

It is likely that the totality of emotional change in expressive writing is over-determined (Greenberg & Pascual-Leone, 2006). In fact, all of the emotional processing theories discussed thus far probably, to some degree, correctly explain the pathways of emotional change that occur as a result of expressive writing. However, emotional processing theories of *experiencing* and sequences of meaning making have received considerably less attention as processes of change in expressive writing.

Current Study: Aims and Hypotheses

Aims. The main purpose of this study is to examine the process of expressive writing within the broader conceptual and methodological approach of psychotherapy research in the hopes of drawing conclusions that are also relevant to psychotherapy. Gaining insight into psychotherapy processes informs clinicians on how to maximize helpful processes while in-session with their clients in order to facilitate their achievement of the best possible therapy outcome. Specific to the psychotherapy process of emotionally processing, research in this area tells clinicians what aspects of emotional processing contribute to the best outcome for the client so that clinicians can tailor their interventions to assist the client in achieving them and, subsequently, a good therapy outcome. A number of researchers and theoreticians have already argued that expressive writing, as a psychological intervention, is somewhat analogous to psychotherapy (see for example, Kerner & Fitzpatrick, 2007; Murray & Segal, 1994). Following this notion, the general purpose of the current study is to use the expressive writing paradigm to

investigate whether or not experiential mechanisms of emotional processing are present, and causally contribute to successful intervention outcomes.

Pascual-Leone and Greenberg's (2007) model of emotional processing (see Figure 1) has shown promise in predicting outcome in psychotherapy (Paivio & Pascual-Leone, 2010; Singh, 2008). Therefore, a more specific aim of this study is to test this model of emotional processing in general and as it applies to expressive writing. Keeping in mind the ultimate goal of process research, the current study will investigate whether or not the manipulation of writing instructions enables individuals to be successfully "walked through" the successful stages of emotional processing according to Pascual-Leone and Greenberg's model.

The notion of being process-directive is a relatively new approach to expressive writing. Frattaroli's (2006) meta-analysis revealed that only 4% of known studies gave specific instructions aimed at eliciting a *process,* such as cognitive processing or positive versus negative emotion. Since the publication of that review, only a few studies have given specific instructions, and most were aimed at promoting exposure and habituation (e.g., Kovac & Range, 2002; Nazarian, 2009; Pachankis & Goldfried, 2010) and cognitive reappraisal among participants (e.g., Gidron et al., 2002; Lu & Stanton, 2010; Nazarian, 2009). Of these studies, only three (i.e., Kovac & Range, 2002; Lu & Stanton, 2002; Nazarian, 2009) evaluated participant adherence to writing instructions. While Kovac and Range found that instructions had no influence on participant writing, the other two studies concluded that, for the most part, participants' writing was strongly influenced by their writing instructions.

The current study made use of archival data that included several emotional processing conditions modelled after the theories of exposure, cognitive re-evaluation, and sequential processing in order to examine which mechanism of emotional processing results in the deepest emotional processing in the expressive writing paradigm (See Table 1 for a summary). Furthermore, this study sought to test whether or not the depth of emotional processing was predictive of outcome.

Making Use of Archival Outcome Research

In psychotherapy and intervention research, process research is most often conducted in the context of some existing outcome study (see Greenberg, 1991). This programmatic approach to research allows studies on "process" to piggyback on the archival data of an existing outcome study, making the study of process more feasible, and providing a context of already determined outcomes when examining the preceding processes. Thus, the current study on emotional change processes made use of written narratives collected as part of a broader outcome study by Pascual-Leone et al. (2011). In that study, writing took place over three days in a quiet laboratory setting with special care given to individual privacy. All measures and writing were web-based and therefore completed on a computer. Furthermore, the population consisted of undergraduate university students enrolled in a psychology class and who volunteered to participate if they met certain inclusion criteria of having suffered from a traumatic experience.

For analyses in the current study, participants' raw narratives were used to develop a second generation of "process data" through observation-based coding. Selected measures from the original outcome study were also used. This study made use of the different writing conditions which instructed participants to write about their

emotions in accordance with specific theories of emotional processing. In addition to a control condition, the emotional processing conditions included a venting condition modelled after exposure theory, a meaning-making[1] condition modelled after cognitive reappraisal theory, and a sequential processing condition modelled after a theory of experiential change, described in more detail below.

In summary, this study investigated the differential effects of different mechanisms of emotional processing on depth of emotional processing in expressive writing. It further examined the extent to which depth of emotional processing predicted overall outcome (i.e., psychological functioning) among individuals who expressively wrote about a trauma they experienced. The expressive writing format further provided a unique way of studying processes common across psychotherapy and expressive writing without the influence of confounding therapist or treatment characteristics.

Hypotheses

Hypothesis 1: Participants in different process-directive conditions will evidence differences in emotional states in their written narratives. Although all participants were instructed to write about their emotions, and that the writing conditions were intended to influence the quality with which participants write about those feelings, it cannot be taken for granted that these differences will manifest in the actual written accounts. While session outcomes may or may not be different, such changes may or may not be apparent from a reading of the narratives. The aim of this hypothesis is to

[1] The parent study (Pascual-Leone et al., 2011) referred to this as the meaning-making group. However, it should be recognized that whether this group indeed "makes meaning" or not is, strictly speaking, a design intention in the parent study rather than an empirical fact. The current study actually sought (in part) to test the veracity of this assumption. However, with that caveat and for the purposes of continuity, we continue with using the same terminology as Pacual-Leone and colleagues.

demonstrate the degree to which the qualitative process of participants' written narratives can actually be influenced in a highly nuanced way.

Hypothesis 2: Differences exist in depth of emotional processing as a function of emotional processing condition. Although emotional processing does occur via the behaviour mechanism of exposure in therapy (e.g., Foa & Kozak, 1998; Foa et al., 2006) and expressive writing (Sloan & Marx, 2004), individuals undergoing this type of emotional change are not believed to reach the advanced emotional states of emotional processing identified by Pascual-Leone and Greenberg (2007) as relevant to resolving distress. Instead, participants reportedly stay with, and habituate to, the early expressions of distress in the Pascual-Leone and Greenberg model. In the case of cognitive reappraisal, individuals undergoing emotional change evidence the advanced meaning-making states of the model characteristic of meaning-making. However, Pascual-Leone and Greenberg's sequential model states that both early expressions of distress and advanced meaning making states are required for deepened emotional processing. For these reasons, it was hypothesized that individuals in the sequential processing condition will evidence significantly deepened levels of emotional processing in their writing when compared to written narratives in the venting (i.e., exposure) condition and the meaning-making (i.e., cognitive reappraisal) condition.

Hypothesis 3: Predicting psychological functioning outcome from depth and quality of emotional processing. As described, psychotherapy research suggests that depth of emotional processing is predictive of a good therapeutic outcome (e.g., Goldman et al., 2005; Pascual-Leone & Greenberg, 2007; Pos et al., 2003; Singh, 2008). Therefore, it was hypothesized that the same effect will be evident within the expressive writing task

in the current study. That is, deepened emotional processing will predict a good outcome (i.e., self-reported affective improvement and subjective resolution of trauma from pre-to-post writing task).

CHAPTER II

Method

Participants

A sample of 110 undergraduate students (N = 110), previously recruited from a voluntary undergraduate psychology participant pool as part of a larger outcome study on expressive writing (Pascual-Leone et al., 2011), was used for this process study. The sample consisted of 97 females, 12 males, and one transgendered individual. Unfortunately, the age characteristics of the sample were not available, but a total of 14.5% of individuals were in their first year of university, 27.3% in their second year, 29.1% in their third year, and 29.1% in their fourth year or above. In all, 63 participants were single, 44 were married or in a committed relationship, 2 were separated or divorced, and 1 was widowed. Of the participants, 67.3% identified their racial or ethnic background as white or Caucasian, 10.9% as black for African Canadian, 10% as South Asian, 3.6% as Arab or Middle Eastern, 1.8% as Hispanic or Latino, 1.8% as East Asian, .9% as Aboriginal or Native Canadian, and 3.6% did not identify with a racial or ethnic background listed.

Upon completion of the original outcome study, participants were compensated with a total of three course percentage points and $35. Inclusion criteria required that subjects (a) endorse the past experience of a "very stressful or upsetting event, crisis, or upsetting personal upheaval," and (b) that they still experienced distress or had unresolved bad feelings about, or felt stuck and pessimistic about the traumatic experience. In the outcome data, participants reported a range of personal difficulties,

including: suffering from the betrayal of a romantic partner or friend; being the victim of sexual assault, childhood abuse or maltreatment, a non-violent crime; the death of a family member or romantic partner; an eating disorder; and physical injury resulting in disfigurement.

There were no significant differences in participant outcomes (i.e., on the RS, STAI, and IES-R) as a function of trauma recency (*p*'s > .338), which is contrary to Frattaroli's (2006) finding of a large effect for those who wrote about a recent versus less recent trauma.

In order to roughly gauge how much support or processing of the traumatic event had occurred, participants were asked several questions, including if they had spoken to anyone about their trauma, if they had received counselling for their trauma, if they had received any psychiatric medication to help them deal with their trauma, or if they were in therapy or taking psychiatric medication at the time of the study. Only 24.5% of participants acknowledged not talking to someone about their trauma a. A total of 28.2% had received counselling for their identified traumatic experience. Similarly, 20.9% of participants were prescribed psychiatric medication to help them deal with their trauma.[2]

Participants rated how upsetting the traumatic occurrence was to them on a 7-point scale with a greater number indicative of more distress. The frequency statistics revealed that 41.8% of participants rated their trauma as a 7, 19.1% rated it as 6, 21.8% rated it as a 5, 6.4% rated it as a 4, 1.8% rated it as a 2 or a 3 and no one rated their trauma as a 1 or minimally upsetting. Of the sample, 52.72% of participants reported the

[2] At the time of the study, 8.2% of participants were in therapy and 8.2% were taking psychiatric medication.

year of the occurrence of their trauma. The recency of participants' traumatic events ranged from less than 1 year up to 26 years prior to writing (*M =4.26*, *SD* = 6.55).

Narratives ranged in length from 139 to 1051 words with an average of around 600 words. In an effort to avoid rater bias procedures created a double-blind (for raters and the researcher) to mask the origin of narratives. Thus, each narrative was assigned a randomized number, therefore masking the condition the narrative was written in and the visit at which the narrative was written. After completion of random number assignment, narratives were only referred to by their randomized number for the duration of coding.

Measures

Conditions. Participants in the parent (archival) study were randomly assigned to one of five control or experimental expressive writing conditions. The two control conditions consisted of an active and a task control condition. Those in the task control condition were instructed to write a non-emotional account of their activities in the 24 hours prior to their writing session. Participants in the active control condition were instructed to write about their "deepest thoughts and feelings" related to their trauma as in the classic expressive writing task (Pennebaker & Beall, 1986).

