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# Are Emotions Influenced by their Sequence? An Experimental Study of Emotional Processing

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# An Experimental Study of Emotional Processing

By

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**An Experimental Study of Emotional Processing**

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## ABSTRACT

The present study examined whether resolution of lingering anger and sadness about an interpersonal interaction depends on the sequence in which anger and sadness are experienced. Within a total sample of 104 participants, two groups were identified based on presenting emotional concern: individuals with predominantly lingering anger about an interpersonal interaction ($n$ = 26), and individuals with predominantly lingering sadness about an interpersonal interaction ($n$ = 56). Participants completed a written emotional processing intervention in one of two randomly assigned conditions (i.e., anger-before-sadness condition or sadness-before-anger condition), which differed only by the order in which participants were guided to feel anger and sadness. Regardless of whether participants presented with lingering anger or sadness, they experienced a greater decline in the desire to hold a grudge when they were guided to feel sadness first and anger second ($d$ = .59), as opposed to anger first and sadness second ($d$ = .31). Moreover, individuals who presented with lingering anger reported that the intervention was more useful when sadness preceded anger, as opposed to the inverse sequence ($d$ = .94). However, for individuals with lingering sadness, the reported usefulness of the intervention did not depend on the temporal sequence of anger and sadness. Results underscore the importance of the temporal sequence of emotions in resolving distress.

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# CHAPTER I
# INTRODUCTION

Within theories of psychotherapy, *emotional processing* refers to awareness, expression, regulation, and transformation of, as well as reflection on, an activated emotion state (Pascual-Leone, Paivio, & Harrington, 2016). Recent research on emotional processing suggests that the intensity and trajectory of emotions are influenced by the sequence in which they are experienced (e.g., Pascual-Leone, 2018). If the intensity and trajectory of emotions are indeed affected by their temporal order, then certain sequences of emotion may be more helpful for resolving certain types of emotional problems. In particular, there is evidence to suggest that the specific emotional sequence of feeling anger first followed by sadness second may aid resolution of lingering anger (Narkiss-Guez, Zichor, Guez, & Diamond, 2015; Rochman & Diamond, 2008), whereas the sequence of sadness first and anger second may be instrumental in the resolution of lingering sadness (Choi, Pos, & Magnusson, 2016; Zhan et al., 2017a). Through an experimental design, the present study was intended to systematically examine whether the resolution of lingering anger vs. lingering sadness depends on the order in which anger and sadness are experienced. Participants were individuals experiencing either lingering anger or lingering sadness following an interaction with an attachment figure, and they were randomly assigned to different sequences of emotional experience. The results of this study are of interest to researchers investigating whether the sequence in which emotions are experienced impacts the trajectory of recovery from lingering emotional distress. It is also of interest to clinicians seeking empirical support for their treatment plans if they hope to guide clients towards emotion sequences that promote optimal recovery.

## Emotions as Units of Information

Across a number of theoretical frameworks, emotion has been defined as a finite state manifesting in physiological, expressive motor, and cognitive systems (Ekman, 1977; Greenberg & Safran, 1989; Kleinginna & Kleinginna, 1981; Lazarus, 1975; Leventhal, 1974; Izard, 1971; Ruch, 1962). Changes in physiology, including heart rate, finger temperature, and skin conductance levels, as well as changes in expressive motor systems, including posture (Camras, Sullivan, & Michel, 1993; Ekman & Friesen, 1974) and facial expression (Ekman, 1993) have each been associated with changes in emotion state (Christie & Friedman, 2004; Ekman, Levenson, & Friesen, 1983; Kleinginna & Kleinginna, 1981). Emotions also involve cognitive changes, including the simultaneous activation of autobiographical memory, semantic memory (i.e., general knowledge), and sensation networks (Greenberg & Pascual-Leone, 2001; Lane, Ryan, Nadel, & Greenberg, 2015).