Three additional writing conditions—venting, meaning-making, and sequential processing—were subjected to experimental manipulation. The venting writing condition was modelled after the behavioural conceptualization of emotional processing, exposure, and guided participants to only write about the highly arousing, but undifferentiated emotions, of distress, rage, fear or shame related to their traumatic experience. The emotions that participants were instructed to write about in this condition represent early expressions of distress as described in Pascual-Leone and Greenberg's (2007) sequence

of emotional processing. In contrast, participants in the meaning-making condition[3], modelled after the cognitive-behavioural conceptualization of emotional processing, were instructed to only write about grief, mourning, assertive anger, or self-soothing related to their traumatic experience, which represent the low arousal, highly differentiated, advanced meaning-making states indicative of cognitive reappraisal, in Pascual-Leone and Greenberg's (2007) emotional processing model.

Finally, the sequential processing condition represents the only condition in which participants were guided to write differently on each of the three consecutive writing days. Together, this last set of writing instructions represents Pascual-Leone and Greenberg's (2007) complete, sequential model of emotional processing. In keeping with this, on the first day of writing, participants in the sequential condition were instructed to write about distress, rage, fear or shame related to their traumatic experience as in the venting condition. Then, on the second day of writing, participants were instructed to only write about a central self-related concern (e.g., self-criticism, sense of inadequacy, etc.) and thoughts and feelings related to unmet personal needs, whether they are interpersonal or existential. The third day writing instructions encourage participants to only write about grief, mourning, assertive anger, or self-soothing related to their traumatic experience as in the meaning-making writing condition. See Table 1 for a summary of the conditions and their theoretical derivations. The five conditions from the Pascual-Leone et al. (2011) outcome study will be used in the present study as predictors of depth of emotional processing using the process measures outlined in the following section.

[3] The label "meaning-making" is not intended to be an empirical observation or fact but rather a hypothesis and is used for the purpose of continuity given the archival nature of the data

Process measures.

Classification of affective-meaning states-modified (CAMS-M; based on Pascual-Leone & Greenberg, 2007). The original CAMS measure, an operationalization of Pascual-Leone and Greenberg's (2007) model of emotional processing, was designed to code for the presence of emotional states experienced by clients, when they are open to, and engaged with emotion while in psychotherapy. For the purposes of the current study, the original observational measure was modified to code for the presence of the same emotional states in expressive writing narratives. The original measure used three indicators, emotional tone, involvement, and meaning, to inform the presence of each emotional state. Given that the current study made use of written narratives rather than video footage of emotionally activated events, the criteria for involvement was modified to suit coding from written text. As previously mentioned, global distress, rejecting anger, and fear/shame are considered early expressions of emotional states due to their presence in cases wherein client distress was and was not resolved. On the other hand, assertive anger, self-soothing, and hurt/grief are considered advanced meaning-making emotional states due to their presence only in cases wherein client emotional distress was resolved. Thus, six affective-meaning (i.e., emotion) states were coded from each participant narrative.

In the present study, each narrative was coded for the presence or absence of each emotion state. The CAMS has demonstrated good predictive validity of psychotherapy within-session effects. Furthermore, inter-rater reliability coefficients have ranged from .76 to .86 Kappa (Pascual-Leone & Greenberg, 2007; Singh, 2011) when client statements were coded from videotaped therapy sessions.

Rating procedures for CAMS. CAMS coding was completed after the completion of EXP coding, by the same raters, to avoid influencing coding on either measure. Each rater completed a total of 30 hours training on the measure, consisting of reading the original CAMS manual (i.e., Pascual-Leone, 2005) and Pascual-Leone and Greenberg's (2007) study involving the CAMS, training with an expert rater (Dr. Antonio Pascual-Leone), and the independent coding of 30 practice narratives. The raters met after each set of 10 narratives to discuss discrepancies and any coding difficulties that arose. Regular meetings were also scheduled with the expert rater to ensure conformity to coding guidelines. Visit three narratives were coded for the presence or absence of the six CAMS affective states: global distress, fear/shame, rejecting anger, assertive anger, self-soothing, and hurt/grief. The primary rater, the author, coded 110 narratives (100% of narratives from visit 3) and the secondary rater coded 55 visit three narratives, resulting in 50% overlap. CAM rating was only conducted on visit 3 narratives.

The experiencing scale (EXP; Klein, Mathieu-Coughlan, & Kiesler, 1986). Originally designed to code written psychotherapy transcripts, the EXP is a 7-point scale used by expert raters to assess the extent to which individuals attend to and explore their personal experiences and use this information to resolve their problems. At the very lowest levels of the scale (i.e., 1 and 2), participants speak about their personal experiences in a detached, superficial cognitive manner. Intermediate levels (i.e., 3 and 4) represent an individual's internal reaction to external events, including the description of resulting emotions. Advanced levels of experiencing (i.e., 5 to 7) involve participants' exploration of a core problem, movement toward its resolution, newly emerging feelings towards the core problem, and an integration of these components.

While it was originally designed for rating each talk-turn of spoken discourse, the scale has also been successfully used to reliably code written discourse (Le, 2006; Mundorf & Paivio, 2011; Sells & Martin, 2001). Following this, the current study will also apply ratings to written trauma narratives such that each statement or complete idea will be assigned an EXP coding and a modal EXP score for each narrative will be used in analyses. The experiencing scale is a highly validated measure and is considered a gold standard of experiential process in psychotherapy (Greenberg & Pascual-Leone, 2006). In previous research inter-rater reliability coefficients for the scale have ranged from Pearson correlation of .76 to .91 (i.e., Greenberg & Malcolm, 2002; Klein at al., 1986) .76 to.84 Kappa (i.e., Pos et al., 2003; Singh, 2008).

Rating procedures for EXP. As with previous studies of experiencing (e.g., Mundorf & Paivio, 2011; Pos et al., 2003), modal scores were taken as the unit for analyses involving EXP as they represent participants' more enduring levels of experiencing (Pos, Greenberg, & Warwar, 2009). Narratives were divided into meaning units; a sentence or complete thought consisting of no more than four sentences, which was then coded for modal EXP level.

For the current study, two raters were responsible for determining the modal EXP level of narratives. The primary rater (the author) is a graduate student in clinical psychology with over 200 hours of videotaped therapy session EXP rating experience prior to this study and was trained by an expert rater (Dr. Antonio Pascual-Leone). The secondary rater, an undergraduate student in psychology, received 30 hours of training on the EXP. Training consisted of reading Klein et al.'s (1986) coding guidelines, reviewing criteria determined by the expert rater, and the independent coding and review of 40

narratives to familiarize the secondary rater with the measure and establish inter-rater reliability. Both raters met after each set of 10 narratives to discuss discrepancies and any other coding issues. A coding aid (see Appendix D) was used to facilitate decision-making during coding.

Treatment outcome measures. Treatment outcome refers to an individual's overall outcome (e.g., symptom reduction, change in affect) once a particular intervention is completed. Session outcome, on the other hand, refers to an individual's outcome after a given session during the course of an intervention. Only treatment outcome measures were used to assess participant psychological functioning and, as such, are described below.

The Resolution Scale-Modified (RS-M; based on Singh, 1994). The original RS was developed to measure the degree of personal resolution of a past interpersonal trauma or emotional injury. Since then, it has been used in several outcome studies on "unfinished business" to assess the degree of resolution of long-standing interpersonal grievances a participant may have with a personally significant other (e.g., Greenberg & Malcolm, 2002; Paivio & Greenberg, 1995). In this self-report measure, individuals rate their degree of agreement with 12 items aimed at assessing the extent to which they feel that their interpersonal trauma has been resolved on a 6-point Likert scale (1 = not at all, 6 = very much). Items in the RS-M have been modified slightly for the current study to refer to a target "issue or concern" (i.e., traumatic experience) rather than a "significant other" per se. For example, items include, "I feel frustrated about not having my needs met regarding this issue" and "I feel unable to let go of my unresolved feelings regarding this issue." Scores for each item are tallied to give an indication of overall trauma

resolution. Test-retest reliability of the original RS has ranged from Pearson correlations of .73 to .81 and demonstrated pre-to-post concurrent validity with other outcome measures (Singh, 1994). The RS has further evidenced good internal consistency reliability (α = .82; Paivio et al., 2001).

As indicated, the original (Singh, 1994) scale was modified only minimally to reflect traumatic and stressful experiences that may not be exclusively interpersonal in nature (see Appendix E). As a result, it is expected that the RS-M will demonstrate similar psychometric properties to the original given that few changes were made to the scale and that the scale is still assessing the same construct, resolution of psychological trauma and personal difficulty regarding a target concern.

The State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The STAI is a measure designed to assess state anxiety, a more temporary type of anxiety; and trait anxiety, a more enduring type of anxiety rooted in personality, among adults. The inventory also yields an overall anxiety score. In the current study, only trait portion of the inventory was used, The trait inventory consists of 20 statements to which individuals rate the frequency they have experienced these statements in the past two weeks on a four-point Likert scale, ranging from "almost never" to "almost always." Statements include the following, "I feel nervous and restless," and "I take disappointments so keenly that I can't put them out of my mind." Some items are reversed scored and higher scores are indicative of greater anxiety (see Appendix F). In order to best capture anxiety as an outcome measure, and to prevent overlapping testing points, the inventory's instructions were modified to ask participants

to rate how they have been feeling in "the past two weeks" instead of how they "generally feel," Internal consistency reliability estimates have ranged from .86 to .95.

The Impacts of Events Scale-Revised (IES-R; Weiss & Marmar, 1997). The IES-R is a 22-item questionnaire designed to assess how a traumatic event has affected an individual's psychological functioning. Although it contains three subscales that assess the PTSD symptom clusters of intrusion, avoidance, and hyperarousal, the IES-R is not a PTSD diagnostic tool. Individuals rate the extent to which each of the 22 statements have been distressing to them in the past seven days on a 5-point Likert scale, ranging from 0 "not at all" to 4 "extremely." Statements include, "I had trouble staying asleep," "I tried not to think about it," and "pictures about it popped into my head." Higher scores indicate greater difficulty with a stressful life experience (see Appendix G). The measure has evidenced good discriminant validity and good internal consistency reliability.

Procedure for Collection of Raw Data in the Parent Study

In the original outcome study of Pascual-Leone et al. (2011), prior to the first expressive writing session, participants completed the Resolution Scale (Singh, 1994), State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), and the Impacts of Events Scale (Weiss & Marmar, 1997) among other measures (not used in the current study) and these served as a baseline measure. During each writing session, participants received detailed writing instructions specific for one of the five conditions and were allotted 15 minutes to write about the traumatic experience they had chosen to focus on for the study. Writing sessions took place on each of three consecutive days (i.e., Monday, Tuesday, and Wednesday) and all writing was completed on computers. Writing took place in a quiet computer lab with 1 to 6 participants per visit

and partitions were erected to increase the privacy for each participant. On a fourth visit two weeks after the final writing session, participants once again completed the RS, STAI, and IES-R (and other measures not used in the current study). Finally, study debriefing, including the distribution of on-campus counselling resources, and payment for participation also took place at the conclusion of the original outcome study.

CHAPTER III

Results

EXP Reliability

Following the training period, the primary rater coded 220 narratives (i.e., 100% of visit one and three) and the secondary rater coded 80 narratives, resulting in 36% overlap. Inter-rater reliability was calculated using Cohen's Kappa and resulted in a coefficient of .827. According to Fleiss (1981), agreement of .75 or higher is considered excellent agreement beyond chance. This level of agreement is also in line with past findings (Pascual-Leone & Greenberg, 2007; Singh, 2011) of EXP reliability between 76 and .86 Kappa. All coding discrepancies were resolved by consensus for use in subsequent analyses, which suggests that the true level of reliability of this data set is likely to be higher than reported.

CAMS Reliability

As discussed in the methods section, rating on the CAMS consisted of binary coding (presence vs. absence); however, the objective of coding emotional states using the CAMS was to capture "emotional profiles" based on the presence (or absence) of six different emotions (global distress, fear/shame, rejecting anger, assertive anger, self-soothing, and hurt/grief). For this reason, the reliability of ratings for a given emotion was not as important as establishing reliability on the *profile of emotions*. As reference for comparison, the likelihood of nested probabilities was 1.6% (i.e., .5 [chance probability of presence or absence] to power of 6 [one for each coded emotion]), thereby making it unlikely that an emotional profile with six emotions would be agreed upon by chance. Percentage agreement on all six emotions (present/absent) for a given narrative

ranged from 33-100% with an average agreement of 80%. Again, coding discrepancies on individual emotions were resolved by consensus and used in subsequent analyses.

Hypothesis 1: Participants in Different Process-Directive Conditions Will Evidence Differences in Emotional States in their Written Narratives

Chi-square tests were used to evaluate whether participants differed in their emotional states based on their writing conditions. All tests satisfied the chi-square statistical assumption that each cell have adequate sample size (n = 5). A chi-square test between condition and the presence or absence of each CAMS affective-meaning state at the visit 3 writing session was conducted. Conditions significantly differed in their presence of global distress, χ^2 (4, N = 110) = 39.160, p < .001, which is likely due to the difference between the frequency present in the control group and the relatively even frequencies in all of the other groups, as seen in Figure 3. It was expected that participants in the control group would have a low frequency of global distress, which they did at 21.1%. In contrast, participants in the active control and venting conditions had a greater presence than absence of global distress as expected (i.e., 86.4% and 91.3%). However, it was expected that there would be a lower frequency of global distress in the meaning-making and sequential processing conditions as compared to the other conditions because their instructions promoted the expression of advanced CAMS meaning-making states, but this did not appear to be the case. The frequency of global distress was 85.7% and 88%, respectively, which is on par with the other active emotion-writing conditions.

Conditions also significantly differed in frequency of fear/shame, χ^2 (4, N = 110) = 36.349, p < .001. As Figure 3 shows, this finding is also likely the result of the overall

difference between the low frequency in the control group and the relatively equal frequencies in all of the other groups. The frequencies of fear/shame across conditions demonstrated the same pattern as global distress with the control condition having a lower frequency of fear/shame presence than the other conditions. Similarly, the meaning-making and sequential processing conditions had an unexpectedly higher presence of fear/shame than expected. Rejecting anger frequency also differed across conditions, χ^2 (4, N = 110) = 16.880, p = .002, though in a different way. Again, participants in the control condition had a low frequency of rejecting anger (10.5%). Participants in the venting condition had a high frequency of rejecting anger (73.9%), which was consistent with the instructions they were given. For participants in the remaining conditions, there was an approximately equal split between the presence and absence of rejecting anger within each condition as seen in Figure 3. This finding is not what was hypothesized for the meaning-making and sequential processing conditions given their instructions.

Self-soothing was the only advanced meaning-making state (among assertive anger, and hurt/grief) that showed a difference in presence among the experimental conditions, χ^2 (4, N = 110) = 14.899, p = .005. Participants in the control condition had a lower frequency of self-soothing (5.3%), as predicted. With the exception of the venting condition, participants in the remaining conditions evidenced approximately the same frequency of self-soothing. This finding in the meaning-making and sequential processing condition is unexpected due to the fact that self-soothing would be expected to be more frequently observed because writing instructions promote the expression and exploration of advanced meaning-making CAMS states, such as self-soothing.

Participants in the venting condition evidenced a lower frequency of self-soothing (26.1%) than the other conditions, which was expected as a function of their writing instructions. As previously mentioned, the frequency of assertive anger (χ^2 [4, N = 110] = 6.727, p = .151, *ns*) and hurt/grief (χ^2 [4, N = 110] = 5.165, p = .271, *ns*) did not differ across conditions. In summary, there was only some evidence for the influence of instructions on participants' emotions. Participants' emotions did not perfectly map on to the instructions given in their particular experimental condition. Therefore, this finding does not support that hypothesis that the quality of feelings expressed by participants in their narratives would be influenced in a highly nuanced way (see Figure 3).

In an effort to determine if there were groups with observable differences in emotional states among participants, a two-step cluster analysis was completed using the CAMS affective-meaning states as the clustering variables. The first step in a two-step cluster analysis assigns cases to pre-clusters, which are then clustered using a hierarchical clustering algorithm. Log-likelihood was used as the distance measure and the Bayesian Criterion (BIC) was used as the clustering criterion. The results revealed three discernable clusters with a Silhouette coefficient of 0.4, indicating fair cohesion and separation. The most important variable in determining the clusters was self-soothing followed by global distress, fear/shame, rejecting anger, assertive anger, and hurt/grief. The first cluster, comprised of 14.5% of the sample (n = 16), essentially consisted of what would be expected to be participants in the "functional control group," in that they did not express emotions in their writing (sometimes despite instructions to do so). None of these participants showed engagement with global distress, rejecting anger, self-soothing, assertive anger, or hurt/grief in their narratives though 6.2% experience fear/shame. The

second cluster (n = 43) can be considered the "distressed group" consisted of participants who did not experience any advanced meaning-making states (i.e., self-soothing, assertive anger, and hurt/grief). However, 100% of participants in this cluster were expressed global distress, 79.1% experienced fear/shame, and 60.5% experienced rejecting anger. Taking Pascual-Leone and Greenberg's (2007) psychotherapy findings into account, these individuals, who only expressed early distress, would be expected to not have a good treatment outcome. Outcome findings related to clusters will be discussed in relation to hypothesis 3. The third cluster (n = 51) is composed of participants who endorsed both early expressions of distress and advanced meaning-making states, and can be thought of as the "emotional processing group." In contrast, 80.4% of participants in this cluster experienced global distress compared to 100% in the other two clusters. A total of 78.4% of participants in the cluster experienced fear/shame, and only 49% experienced rejecting anger. As for advanced meaning-making states, 80.4% of participants in the cluster experienced self-soothing, 23.5% experienced assertive anger, and 17.6% experienced hurt/grief. Based on Pascual-Leone and Greenberg's (2007) finding in psychotherapy, this group would be expected to have a good treatment outcome, which is tested in hypothesis 3 (see Figure 4).

Hypothesis # 2: Depth of Emotional Processing as a Function of Writing Condition (Main Effect of Condition)

A 5 (writing conditions) x 2 (time of visits) mixed ANOVA, between subjects by within subjects, was computed to examine the effects of expressive writing condition and time (i.e., visit 1 vs. 3) on the depth of participant experiencing. As a result of a restricted modal EXP range (i.e. 1 to 3), the ANOVA statistical assumption of normality was not

satisfied in preliminary analyses. The data were also examined for outliers and only one case, with a modal score of 5, was present. The ANOVA was re-run without the outlier to determine if it was contributing to the significant findings that were evidenced. However, there was no difference in the statistically significant findings when the outlier was removed. Due to this fact, and the belief that the case involving the modal EXP score of 5 represented a true data point, analyses proceeded with the inclusion of the identified outlier. This departure from normality likely contributed to the violation of the other statistical assumptions as some, such as sphericity, are sensitive to minor departures of normality (Stevens, 2009). However, when group sizes are roughly equal and the sample size is large, as in the current study, ANOVA is robust to violations of homeogeneity of variance/covariance. Most importantly, the data were collected in an independent manner whereby individuals' ratings could not influence one another; therefore, the assumption of independence of observations was not violated. Thus, although some of the statistical assumptions of ANOVA were violated, the study is exploratory in nature and serves the purpose of assessing the usefulness of expressive writing for clinical populations in the future.

Overall, the results of the mixed (between subjects by within subjects; i.e., condition by time) ANOVA revealed a significant difference in depth of modal experiencing among participants in different writing conditions over time, $F(4, 105) = 76.419$, $p < .001$, $\omega^2 = .733$. A planned simple contrast comparing each condition to the sequential processing condition further revealed that participants in the sequential processing writing condition exhibited significantly higher modal levels of experiencing ($M = 2.240$, $SD = .255$) than participants in the task control condition ($M = 1.053$, $SD =$

.257), $p < .001$. Furthermore, the analysis revealed a possible trend ($p < .06$) whereby participants in the sequential processing condition exhibited higher levels of modal experiencing ($M = 2.240$, $SD = .255$) than participants in the meaning-making writing condition ($M = 2.095$, $SD = .252$), $p = .059$, *ns*. Therefore, the hypothesis that participants in the sequential processing group would exhibit significantly deepened levels of experiencing than those in the venting and meaning-making conditions was not supported. Though not significant, a positive trend ($p = .06$) was noted with participants in the sequential processing group demonstrating higher levels of experiencing than those in the meaning-making condition. Finally, for the sake of completeness, Tukey's HSD post-hoc procedure was also computed to determine if any other differences among writing conditions existed and revealed that all four active writing conditions significantly differed from the task control condition, $p < .001$. This means that experiencing was deeper (i.e., higher on EXP) when participants were given instructions to write about their feelings related to a trauma (either by prescribing specific emotions or not), as compared to when they were instructed to write on non-emotional material, and this effect was large ($\omega^2 = .733$).

Differences in level of experiencing as a function of time (main effect of time). Although no specific hypotheses were made with respect to time (i.e., visit), exploratory analyses showed no significant difference in participant experiencing between writing visit one ($M = 1.977$, $SD = .367$) and visit three ($M = 1.920$, $SD = .399$), $F(1, 105) = 1.155$, $p = .285$, *ns*, $\omega^2 = .001$.

Experiencing: The interaction of time by condition. Further, examining participants' level of experiencing revealed a significant interaction between writing

condition and time, $F(4,105) = 6.056$, $p < .001$, $\omega^2 = .293$. A custom contrast examined the difference between participants' modal level of experiencing in the classic expressive writing (i.e., active control group) and the meaning-making group at visit 1 and visit 3. The results of this contrast were significant ($F[1, 105] = 21.737$, $p < .001$, $\omega^2 = .361$). This indicated that while both conditions maintained higher experiencing scores than the writing control they showed a uniquely changing relationship to one another, such that participants in the sequential processing group and participants in the classic expressive writing group significantly differed in their level of experiencing across time points. Specifically, participants in the sequential processing condition had higher levels of experiencing at visit one ($M = 2.48$, $SD = .365$) than visit three ($M = 2.00$, $SD = .385$), whereas participants in the classic expressive writing group showed the opposite trend with lower scores at visit one ($M = 2.045$, $SD = .366$) and higher scores at visit three ($M = 2.318$, $SD = .394$; see Figure 2).