In addition, emotions automatically orient individuals towards (e.g., Bradley & Lang, 2000; Frijda, 1986, 2004, 2010; Lang & Bradley, 2010; Lowe & Ziemke, 2011; Rolls, 1999) or immediately provoke (e.g., Damasio, 1994, 2010; Ekman, 1972; Levenson, 2003, 2011, Levenson, Carstensen, Friesen, & Ekman, 1992; Lowe & Ziemke, 2011; Panksepp, 1998, 2000, 2007; Stephens, Christie, & Friedman, 2010) a series of actions that are intended to accomplish a goal (Kagan, 1978) or fulfill an unmet need (Greenberg, 2011). This propensity to orient towards, or ultimately engage in, certain goal-directed behaviours has been referred to as an *action tendency* (Ekman, 1972, Frijda; 2010; Greenberg, 2010).

Several studies have demonstrated that specific emotion states are indeed associated with distinct action tendencies. For example, anger has been associated with the tendency to approach, whereas sadness has been associated with the tendency to withdraw. In response to angry faces with a direct gaze, individuals with high levels of trait anger engaged more quickly in approach

behaviours than avoidance behaviours, whereas individuals with low levels of trait anger engaged more quickly in avoidance behaviours than approach behaviours (Veenstra, Schneider, Bushman, & Koole, 2017). In contrast, during periods of depression (i.e., sadness), individuals tend to engage in withdrawal and avoidance behaviour (Burton, McKinstry, Tătar, Serrano-Blanco, Pagliari, & Wolters, 2013). In a study of learned helplessness, Mikulincer (1988) also showed that anger predicted improved performance on a set of problems (i.e., participants approached the task), whereas sadness predicted a decline in performance (i.e., participants withdrew from the task). Because emotion conveys information about personal needs and prepares one to engage in the actions required to achieve one's goals, it has been conceptualized as a "densely packaged unit of information" (Pascual-Leone et al., 2016, p. 149).

**Emotional Processing Appears to Resolve Lingering Interpersonal Distress**

When painful emotions persist, emotional processing allows one to work through and ultimately alleviate distress. Within a behaviourist perspective, emotional processing refers to the awareness, expression, and regulation of emotion (Foa & Kozak, 1986; Rachman, 1980), whereas in an experiential perspective, emotional processing also encompasses reflection on an activated emotion state and the emergence of new, adaptive emotion states (Pascual-Leone et al., 2016; Pos, Greenberg, Goldman, & Korman, 2003). There are several possible methods of processing emotion, which range in their degree of abstraction or complexity. In order from least to most abstract, the various forms of emotional processing include awareness of emotion, emotional arousal, active down regulation of affect, narrative reflection on emotion, and changing emotion with emotion (Pascual-Leone et al., 2016). Some methods of emotional processing may be more *useful* than others as they provide a clearer sense of direction for addressing one's problem and greater self-awareness (Pascual-Leone & Sawashima, 2018).

Further, each method of emotional processing has been associated with resolution of lingering distress, including *unfinished business*, which is defined as lingering negative emotions about an interpersonal grievance (Rhode et al., 2015). Specifically, resolution of unfinished business entails a decline in the intensity of painful lingering emotions, and in some cases, forgiveness of the transgressor (Greenberg, 2011).

**Emotional awareness as an initial step in overcoming an interpersonal grievance.**

Emotional awareness, which refers to the act of recognizing and readily engaging with emotion (Greenberg, 2011; Pascual-Leone et al., 2016), appears instrumental in healing interpersonal distress. Reductions in alexithymia, which is a personality trait characterized by low emotional awareness, have been found to predict decreased severity of interpersonal problems (Ogrodniczuk, Sochting, Piper, & Joyce, 2012). Furthermore, both the frequency and depth of engagement with emotion have been associated with resolution of unfinished business (Paivio, Hall, Holowaty, Jellis, & Tran, 2001).

**Expression and regulation of intense emotion may both be instrumental in resolution of unfinished business.**

Emotional arousal refers to the intensity of emotions experienced (Greenberg, 2011; Pascual-Leone, 2016), whereas expression of emotion refers to outward displays of emotional arousal (Carryer & Greenberg, 2010). The expression of emotion at elevated levels of emotional arousal, has been associated with positive emotion changes in therapy (Carryer & Greenberg, 2010; Missirlian, Toukmanian, Warwar, & Greenberg, 2005). For example, individuals who expressed intense emotions in session were found to be more likely to resolve unfinished business (Greenberg & Foerster, 1996; Greenberg & Malcom, 2002). It is important to note that the expression of emotion is influenced by both culture and gender (Safdar et al., 2009).

Consequently, when describing past research on emotional expression, the impact of sample demographics will be considered as a factor that may influence whether the findings generalize to the sample in the current study.

In contrast to the aroused expression of emotion, active down regulation of affect is the act of decreasing emotional arousal or intensity (Greenberg, 2011; Pascual-Leone et al., 2016). Despite evidence that expression of aroused emotion is instrumental in therapeutic emotion change, clients suffering from depression (i.e., lingering sadness) have been found to make the greatest therapeutic recovery from depression when highly aroused emotion is expressed at a moderate frequency (i.e., emotional intensity is regulated; Carryer & Greenberg, 2010). Excessive emotional activation, without regulation, may be detrimental to the resolution of lingering emotional injuries.

**Narrative reflection on activated emotion may heal emotional injury.**

Narrative reflection on emotion involves thinking about and exploring the meaning of emotional experience (Greenberg, 2011; Pascual-Leone et al., 2016); for example, one may reflect on an unmet need that has prompted an emotion, such as an unmet need for support that has led to feelings of sadness. Literature on experiential therapy suggests that resolution of distress depends on the degree to which one reflects on aroused emotion (e.g., Auszra, Greenberg, & Hermann, 2013; Pos, Paolone, Smith, & Warwar, 2017), and reflection in the form of identifying unmet needs has been associated with resolution of unfinished business (Greenberg & Foerster, 1996; Greenberg & Malcom, 2002). Moreover, among a non-clinical population experiencing unfinished business, participants who completed an emotional reflection task reported lower levels of unfinished business than those who completed an emotionally evocative task that did not involve reflection (Rhode, Stein, Pascual-Leone, & Caspar, 2015).

Activation of emotion without narrative reflection may therefore be insufficient to heal an emotional injury sustained through an interpersonal grievance.

**New emotion may be used to transform other lingering painful emotions.**

*Changing emotion with emotion* (also referred to as *emotional transformation* or *transformative emotional sequences*) is an additional form of emotional processing in which new emotion states are activated to alter and alleviate other lingering, painful emotion states (Greenberg, 2011; Pascual-Leone et al., 2016; Welling, 2012). Both positive (e.g., self-compassion) and negative emotions (e.g., sadness, anger) are used to transform other negative feelings, so long as the newly emerging feelings are *incongruent* with the lingering painful emotions (Welling, 2012). *Incongruent emotions* are emotion states with action tendencies that conflict and cannot be completed simultaneously (Shen & Bigsby, 2010). For example, one cannot simultaneously engage in the approach behaviours that are associated with anger and the withdrawal behaviours that are associated with sadness; therefore, anger and sadness are incongruent emotion states. In support of the notion of changing emotion with emotion, there is evidence that an emerging emotion state can have a transformative impact on a preceding incongruent emotion (Zhan, Ren, Fan, & Luo, 2015; Zhan et al., 2017), including an emotion presenting as unfinished business (Rochman & Diamond, 2008).

## The Sequence in which Incongruent Emotions are Experienced Appears to Impact Distress

A growing body of literature has investigated whether one can alleviate distressing emotion by activating incongruent emotion, and whether the intensity of an emotion depends on when it is experienced, relative to other emotion states. For example, in a sample of female African American and European American university students, Frederickson, Mancuso, Branigna, and Tugade (2000) found that the effect of anxiety induction on the sympathetic

nervous system, as measured by indices of cardiovascular reactivity, was contingent on the subsequent emotion state (Frederickson et al., 2000). Specifically, following anxiety induction, the induction of positive emotion decreased sympathetic activation at a faster rate than the induction of sad emotion or an emotionally neutral control task (Frederickson et al., 2000). In contrast to Frederickson and colleagues' program of research on positive emotion, much of the research on incongruent emotions and emotion sequences has focused on feelings of sadness and anger.

**Feelings of sadness appear to defuse anger.**

Recent literature suggests that feelings of sadness may reduce the intensity of anger and inhibit the aggressive behavioural tendencies associated with anger. Using the framework of traditional Chinese philosophy, Zhan et al. (2015) investigated the ability to alleviate anger with sadness. Participants in the study were students at universities in Beijing. The sample was also 50% male and 50% female. The authors found that among individuals guided to feel angry, a sadness induction task led to lower levels of aggressive behaviour than either a fear induction or a control (i.e., distraction) task, as well as lower levels of anger intensity and greater intensity of positive emotion than a fear induction task.