Effect sizes were calculated to elucidate the observed differences and pattern of changed experiencing from visit one to three for participants in both groups. The magnitude of reduced experiencing from visit one to visit three for participants in the sequential processing condition was large ($d = -1.28$). In contrast, however, the magnitude of increased experiencing from time one to time three in the classic writing group was moderate ($d = .718$). When comparing experiencing differences between both conditions at visit one, a large effect was evidenced at time one ($d = 1.190$) with a more moderate effect at observed at visit three ($d = -.816$).

Additional analyses: design controls. Given that the venting writing group had the same visit one instructions as the sequential processing writing group, it was of

particular interest to determine whether or not participants in these groups had differing levels of experiencing at visit one. Thus, more detailed exploratory analyses were conducted to clarify this issue. However, an independent samples t-test demonstrated there was no significant difference in depth of experiencing between the sequential processing group (M = 2.48, SD = .510) and the venting group (M = 2.25, SD = .442) when compared at visit one, $t(47) = -1.684$, $p = .099$. Similarly, the sequential processing writing group had the same writing instructions as the meaning-making writing group at visit three; therefore, a further t-test explored whether or not participants in these two groups significantly differed in experiencing at visit three. Results suggest that the sequential processing group (M = 2.00, SD = 0.00) did not differ from the meaning-making group (M = 2.05, SD = .218) in depth of experiencing at visit three, $t(44) = .1.093$, $p = .280$. These findings suggest the changing depth of experiencing by time for the sequential (relative to the classic writing) condition cannot be easily attributed to the different components of that condition, but rather to its structure or sequential nature.

Hypothesis 3: Predicting Psychological Functioning Outcome from Depth and Quality of Emotional Processing

To account for individual differences in baseline symptoms, pre-to-post residual scores were calculated and used as indices of psychological functioning outcome on all outcome measures (i.e., RS, STAI, and IES-R). Furthermore, in keeping with previous research using the EXP scale in expressive writing (i.e., Pos et al., 2003), an EXP change score was calculated to control for early experiencing in determining the effect of experiencing on outcome. No correlations were evidenced among CAMS affective-meaning states and EXP change scores (all p's > .147).

Next, correlation analyses were conducted to explore the relationship between a change in EXP and treatment outcomes. One case was missing baseline data for all three outcome measures; therefore, it was excluded leaving a sample of $N = 109$ for all remaining analyses. No significant relationship was found between change in EXP and the resolution scale, $r(107) = .073$, $p = .451$, *ns.* A significant relationship between change in EXP and treatment outcome, as measured by the STAI (i.e., anxiety), was observed, $r(107) = -.209$, $p < .05$, such that an increase in experiencing change corresponded to a decrease in overall anxiety. Finally, a non-significant finding, but positive trend, was observed among change in experiencing and treatment outcome as measured by the IES-R, $r(107) = .172$, $p = .073$, indicating that as change in experiencing increases, so does the impact of the traumatic event at outcome, four weeks later.

Using the same cluster variables that were developed under hypothesis 1, both individual CAMS affective-meaning states and clusters, based on the CAMS, were used to predict outcome. A series of t-tests were conducted to determine whether or not the presence of each affective-meaning state differentially led to each treatment outcome. No significant differences were found between the presence and absence of any of the six CAMS affective meaning states (all t's > -.845, all p's > .159). ANOVAs were used to similarly ascertain whether or not participants in the three CAMS clusters differed with respect their outcomes on the RS, IES-R, and the STAI. None of the analyses were significant (all F's > .263, ($df = 3, 106$) all p's > .510); therefore, no significant differences were found between clusters on treatment outcome.

CHAPTER IV

Discussion

The overarching goal of this study was to examine whether or not the emotional processes that have been demonstrated to make psychotherapy successful can be translated to the expressive writing paradigm. Rating participants' personal disclosures on experiencing, as done in the current study, has been demonstrated to be a valid method of assessing depth of emotional processing (e.g., Pos et al., 2003; Pos, Greenberg, & Warwar, 2009; Singh, 2008). Additionally, determining participants' expression of affective-meaning states in Pascual-Leone and Greenberg's (2007) model of emotional processing further assessed emotional processing. Using this model, the study sought to determine if individuals can be successfully "walked through" stages of emotional processing, thereby evaluating the model in general and its applicability to expressive writing. These two methods of studying emotional processing have each been shown to be relevant to the successful resolution of distress.

In order to test the effects of process directive instructions on emotional processing, the current study made use of the five experimental writing conditions that were created in the archival parent study: (a) task control, (b) active control, (c) venting, (d) meaning-making, (e) sequential processing. The study was primarily one of intervention processes (i.e., emotional processing), but the relationship between process and outcome was examined to inform the extent to which the emotional processes being studied were related to outcome.

Summary of Key Findings

The study has yielded a number of findings, some of which were different than anticipated and each will be addressed in sub-sections of the discussion that follows. First, although participants' emotional states did not perfectly map onto the condition they were placed in, three clusters were eventually identified based on the CAMS affective-meaning states actually disclosed by participants. These clusters, in addition to the original CAMS affective-meaning states, were used in subsequent outcome analyses. Second, instructions to write about feelings or emotions resulted in deeper levels of experiencing than instructions to write an account of the previous 24 hours. Third, participants in the sequential processing and active control conditions significantly differed in their experiencing levels across time. Such an interaction was not expected given that the first and last visits were only separated by two days. Those in the sequential processing condition began with higher experiencing, which declined over time. In contrast, those in the active control condition began with lower experiencing, which increased by the end of the study a few days later. Fourth, an increase in experiencing was related to a decrease in anxiety but was not found to be related to the impact of traumatic event or its resolution per se. Last of all, the presence of CAMS affective-meaning states did not have a differential effect on outcome and CAMS clusters did not differ from each other in their respective outcomes.

Differences in Emotional States in Written Narratives

Differing frequencies of global distress, fear/shame, rejecting anger, and self-soothing were observed among participants in the different experimental writing conditions. Participants in all other conditions differed from those in the control condition

on their expression of emotions mentioned. However, based on their individual writing instructions for visit 3, participants did not always exhibit the profile of different emotions that were expected based on their assigned condition. Participants in the active control condition were given open-ended instructions to write about their "deepest thoughts and feelings" at each of the three writing times. Those in the venting condition were only told to write about early expressions of distress (i.e., global distress, fear/shame, and rejecting anger) in Pascual-Leone and Greenberg's (2007) model at each of the three writing times. Therefore, the finding that participants in these groups exhibited a higher presence of global distress than participants in the other conditions was as hypothesized. In contrast, it was an unexpected finding that participants in the meaning-making and sequential processing conditions had roughly the same presence of global distress and fear/shame as the active control and venting conditions. This equivalence was despite these conditions (i.e., sequential, and meaning making) having one or several sets of instructions to write about advanced meaning-making states (i.e., self-soothing, assertive anger, and hurt/grief) as described in Pascual-Leone and Greenberg's (2007) model. Similar findings were evidenced among the conditions for rejecting anger. Participants in the venting condition were more likely to have a presence than absence of rejecting anger and approximately half of those in the other conditions (i.e., exposure, sequential processing and active control) demonstrated rejecting anger. This particular finding was not expected in the meaning-making and sequential processing conditions because of their instructions that encourage other emotions. Given their last visit instructions, it was expected that participants in the meaning-making and sequential processing conditions would exhibit higher frequencies of self-soothing

presence than the other conditions; however, this was not the case with the exception of the venting condition.

Results of other studies that manipulated writing instructions have also been mixed as to whether or not the instructions influence the way participants write. Kovac and Range (2002) included a cognitive-processing, exposure, and control condition in their study on expressive writing for suicidal thoughts and feelings and found that their writing instructions did not influence how participants wrote. On the other hand, a study by Nazarian (2009) concluded that manipulating writing instructions to target processes is effective. Nazarian added that writing instruction manipulation did result in some findings that were not consistent with what would be expected given the theoretical underpinnings of certain instructions. For example, the exposure condition demonstrated habituation over time but also cognitive reappraisal and the cognitive reappraisal group used more positive emotion words than standard expressive writing group.

The differences in the findings of these two studies may be attributable to the ways in which participants' adherence to writing instruction was measured. Both studies used what could be considered process measures, but the processes measures differed in each of the studies. To assessed condition adherence, both Nazarian (2009), Kovac and Range (2002) used a computerized linguistic analysis to measure the frequency of word usage that referenced causation and insight. Moreover, both studies also used a self-report measure to ask participants the extent to which their essays were personal and meaningful. However, Nazarian (2009) also added to the linguistic analyses a word count of positive and negative words. It is possible that the larger breadth of Nazarian's assessment of condition adherence and more fine-grained analysis (i.e., the analysis of

positive and negative emotions) is responsible for the detection of differences of process differences among writing groups.

The results of the current study are mixed and fall somewhere in between those of Kovac and Range (2002) and Nazarian (2009) but more closely ally with the findings of Nazarian. Although, in the current study, participants' writing did not perfectly map onto the conditions' instructions, trends, particularly related to early expressions of distress, were as expected and consistent with theoretical underpinnings of the model being explored. Though the experimental conditions did not produce the emotional states expected in the narratives, three clusters were later identified based on the CAMS. These were essentially common "profiles of emotional presentation" as were discernible in written narratives using the CAMS. The first cluster, the *functional control group*, consisted of participants who essentially did not express emotions in their writing. The second cluster, the *distressed group*, only evidenced early expressions of distress (i.e., global distress, fear/shame, and rejecting anger). Participants in the third cluster, the *emotional processing group*, expressed early distress emotions and advanced meaning-making states (i.e., self-soothing, assertive anger, and hurt/grief).

Remarkably, the present study's cluster analysis shared cluster characteristics with Pascual-Leone's (2005) cluster analysis. In his seminal CAMS study of 34 clients in a clinical trial on emotion-focused therapy for depression and long-standing interpersonal grievances, Pascual-Leone identified clusters based on the duration of CAMS affective-meaning states. Ratings were made from videotaped psychotherapy sessions and four clusters resulted: (a) *distressed group* (b) *protester group* (c) *fearful and ashamed group* (d) *minimally distressed/focused group*. Similar to the present study's *distressed group*,

Pascual-Leone identified a cluster, with the same name, which consisted of clients who exhibited a high prevalence of global distress, followed by more moderate prevalence of fear/shame and rejecting anger. Additionally, Pascual-Leone identified another cluster, labelled the *minimally distressed/focused group,* which was comprised of clients who showed a moderate to low prevalence of early expressions of distress compared to the previously mentioned cluster. This profile is similar to that of the *emotional processing group* in the current study. However, the current study's cluster analysis differed from Pascual-Leone's in that his study identified two additional clusters. One of these clusters, which he dubbed the *fearful and ashamed group*, contained individuals with a high prevalence of fear/shame and a lower prevalence of global distress and rejecting anger. The other cluster, the *protesting group*, consisted of clients who demonstrated a high prevalence of global distress and rejecting anger but a low prevalence of fear/shame. Given the disparate populations (i.e., college versus clinical) and the differing interventions (i.e., expressive writing versus psychotherapy) it is interesting to note that there is any overlap in these clusters at all. The resulting overlap speaks to the strength of Pascual-Leone and Greenberg (2007) emotional processing model.