Similarly, in a study of university students in Beijing, most of whom were women (66%), Zhan et al. (2017b) observed that in both the presence and absence of physiological stress, sadness induction reduced aggressive behaviour, as well as physiological arousal associated with anger, which was measured by skin conductance. However, sadness induction did not impact self-reported anger intensity. In this study, physiological stress was induced through activation of the sympathetic nervous system and hypothalamic pituitary adrenal axis via the cold pressor test, in which the right arm is held in ice-water for 3 minutes (Lovallo, 1975; Ulrich-Lai & Herman,

2009). Results also suggested that under physiologically stressful conditions, *changing emotion with emotion* may be a more effective method of emotional regulation than *cognitive reappraisal*, which entails thinking about an experience in a different way (Zhan et al., 2017b). A cognitive reappraisal task reduced anger intensity, but only in the absence of physiological stress. Moreover, regardless of whether physiological stress was induced, cognitive reappraisal did not reduce skin conductance or aggression (Zhan et al., 2017b). After the experimental task, participants who had completed the cognitive reappraisal task showed higher cortisol levels than those who had completed the sadness induction or a control task, but cortisol levels did not differ significantly across the groups at baseline, which suggests that cognitive reappraisal may further increase stress when under stressful conditions (Zhan et al., 2017b).

The findings of another recent study (Lutz & Krahé, 2018) suggest that sadness may defuse anger, regardless of the temporal sequence of these emotion states. Participants were American residents recruited through Amazon Mechanical Turk, with a mean age of 36 years. The sample also consisted of even numbers of men and women. Among individuals made to feel angry, a sadness induction task was associated with lower levels of aggressive behaviour than a control task, whether sadness was induced before or after anger (Lutz & Krahé, 2018). Based on the above findings, it appears that feelings of sadness may be used to counteract anger.

**The emotion sequence of anger-then-sadness may alleviate lingering anger.**

Contrary to the above findings by Lutz and Krahé (2018), there is evidence that the temporal order of anger and sadness may indeed impact resolution of lingering anger. In this case, the mechanism of change is the order in which emotions are experienced, as opposed to the activation of a single incongruent emotion (Pascual-Leone, in preparation). To explore the temporal order of anger and sadness, Rochman and Diamond (2008) examined physiological

arousal among individuals who were experiencing lingering anger towards an attachment figure. Participants were Israeli undergraduate students, and over 85% of participants identified as women. The study also involved an experimental procedure that paralleled a session of emotion-focused therapy, in which painful emotion states are expected to transform when they are activated simultaneously with, or immediately prior to, other incongruent emotion states (Greenberg, 2010).

In their research, Rochman and Diamond (2008) found that physiological arousal increased when participants experienced anger first and sadness second, but not when these emotions were experienced in the reverse sequence. Moreover, the observed increase in physiological arousal was not a function of time spent in states of either anger or sadness (Rochman & Diamond, 2008). Results suggest that among individuals with lingering anger, the specific sequence of anger first and sadness second produces a unique increase in physiological arousal. The expression of emotion at high levels of arousal has been associated with resolution of unfinished business (Greenberg & Foerster, 1996; Greenberg & Malcom, 2002); therefore, further study is warranted to investigate whether the emotion sequence of anger-then-sadness contributes to the resolution of longstanding anger sustained through interpersonal injury.

**Feelings of anger appear to counteract sadness.**

An additional body of literature on incongruent emotions suggests that anger can counteract feelings of sadness. For example, in a sample of American residents with comorbid borderline personality disorder and substance abuse disorder, Rizvi, Dimeff, Skutch, Caroll, and Linehan (2011) examined *opposite action training* as a method of changing emotion with incongruent emotion. The sample consisted of mostly women (81.8%) and mostly European Americans (77.3%), although 13.6% of the sample was Asian American and an additional 9.1%

was Native American. Within opposite action training, individuals are instructed to identify their current emotion and their associated action tendency, and then to engage in an opposite action tendency, thereby activating an incongruent emotion (Pascual-Leone, in preparation; Rizvi & Linehan, 2005). Opposite action training immediately reduced the intensity of the current emotion state, and after 10-14 days of the intervention, there was a significant reduction in psychological distress and depression symptoms (Rizvi et al., 2011). Although anger was not explicitly used to counteract sadness, the intervention allowed participants to use a variety of emotions, including anger, to counteract sadness. Therefore, the findings suggest that perhaps one may recover from lingering sadness (i.e., depression) by activating anger.

Similarly, research on the Affect Phobia model of short-term dynamic therapy (McCullough-Vaillant, 1997) suggests that anger may be used to heal persistent sadness (Schanche, Stiles, McCullough, Svartberg, & Nielsen, 2011). The Affect Phobia model (McCullough-Vaillant, 1997) assumes that activating affects, which are emotion states that have approach-oriented action tendencies (e.g., assertive anger), counteract inhibitory affects, which are emotion states with withdrawal-oriented action tendencies (e.g., shame, pain; Malan, 2001; Menninger, 1958; Pascual-Leone, in preparation; Schanche et al., 2011). Among a sample of both female (50%) and male (50%) Norwegian residents receiving therapy for Cluster C personality disorders, Schnache et al. (2011) examined the emotional changes that preceded recovery from self-criticism, which has been associated with depression (Abela, Webb, Wagner, Ho, & Adams, 2006; Zuroff, Igreja, & Mongrain, 1990). Regardless of whether participants were assigned to short term dynamic therapy or a cognitive therapy comparison group, those who reported an increase in self-compassion over the course of treatment were more likely to experience a decrease in inhibitory affect and an increase in activating affect during treatment

(Schanche et al., 2011). It is therefore possible that approach-oriented emotion states (e.g., anger) defuse the intensity of withdrawal-oriented emotion states (e.g., sadness), which may contribute to recovery from self-criticism and accompanying depression or lingering sadness.

Within the framework of traditional Chinese philosophy, Zhan et al. (2017a) also examined the ability to transform sadness with anger. Participants were students of universities in Beijing. Over 55% of the sample identified as women, while the remaining participants identified as men. Individuals experiencing lingering sadness about a recent event reported a greater reduction in the intensity of sadness when they completed an anger induction task, as opposed to a joy induction or neutral task (Zhan et al., 2017a). Overall, these findings suggest that anger activation may be a means of regulating sadness.

**The sequence of sadness-then-anger may reduce the intensity of lingering sadness.**

Similar to findings on resolution of lingering anger, at least one study has demonstrated that the sequence in which sadness and anger are experienced may influence resolution of lingering sadness. Within the context of emotion-focused therapy, Choi et al. (2016) examined sequences of expressed emotion among clients who were successfully treated for self-critical depression (i.e., lingering sadness). Clients were two men and three women living in Canada, with a mean age of 35 years. Among clients who experienced a substantial increase in self-esteem during treatment, the most frequent naturally occurring pattern of emotion in psychotherapy was sadness accompanied by the articulation of unmet existential needs, and then anger (Choi et al., 2016). Results suggest that individuals may recover from lingering sadness by experiencing sadness first, followed by anger second.

**The Sequential Model of Emotional Processing (Pascual-Leone & Greenberg, 2007)**

The Sequential Model of Emotional Processing (Pascual-Leone & Greenberg, 2007; Pascual-Leone, 2018) is a model of emotion change that was originally developed from the study of emotion-focused therapy and has since been empirically supported in a number of other therapies (Pascual-Leone, 2018). This model is a suitable framework for the present study because it provides empirically-supported emotion sequences that are associated with resolution of unfinished business, including feelings of lingering anger or sadness. According to this model, to recover from longstanding emotional injuries, individuals must progress from a series of emotion states called *early expressions of distress* to *primary adaptive emotion states*. Early expressions of distress include expression of secondary emotions and maladaptive emotions. On the other hand, primary adaptive emotions are states that occur in response to one's situation and guide one towards a suitable response to that situation (Greenberg, 2011; Pascual-Leone, 2018). Primary adaptive states are also characterized by a sense of meaning, including insight into negative beliefs about the self and an understanding of what one needs (Pascual-Leone, 2018). It is important to note that both early expressions of distress and primary adaptive states are critical in the resolution of emotional injuries (Pascual-Leone, 2018). Thus, the hypotheses derived from this model will describe resolution for individuals in an early expression of distress as well as individuals in a primary adaptive emotion state.