One limitation of applying the aforementioned model to expressive writing is that it was originally intended to capture emotional processing in psychotherapy where clients speak about their distress at length (e.g., 45-60 minutes) over many sessions (e.g., 12-16 sessions). It can be reasonably assumed that reaching some advanced meaning-making states, such as assertive anger, and hurt/grief, takes time. In the current study, participants only wrote for 15 minutes at a time over three consecutive days. Therefore, it might be unreasonable to expect that participants can reach these advanced meaning-making states,

even though many participants did express the advanced meaning-making state, self-soothing. It remains to be seen why self-soothing is "easier" to express in a short amount of time when compared to the other advanced meaning-making states (i.e., assertive anger and hurt/grief). One possibility is that while self-soothing is functionally equivalent to assertive anger, clients might also be able to express it in parallel with early expressions of distress.

Depth of Emotional Processing Based on Writing Condition

In keeping with the literature, we have defined *experiencing* as the degree of client engagement and exploration of their feelings and meaning related to their personal distress (Klein, Mathieu-Coughlan, & Kiesler, 1986). Using theory as a guide (i.e., Pascual-Leone & Greenberg, 2007, as depicted in Figure 1), the findings of emotional processing differences among the experimental conditions are contrary to what was expected. Participants the sequential processing condition did not have significantly higher levels of experiencing than those in the other experimental writing conditions. Although not statistically significant, the sequential processing condition showed a trend ($p <. 06$) towards having higher levels of experiencing than participants in the meaning-making condition. Furthermore, all of the experimental writing conditions, not just the sequential processing condition, demonstrated higher levels of experiencing than those in the control condition. This parallels Pachankis and Goldfried's (2010) findings that different experimental groups (i.e., an exposure group and a classic expressive writing group) in an expressive writing study differed from the control group but not each other in their depth of experiencing. An interesting finding was that, overall, participants did not differ in experiencing from first to last visit. Despite there being no main effect of

time, participants in the active control and sequential processing conditions did differ in experiencing based on their first and last visit narratives, revealing an interaction. Sequential processing participants had higher levels of experiencing at their first visit than active control participants and this pattern reversed by time three whereby active control participants had higher experiencing than sequential processing participants. Although the changes amounted to small differences in experiencing, all of them were found to be large effects. These patterns were highly surprising given that the structure of the sequential processing condition was expected to lead to steady increase in experiencing in contrast to the more open-ended instructions of the active control condition.

In reflecting on why this interaction may exist, it is quite possible that the structure of the writing instructions played a role in the observed differences in experiencing for the sequential processing versus active control groups. This possible interpretation argues that structure and directiveness, as manifested in the writing instructions across conditions, may be a latent variable (i.e., an unaccounted, third variable) explaining this finding. The sequential processing group had highly structured instructions and strict adherence to these instructions was hypothesized to lead to higher levels of experiencing than the active control at visit one.

In contrast, active control participants' instructions were highly unstructured, with few process directives other than "expressing your thoughts and feelings," which could account for the fact that participants in this condition evidenced lower levels of experiencing at visit one. Yet, a decline in experiencing was evidenced among sequential processing participants (which is to say they did not write about meaning- making) at

visit three. In this instance, it is possible that highly structured instructions might be too rigid and promote deviation, resulting in lower levels of experiencing.

An increase in experiencing among active control writers at visit three might suggest that more open-ended instructions (less structure and directiveness) may have allowed participants to arrive at a similar level of experiencing as sequential processing writers but with more time, coming to more specificity in meaning by their own self-directed process. A limiting factor on this interpretation is that, at visit one, the sequential processing group evidenced higher levels of experiencing than the venting and meaning-making conditions, which also had highly structured instructions. It is encouraging that the least amount of change in experiencing occurred between the venting condition and sequential processing condition, which had the same visit one instructions, differences which should be attributable to the hazards of random assignment.

Nonetheless the results of the interaction beg the question: is there a maximum level of experiencing writers can achieve without outside intervention, such as those offered by a therapist? Certainly the literature (e.g., Gendlin, Beebe, Cassens, Klein, & Oberlander, 1968; Pos et al., 2003) suggests that people have differing a priori capacities to engage in experiencing and that one of the purposes of experiential therapy is to facilitate deeper experiencing in clients (Paivio & Pascual-Leone, 2010). In the present study, the sequential processing condition best represents process experiential therapy, whereby therapists direct client processes, such as experiencing (Greenberg, 2006). On the other hand, the active control condition best represents the spirit of Rogers' person-centered therapy, whereby the therapist is nondirective and allows the client to direct the session (Rogers, 1946). The former approach requires a therapist to direct the client's

experiencing, which was attempted in this study by manipulating instruction to model an experiential model of emotional processing. The problem with simply giving instructions to model experiential interventions is its rigidity in contrast to the interactive process of therapy between the therapist and the client. In session, a therapist chooses an intervention based on a client's speech and body language and clients then respond according to therapist responses, what Stiles (1988) terms *responsiveness.* Therefore, participants in the current study on narratives, regardless of condition, could not fully benefit from the dynamic, interactive process of having a "responsive set of instructions" (i.e., as might have come from a therapist), which may account for the overall similar levels of experiencing in the sequential processing and active control conditions.

Relating Depth and Quality of Emotional Processing to Outcome

Of all the outcomes, participants' levels of anxiety, as they related to experiencing, were most affected. Interestingly, the more participants' experiencing increased from their first visit to their last, the more their anxiety decreased over the following four weeks. A positive trend ($p < .073$) between participants' experiencing and the impacts of their traumatic events was also observed, although it was in the opposite direction than expected. So, keeping in mind the caveat that it did not meet the conventional significance levels, this trend suggests that as experiencing increased so did the impacts of the traumatic event. A possible explanation for this finding is that as a result of writing about their traumatic event, participants thought about and experienced aspects of their event, as measured by the IES-R, in between writing session and following the study more frequently than usual. The fact that participants might be more frequently engaged with their traumatic event is not in itself a negative thing. First, the

emotions and thoughts related to the traumatic event might not necessarily be distressing and could be positive in nature. Second, the experience of emotions that are considered an expression of distress are not necessarily considered indicative of a poor outcome. Pascual-Leone (2009), in a study of 34 clients being treated with emotion-focused therapy for depression or long-standing interpersonal grievances, found that positive change was not related to the absence of expressions of distress but a greater range of emotional experiencing from expressions of distress to advanced meaning-making states.

Furthermore, there was no noteworthy relationship found between participants' level of experiencing and their amount of resolution about their trauma. Additionally, no significant differences were found among presence of CAMS affective-meaning states or CAMS clusters and outcomes. The decrease in anxiety experienced by writers is a positive intervention effect and echoes Frattaroli's (2006) meta-analytic findings of a large effect in anxiety reduction as a function of writing; though the present study explored the relationship between the experiencing process (a marker of good treatment progress; Greenberg & Pascual-Leone, 2006) and anxiety, not solely outcome. Moreover, the lack of relationship among CAMS and outcome is somewhat surprising. Nevertheless, Stiles (1988) has cautioned that a lack of a correlation between process and outcome measures does not mean that a particular process was ineffective. Instead, he points to *responsiveness*, or the likelihood that clients vary in their degrees of requirements of certain process components to which therapists tailor their interventions accordingly. It follows that a correlation would only be observed if the therapist's delivery of the process components was unrelated to the client's requirements. In this sense, participants in the current study did not benefit from the presence of a responsive

set of instructions (i.e., in the form of a therapist, or some other interactive process). In contrast, it may be possible that participants took the initiative to be self-directed based on their needs for expression during the writing task (i.e., their own "internal responsiveness" as described by Stiles, 1988), thus explaining null findings among process and outcome measures.

As suggested by Stiles (1987) in previous research, it is likely that participants in the current study differed in their presenting levels of distress as well as in their amount of disclosure. Stiles (1988) contends that those with higher levels of distress are often more attuned to their subjective experience and consequently disclose more as this serves as a sort of relief, which is therapeutic to them. The amount of attunement (i.e., with subjective experience) and disclosure by participants in this study could have had a direct influence on the emotional processes they expressed. It would appear that those who began the study with lower distress had better outcomes than those who began with higher distress but this is only because they began with less distress. Nonetheless, expressive writing could have been just as helpful, if not more so, for the highly distressed participants given that they disclose more, possibly leading to deeper emotional processing, even though they did not appear to have better outcomes than participants with lower levels of distress. Herein lies the difficulty in concluding that the lack of correlation between process (i.e., the CAMS and EXP) and outcome measures means that a process was unsuccessful. Taking into consideration participants' levels of distress at the beginning of the study, it is possible that these processes were helpful.

Methodological Conundrums: The Problem with Randomly Assigning Process

As the current findings suggest, and as evidenced in a few previous studies (e.g., Kovac & Range, 2002; Nazarian, 2009), participants do not always write what is expected of them given their instructions. This is an interesting methodological puzzle, one which is likely at work in psychotherapy studies but one that may only become clearly evident in experimental designs such as the one used in this study. There are several possibilities as to why participants may not follow instructions or clinical intervention directives. First, participants could be simply ignoring the instructions either because they want to write about their "story" in their own, idiosyncratic way, or because they are not personally invested in the study. Alternatively, participants may have more meaningful reasons to dismiss or ignore instructions either consciously or unconsciously: perhaps, for example, because doing so would be too painful. Avoidance of feelings and memories related to the traumatic event is not uncommon among individuals who have experienced a trauma and often serves as a coping strategy (Paivio & Pascual-Leone, 2010). Third, it is possible that participants are unclear about what the instructions are actually asking them to do. Participants may not know what a particular emotion might be or they could be confused by psychological jargon despite efforts to make the instructions as clear as possible. Last of all, it is possible that participants are simply unable to comply with the instructions. Thus, the issue may have less to do with unwillingness but rather a lack of capacity to respond emotionally as required by the task instructions. Paivio and Pascual-Leone (2010) have described the difficulties of alexythymia in relation to some trauma survivors, and individual differences in emotional competence may limit the range of compliance despite any good intentions to participant

(Mayer, Salovey, & Caruso, 2008). Unlike psychotherapy, expressive writing does not involve a therapeutic alliance that instils a sense of security for exploration of one's experience. Furthermore, a therapist is not involved in helping the client stay with, or bring him or her back, to a particular emotion or process that is facilitative of a good psychological outcome.

Strengths and Limitations

A strength of the current study was that it was one of few to investigate emotional processing in the expressive writing paradigm. Furthermore, it was one of a handful of studies to examine the effect of manipulating writing instructions to manipulate certain processes. The other studies (e.g., Gidron et al., 2002; Lu & Stanton, 2010; Pachankis & Goldfried, 2010) targeted processes related to cognitive reprocessing or exposure, but the current study is one of the first to explore the impact of tailoring instructions to facilitate an experiential model of emotional processing. Finally, the current study made use of an experimental design to investigate an experiential model of emotional processing without confounding therapist or treatment characteristics.

A limitation of the current study is that it did not take any measures to ensure that writers were complying with their conditions' writing instructions. On average, participants did not fully comply with writing instructions as presented in the parent study, and this is something that could not have been clearly determined without the current set of findings. Given the findings in past studies on compliance (e.g., Kovac & Range, 2002; Nazarian, 2009), it would have benefitted the body of expressive writing literature to examine the effect that manipulating writing instructions has on

psychological functioning outcome without the confounding variable of participant compliance.