**Emotion sequences for the resolution of lingering anger.**

If individuals are experiencing lingering anger, they may be experiencing *rejecting anger*, which is an early expression of distress characterized by high arousal but minimal understanding of one's emotional state, such that one is aware only of what one does not want, as opposed to what one wants/needs (Pascual-Leone & Greenberg, 2005; Pascual-Leone, 2018). In this case, when recovering from unfinished business, individuals should first express rejecting

anger. As they reflect on their emotion and gain insight into their needs, they should then experience *assertive anger*, which is a primary adaptive state that is characterized by moderate to high levels of arousal and a clear sense of what one needs (Pascual-Leone & Greenberg, 2005; Pascual-Leone, 2018). Then individuals should experience *hurt/grief*, which is another primary adaptive state characterized by sadness about loss or injury, without self-criticism or hopelessness (Pascual-Leone, 2018). Alternatively, individuals presenting with unfinished business in the form of lingering anger may be experiencing assertive anger (Pascual-Leone & Greenberg, 2005; Pascual-Leone, 2018). To resolve this form of unfinished business, the model prescribes a sequence of assertive anger, followed by hurt/grief.

**Emotion sequences for the resolution of lingering sadness.**

Individuals presenting with lingering sadness may be experiencing *global distress*, which is an early expression of distress that is characterized by a high level of arousal but minimal understanding of one's feelings (Pascual-Leone & Greenberg, 2007; Pascual-Leone, 2018). Although this state is undifferentiated, it is commonly described as feeling "hopeless", "empty", or "lonely", and individuals who report feeling sad may be in a state of global distress (Rohde et al., 2015). When resolving this form of distress, the model suggests that individuals may progress from the expression of global distress to rejecting anger as they reflect on and clarify their needs. Following expression of rejecting anger, to resolve emotional distress, individuals must experience either *self-compassion*, which is an affective-meaning state characterized by caring for oneself, or assertive anger. In addition to expression of either assertive anger and/or self-compassion, many individuals seeking to resolve lingering sadness will also may need to access and express adaptive sadness in the form of hurt/grief.

It is also possible that individuals presenting with lingering sadness may be experiencing hurt/grief, as opposed to global distress. To resolve this form of sadness, individuals must first thoroughly express and explore their feelings of hurt/grief, and subsequently experience assertive anger. Evidently, regardless of whether individuals present with sadness in the form of global distress or hurt/grief, sequences for resolution of lingering sadness are theorized to involve the expression of sadness first followed by the expression of anger.

**Theories in which the Order of Emotions is not Identified as a Predictor of Distress Resolution**

Both traditional (Beck & Haigh, 2014) and third wave cognitive theories (Hayes, 2004) purport that maladaptive thoughts cause negative emotions and can be modified (in the case of traditional theories) or accepted (in the case of third wave cognitive theories) to alleviate lingering distress. Within a cognitive framework, the sequence in which emotions are experienced is not expected to impact resolution of emotional injuries (Sawashima, 2018). Within behavioural theories (e.g., exposure theory; Foa & Kozak, 1986; Rauch & Foa, 2006), emotion is viewed as a conditioned response to a conditioned stimulus (Foa, 2011). These theorists posit that by eliciting a persistent, painful emotion through repeated exposure to a stimulus, such as writing about a negative interpersonal interaction, the intensity of the persistent emotion gradually decreases, and the conditioned emotional response is extinguished (Greenberg, 2007; Sawashima, 2018). Associative learning, rather than emotion, is used to change emotion in behavioural therapy (Foa, 2011). Therefore, within this framework, the temporal order of emotions states is not expected to impact distress resolution (Sawashima, 2018). In addition, theories of positive psychology (Frederickson, 2001; Seligman, Steen, Park, & Peterson, 2005) are premised on the notion that the activation of positive emotion is an

optimal process for alleviating distress. Once again, from that perspective, the sequence in which negative emotions (e.g., anger, sadness) are experienced is not expected to impact resolution of distress, including unfinished business (Sawashima, 2018). Evidently, there are multiple theories in which the ordered sequence of anger and sadness is not identified as an important predictor of recovery from unfinished business.