Additionally, the outcome measures employed were also closely related to the construct of post-traumatic stress disorder and clinical in nature, which could have been a limiting factor in psychological functioning outcome given that clinical measures were employed to assess outcome on a non-clinical sample. For example, the Essay Evaluation Form (Kovac & Range, 2002), a list of questions that assesses the extent to which participants felt their writing experience was personal and meaningful, might have been better suited to evaluate participant outcome. Furthermore, a modification of Kovac and Range's (2002) Experiment Follow-Up Form, which, among other things, requires participants to rate the overall value of their writing experiences, could have been useful in assessing a more subtle aspect of outcome. Thus, the use of less clinical measures that focus on a broader domain might have been more useful in assessing outcome in a college population.

Another potential limitation is the decision to limit the focus on central tendencies of experiencing and to also examine peak experiencing scores. In measuring experiencing for the present study, modal scores for each narrative were chosen over peak scores for the following reasons. First, modal scores have been argued, on theoretical and clinical grounds, to be better represent a participants' more enduring level of experiencing (Pos et al., 2009). Second, inter-rater reliability on peak experiencing scores was difficult to establish in the current study and subsequently abandoned as an index. In hindsight, perhaps peak experiencing would have been a better index of experiencing and better captured the relationship between emotional processing and outcome.

Future Research Directions

Future studies would benefit from implementing strategies to encourage writing instruction compliance, such as telling participants that they might maximally benefit by following the writing instructions or even make continuation in the study contingent on following the instructions. There are several computer software options designed to detect certain types of emotions from text that could be used to check compliance following a writing session. If compliance is noted, with the participant displaying one or more of the particular target emotions for that session, the participant would be allowed to return the next day for the next writing session. Figure 3 shows that participants in this study, on the whole, did not adhere to their writing condition instructions. Thus, the goal of this design would be to promote adherence to writing instructions would allow stronger conclusions to be drawn about differences in emotional processing.

Of course, analyses would need to be carried out on the characteristics of those who followed versus did not follow the writing instructions. To illustrate, Figure 3 shows that a large number of participants in the sequential processing group displayed global distress, fear/shame, and rejecting anger, similar to the other experimental groups, despite being instructed to write about advanced meaning-making states (i.e., self-soothing, assertive anger, and hurt/grief). Additionally, it would be expected that with better compliance a lot more participants in this condition would display self-soothing, assertive anger, and hurt/grief when compared to the other conditions (with the exception of the meaning-making condition which received the same visit three writing instructions), but this was not the case. By using individualized feedback to encourage compliance with writing instructions, stronger conclusions can be made as to whether or not one group

differentially facilitated emotional processing when compared to the other experimental groups.

Alternatively, one could seek a similar end by making use of the archival data used in the current study (and any additional data available) by incorporating the adherence design mentioned above. In this solution to the loose compliance of participants to instructions, artificial groups could be made retrospectively based on their apparent adherence using the same word identification software. If sample size allows for this procrustean method, the present study as could be redone with only participants who adhered to their condition's writing instructions. Another option, sample size-permitting, would be nested analyses to examine emotional processing differences among groups that, for example, fully adhered to instructions, partially adhered to instructions, and minimally adhered to instructions. Such a design would involve the five conditions in the current study with three subgroups in each condition based on participants' adherence to instructions. This last design might allow for even stronger conclusions to be made about the role of writing instructions in facilitating emotional processing because it would speak to emotional processing type (i.e., depth) and adherence (i.e., based on instructions). On a different note, visit two data might aid in the interpretation of experiencing patterns regardless of whether or not instruction adherence measures are implemented.

Additionally, as mentioned earlier, future research in this area might also benefit from using outcome measures that are less clinical in nature and that examine more than one construct. Moreover, due to the fact that the experience of particular types of trauma (e.g., abuse, domestic violence, and sexual assault) increases the risk of subsequent

exposure (Paivio & Pascual-Leone, 2010), it would be interesting to examine whether or not depth of emotional processing has a differential effect on repeated trauma. Through the process of expressive writing, it is possible that participants might be able to reflect on their experience and generate meaning that will enable them to identify future situations that might lead to another traumatic incident. Notice that the effect of preventing subsequent trauma could be present despite a failure to help an individual resolve a past trauma. Such a finding would speak to the evolutionary significance of emotions as a source of information that informs us how to act (Greenberg & Pascual-Leone, 2006). In general, this research would lend to a current trend in acknowledging and evaluating relapse as a treatment outcome (Beshai, Dobson, Bockting, & Quigley, 2011).

Implications for Clinical Work and Theory

The identification of clusters based on the presence of CAMS affective-meaning states and replication of clusters found by Pascual-Leone (2005) further validates this model (Pascual-Leone & Greenberg, 2007) of emotional processing in general and as it applies to expressive writing. Furthermore, the observed relationship between increased experiencing and decreased anxiety suggests that promoting experiencing among expressive writers would be beneficial in reducing their levels of anxiety. Finally, the findings of the experiencing interaction between the sequential processing and active control conditions suggest that emotional processing can be promoted through writing instructions. However, it also suggests that experiencing must be continually promoted and maintained after the first writing session. Specifically, it speaks to Stiles' (1996) idea of responsiveness, or therapists appropriately tailoring their interventions to the client's

process needs. Stiles argues that “more of a good thing is only better when one is not getting enough” (p. 915). What is meant by this is that a certain process component might not be beneficial for therapy clients that are already getting enough of that process component. For example, an expressive writer who is quite aware of his or her emotional experience and expressive of it would not benefit from writing about lower levels of experiencing (i.e., levels 1-4), but instead writing about the exploration of his or her problem or generating propositions about his or her experience (i.e., level 5). This fact highlights the importance of responsiveness and process directive in facilitating successful client outcomes.

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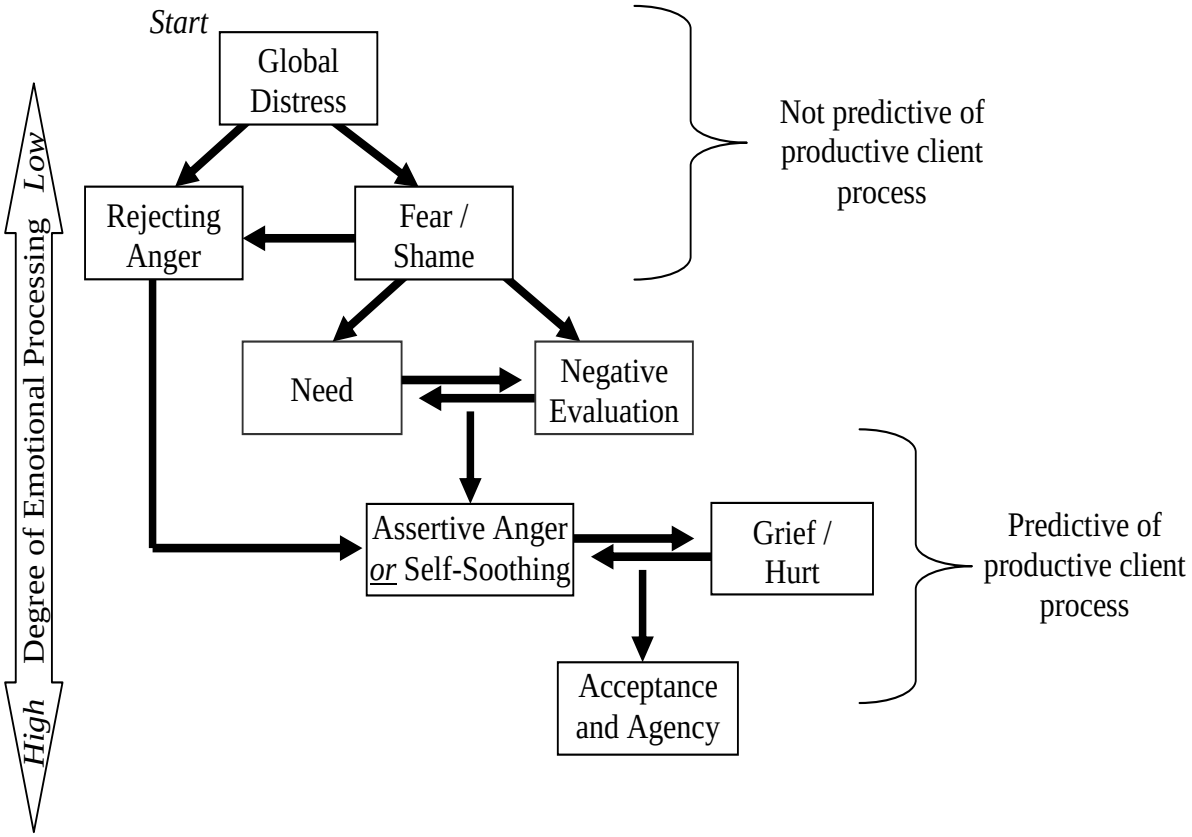
Table 1

Summary of Derivation of Conditions

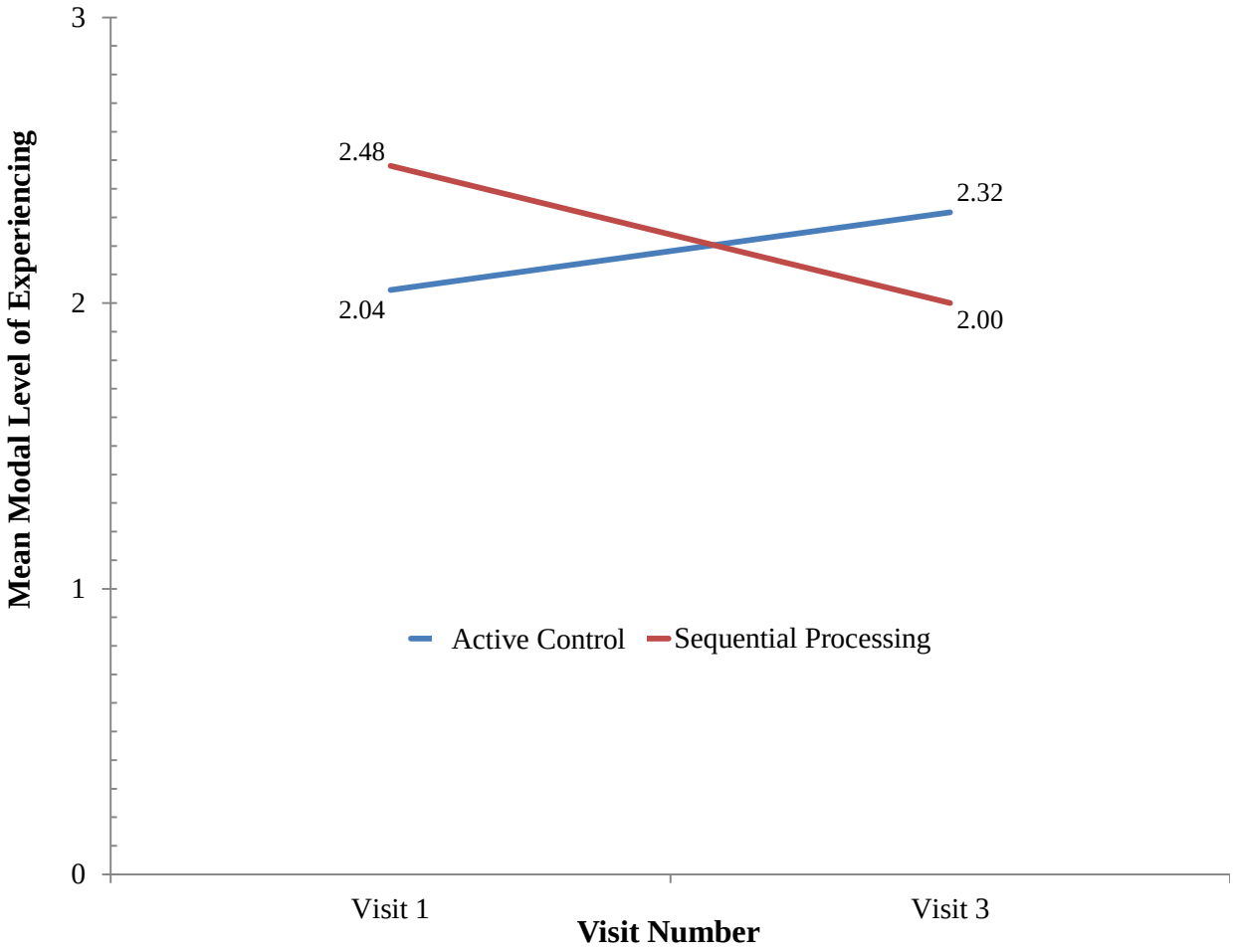
Condition Name	**Theory of Emotional Processing**	**Pascual-Leone & Greenberg (2007) CAMS States Involved**	**Do Writing Instructions Differ on Each of the Writing Days?**
Task Control	N/A	N/A	No
Active Control	N/A	N/A	No
Venting	Behavioural (i.e., exposure and habituation)	Early Expression of Distress (i.e., global distress, rejecting anger, and fear/shame)	No
Meaning-Making	Cognitive (i.e., cognitive re-evaluation)	Advanced Meaning Making States (i.e., assertive anger, self-soothing, and hurt/grief)	No
Sequential Processing	Experiential (i.e., sequential processing [Pascual-Leone & Greenberg, 2007])	Early Expressions of Distress and Advanced Meaning-Making States	Yes

Figure 1. Model of emotional transformations (modified from Pascual-Leone & Greenberg, 2007; with permission).



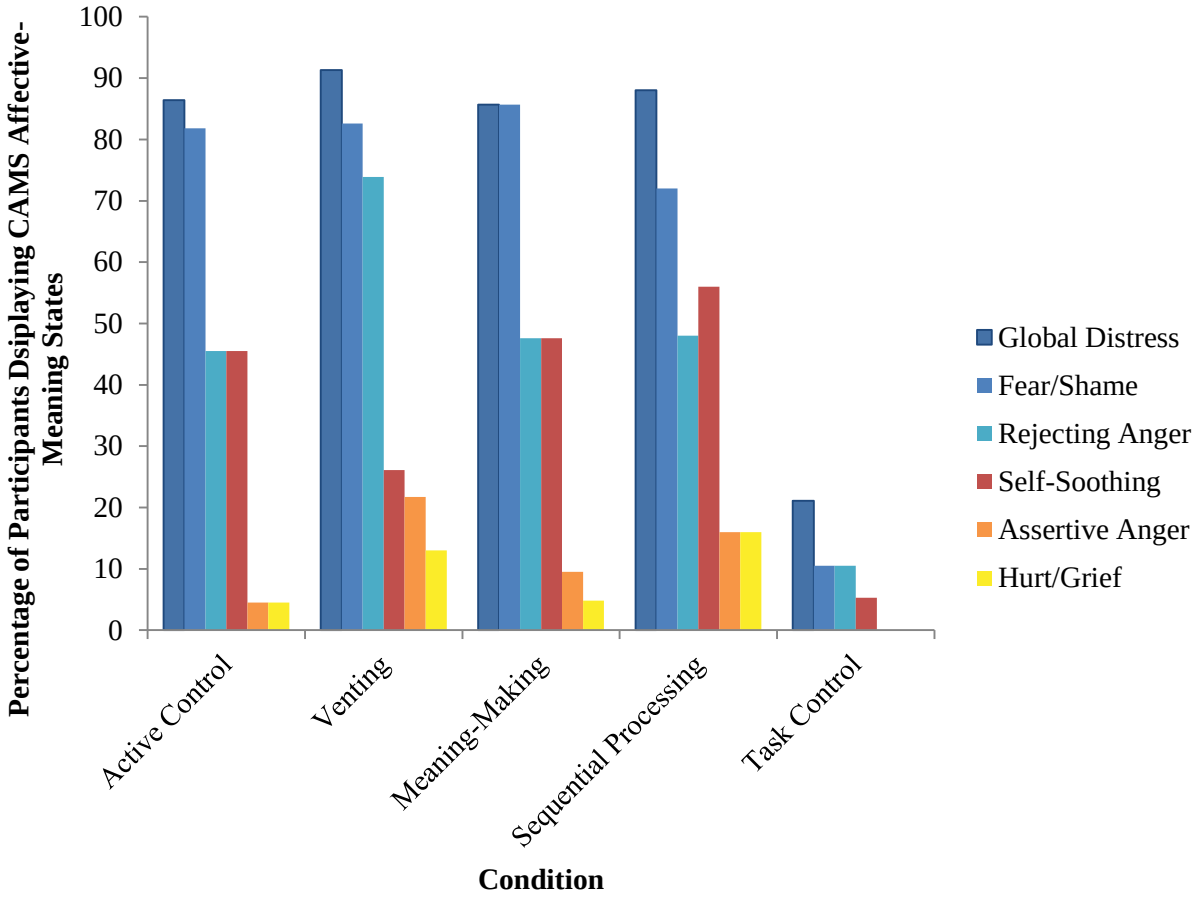
Note. The figure indicates that the top part of the model represents emotions that did not discriminate between successful and unsuccessful emotional processing whereas emotions in the bottom part of the model did. Those emotions that did not discriminate between successful and unsuccessful emotional processing are referred to as *early expressions of emotional distress* whereas those emotions that did discriminate between successful and unsuccessful emotional processing are referred to as *advanced meaning-making states*.

Figure 2. Significant interaction between condition (i.e., active control and sequential processing) and writing session (i.e. visit 1 and 3).



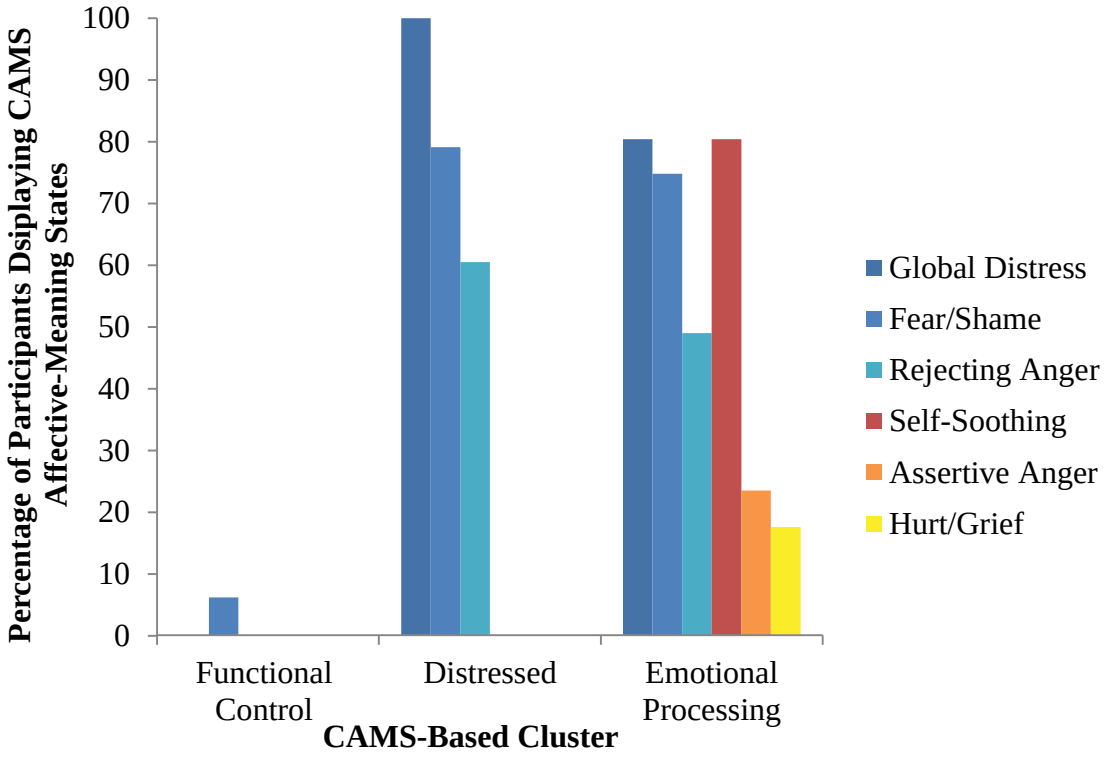
Note: Change in modal experiencing level changes over time and significantly differs for each of the writing conditions.

Figure 3. Difference in percentage of participants who experienced each of the differing CAMS affective-meaning states in each experimental condition at visit three.



Note. The "cool" colours are used to represent early expression of distress while the "warm" colours are used to represent advanced meaning-making states in Pascual-Leone and Greenberg's (2007) model of emotional processing. This figure shows that the experimental conditions differ from the control condition in the frequency of the participants that exhibited early expression of distress (cool colours) but not each other. The experimental conditions had some mild variation in low levels of advanced meaning-making states (warm colours) with the exception of self-soothing, which was higher but equivalent in each of the experimental conditions.

Figure 4. Difference in percentage of participants who experienced each of the differing CAMS affective-meaning states in each cluster at visit three.



Note. The "cool" colours are used to represent early expression of distress while the "warm" colours are used to represent advanced meaning-making states in Pascual-Leone and Greenberg's (2007) model of emotional processing. This figure shows that three clusters could be formed based on the frequency of participants that exhibited each of the CAMS affective-meaning states in each group. Participants in the functional control group did not exhibit any affective-meaning states with the exception of a small amount exhibiting global distress. The distressed and emotional processing groups, on the other hand, exhibited similar levels of early expressions of distress (cool colours). The only group that expressed advanced meaning-making states (warm colours) was the emotional processing group.

Appendix A

Original Writing Instructions by Condition and Day from Parent Study (i.e., Pascual-Leone et al., 2011)

Standard Instructions for all conditions but task control:

During the next 15 minutes, please write down your deepest thoughts and feelings about the most upsetting or traumatic experience of your entire life (i.e., the topic you have chosen for this study). In your writing, we'd like you to really let go and explore your very deepest thoughts and feelings. You might tie your topic to your relationships with others, including parents, lovers, friends, or relatives. You may also link this event to your past, present, or your future; or to who you have been, who you would like to be, or who you are now.

	Additional Instructions		
	Visit 1	**Visit 2**	**Visit 3**
Task Control	During the next 15 minutes, please write down in as much detail as possible what you did in the last 24 hours. This account should be from memory and should be as objective as possible. So, try to avoid adding personal thoughts and feelings as you describe the last 24 hours.[1]	Same as visit 1	Same as visit 1
Active Control	None	Same as visit 1	Same as visit 1
Venting	During this writing session, we would like you to search your thoughts and feelings about the topic and, in particular, write about <u>one or more</u> of the following feelings: distress and sadness, fear, shame and guilt, anger and rage.	Same as visit 1	Same as visit 1

Meaning-Making	During this writing session, we would like you to search your thoughts and feelings about the topic and, in particular, write about one or more of the following feelings: assertive anger, grieving a loss, recovering from hurt, and soothing oneself/comforting oneself.	Same as visit 1	Same as visit 1
Sequential Processing	During this writing session, we would like you to search your thoughts and feelings about the topic and, in particular, write about one or more of the following feelings: distress and sadness, fear, shame and guilt, anger and rage.	During this writing session, we would like you to search your thoughts and feelings about the topic and, in particular, write about your: personal and interpersonal needs.	During this writing session, we would like you to search your thoughts and feelings about the topic and, in particular, write about one or more of the following feelings: assertive anger, grieving a loss, recovering from hurt, and soothing oneself/comforting oneself.

Appendix B

List of Available Measures Used in Pascual-Leone et al. (2011) Outcome Study

Session Outcome:

- The Self-Assessment Manikin (Bradley & Lang, 1994) – assesses subjective physiological and affective arousal
- Positive and Negative Affect Scale (PANAS; Watson et al., 1988) – mood checklist
- Saliva cortisol testing – physiological index of stress response

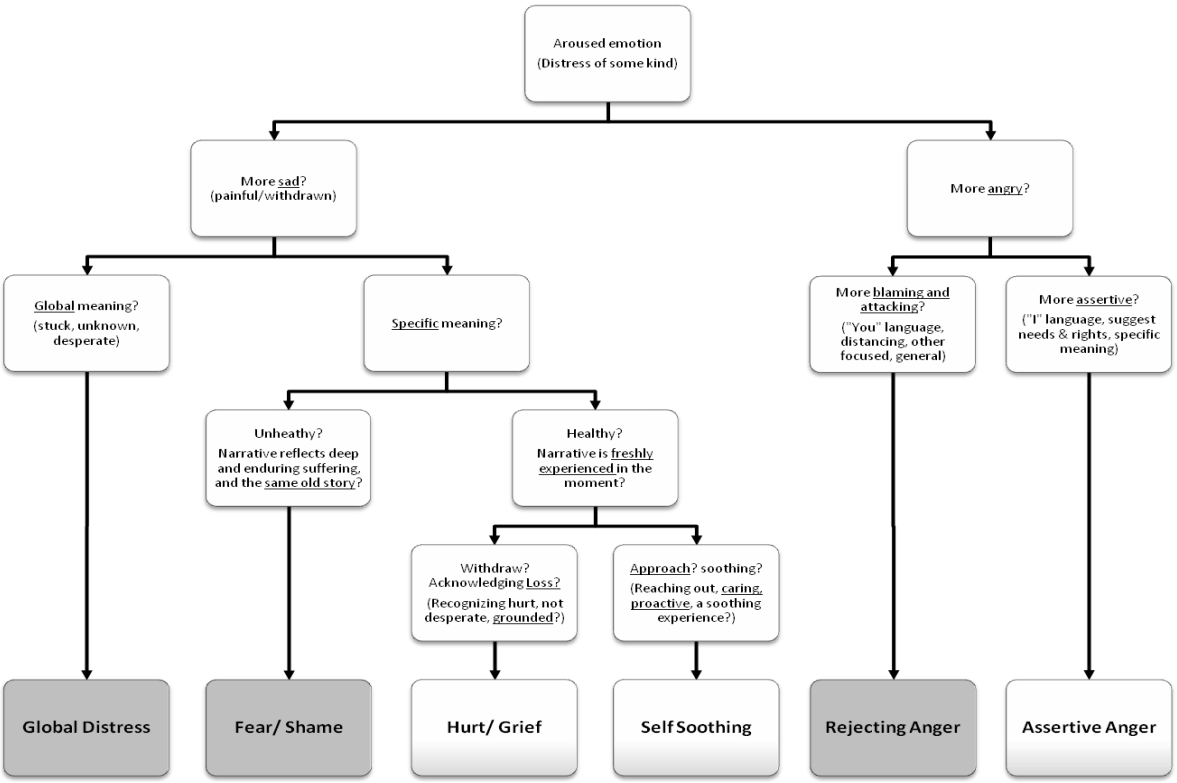
Treatment Outcome:

- Satisfaction with Life Scale (Pavot & Diener, 2009; Diener et al., 1985) – self-report measure of life satisfaction
- Post-Traumatic Growth Inventory-SF (Tedeschi & Calhoun, 1996; Cann et al., 2010) – assess positive outcome and change following psychological trauma
- An illness checklist to assess self-reported health (Sirois & Gick, 2002)
- Resolution Scale-Modified (Singh, 1994) – measures subjective resolution of trauma
- Impact of Events Scale-Revised (Horowitz, 1986; Weiss & Marmar, 1997) – assesses adjustment to traumatic event
- Anger Rumination Scale (Sukhodoslky et al., 2001) – assesses symptoms of anger and rumination in the "previous two weeks"
- State-Trait Anxiety Inventory (Speilberger et al., 1970) – assesses symptoms of anxiety in the "previous two weeks"

- Center for Epidemiologic Studies' Depression Scale (Radloff, 1977) – assesses symptoms of depression in the "previous two weeks"

Appendix C

CAMS Coding Category Flowchart (Pascual-Leone, 2005)



Appendix D

Experiencing Scale Level Summary (Klein et al., 1986; Paivio & Pascual-Leone, 2010)

Level 1	External events not pertaining to client
Level 2	Events pertaining to client with a behavioural or intellectual elaboration of thoughts but not emotions
Level 3	Client reacts to external events with some reference to feelings but in a behavioural or descriptive manner
Level 4	Client describes feelings and personal experiences
Level 5	Client explores a problem or need related to his/her feelings and personal experiences
Level 6	Client focuses on a newly emerging or more fully recognized feeling
Level 7	Client integrates newly emerging feelings with other feelings in a way that links these experiences together to promote an expansive understanding of the main issue

Appendix E

The Resolution Scale – Modified

Instructions: The following questions ask you how you feel now in terms of your unfinished business with the issue you have identified. Please circle the number of the scale that best represents how you currently feel.

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1. I feel troubled by my persisting unresolved feelings (such as anger, grief, sadness, hurt, resentment) regarding this issue.

   1 2 3 4 5 6

   Not at all Very Much

2. I feel frustrated about not having my needs met regarding this issue.

   1 2 3 4 5 6

   Not at all Very Much

3. I feel like a worthwhile person when it comes to this issue.

   1 2 3 4 5 6

   Not at all Very Much

4. I see this issue negatively.

   1 2 3 4 5 6

   Not at all Very Much

5. I feel comfortable about my feelings in relation to this issue.

1	2	3	4	5	6
Not at all					Very Much

6. This issue's negative impact on me has made me feel badly about myself.

1	2	3	4	5	6
Not at all					Very Much

7. I feel okay about not having received what I needed regarding this issue.

1	2	3	4	5	6
Not at all					Very Much

8. I feel unable to let go of my unresolved feeling regarding this issue.

1	2	3	4	5	6
Not at all					Very Much

9. Apart from my own struggle, I have a real appreciation of the inherent difficulties in this issue (for example, the other person's own personal difficulties, or the unfortunately reality of the situation).

1	2	3	4	5	6
Not at all					Very Much

10. I have come to terms with not getting what I want or need in the situation related to this issue.

1	2	3	4	5	6
Not at all					Very Much

11. I view myself as being unable to stand up for myself when it comes to this issue.

1	2	3	4	5	6
Not at all					Very Much

12. I feel accepting toward this issue.

1	2	3	4	5	6
Not at all					Very Much

Appendix F

State-Trait Anxiety Inventory

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then **circle the number next to the answer that describes how you have been feeling in the past two weeks**. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	Almost Never	**Sometimes**	**Often**	**Almost Always**
1. I feel pleasant ……	1	2	3	4
2. I feel nervous and restless …….	1	2	3	4
3. I feel satisfied with myself ……	1	2	3	4
4. I wish I could be as happy as others seem to be….	1	2	3	4
5. I feel like a failure ……	1	2	3	4
6. I feel rested ……..	1	2	3	4

7. I am “calm, cool, and collected”…….	1	2	3	4
8. I feel that difficulties are piling up so that I cannot overcome them.	1	2	3	4
9. I worry too much over something that really does not matter.	1	2	3	4
10. I am happy ……..……..	1	2	3	4
11. I have disturbing thoughts …….……...	1	2	3	4
12. I lack self-confidence ……	1	2	3	4
13. I feel secure ……	1	2	3	4
14. I make decisions easily …….…...	1	2	3	4
15. I feel inadequate …….	1	2	3	4
16. I am content ……..…	1	2	3	4

17. Some unimportant thought runs through my mind and bothers me.	1	2	3	4
18. I take disappointments so keenly that I can put them out of my mind	1	2	3	4
19. I am a steady person ……...	1	2	3	4
20. I get in a state of tension or turmoil as I think over my recent concerns.	1	2	3	4

Appendix G

Impact of Events Scale – Revised

INSTRUCTIONS: Below is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you **DURING THE PAST SEVEN DAYS** with respect to _____, which occurred on _____. How much were you distressed or bothered by these difficulties?

Item Response Anchors are

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

1. Any reminder brought back feelings about it.
2. I had trouble staying asleep.
3. Other things kept making me think about it.
4. I felt irritable and angry.
5. I avoided letting myself get upset when I thought about it or was reminded of it.
6. I thought about it when I didn't mean to.
7. I felt as if it hadn't happened or wasn't real.
8. I stayed away from reminders of it.
9. Pictures about it popped into my mind.
10. I was jumpy and easily startled.
11. I tried not to think about it.
12. I was aware that I still had a lot of feelings about it, but I didn't deal with them.

13. My feelings about it were kind of numb.

14. I found myself acting or feeling like I was back at that time.

15. I had trouble falling asleep.

16. I had waves of strong feelings about it.

17. I tried to remove it from my memory.

18. I had trouble concentrating.

19. Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart.

20. I had dreams about it.

21. I felt watchful and on-guard.

22. I tried not to talk about it.

Vita Auctoris

Shawn Joseph Harrington was born in 1986 in Windsor, Ontario where he graduated from Catholic Central High School in 2004. He went on to study psychology at the University of Windsor and graduated with a Bachelor of Arts in Psychology in 2008. In his two year hiatus between his undergraduate degree and beginning his Master's, he was given the opportunity to work as a clinical drug trial coordinator in the Wellness Program for Extended Psychosis at Windsor Regional Hospital. He obtained his Master of Arts degree in Adult Clinical Psychology in 2012 at the University of Windsor. He is currently enrolled in the Doctoral program in Adult Clinical Psychology and the University of Windsor.