**Rationale for Study**

The study of sequences of emotion will inform theoretical perspectives of affective functioning. Within emotion-focused theory, emotions are assumed to be influenced by the order in which they are experienced (Pascual-Leone, 2018); however, other theories (i.e., cognitive theory, behavioural theory, theories of positive psychology) assume that emotions are not influenced by their temporal sequence (Sawashima, 2018). An empirical study will help investigate the merit of these competing perspectives.

To date, several researchers have investigated whether emotion is influenced by the sequence in which it is experienced. Rochman and Diamond (2008) demonstrated that among individuals with lingering anger, the specific sequence of anger first and sadness second produces an increase in physiological arousal, which is not observed during the inverse sequence of sadness first and anger second. However, this study did not investigate whether the sequence in which emotions are felt impacts participant reports on resolution, or the usefulness of such an exercise. Furthermore, while the study by Rochman and Diamond examined people presenting with problem anger, it is unknown whether the emotion sequence of anger first and sadness second would engender a similar increase in arousal among individuals with lingering sadness. Similarly, Zhan et al. (2015) showed that individuals experiencing anger engaged in less aggressive behaviour, felt less angry, and felt more positive emotion when they were made to

feel sad, as opposed to afraid or neutral. It is important to emphasize that the anger that was the focus of the intervention was experimentally induced during the study and presumably less intense than a lingering emotion presenting in the context of highly personal and idiosyncratic unfinished business.

Among participants treated successfully for self-critical depression (i.e., lingering sadness), Choi et al. (2016) found that the most common emotion sequence expressed during treatment was sadness, then anger. It is important to emphasize that treatment success was evaluated based on pre-post treatment changes in self-esteem, as opposed to resolution of lingering sadness. Although the results of Choi et al.'s study suggest the expression of sadness first and anger second may aid individuals who feel lingering sadness and self criticism, it is unclear whether this specific emotion sequence is helpful to individuals with other lingering emotions, such as those individuals who present with anger. Similar to Choi and colleagues, among individuals experiencing lingering sadness about a recent event, Zhan et al. (2017a) found that an anger induction task led to a greater reduction in sadness than a joy induction or neutral task (Zhan et al., 2017a). In this case, the emotion that was the target of the intervention (i.e., sadness) was based on a previous personal experience, but the subsequent emotions were experimentally induced and unrelated to the target issues of sadness.

Despite evidence to suggest that specific emotional sequences may be beneficial for lingering anger or sadness, only a few isolated studies (e.g., Rochman & Diamond, 2008; Zhan et al., 2017a) have examined whether the types of emotions experienced and sequences in which emotions are experienced influence physiological or self-reported emotional arousal. No published studies have yet examined whether the types and sequences of emotions impact resolution of unfinished business, including the desire to hold a grudge, and no published studies

have yet compared the effectiveness of different emotion sequences in alleviating different types of emotional problems.

Furthermore, although a growing body of literature has demonstrated that experiencing anger and sadness in a specific sequential context appears to impact the intensity of negative emotions, there are few studies examining which emotions are impacted, as well as the magnitude of any observed impact. For example, Diamond, Rochman, and Amir (2010) found that when female, Israeli undergraduate students with lingering anger were guided to experience anger before sadness, they experienced changes in vocal quality associated with an increase in the intensity of sadness and fear. This finding suggests that the experience of anger before sadness may impact the intensity of emotion states other than anger and sadness. However, the authors did not examine changes in the intensity of anger during the intervention. In contrast, when participants experienced sadness before anger, Zhan et al. (2017a) observed an increase in anger intensity, a decrease in sadness intensity, a decrease in self-reported feelings of tension, and no changes in general positive or negative affect; however, the authors did not compare the magnitude of the observed changes in anger intensity, sadness intensity, and self-reported feelings of tension. It is possible that the specific emotion sequence of sadness-before-anger has a targeted impact on the intensity of anger and sadness, with negligible impact on other forms of negative affect (e.g., tension, fear, disgust) or positive affect (e.g., happiness, hope). Further research is needed to identify the types of emotional changes that occur during sequences of anger and sadness.

In addition, there is a dearth of literature examining whether changes in the intensity of an emotion state (i.e., anger or sadness) during an emotional processing exercise depend on the presenting emotional concern. Regardless of the sequence in which emotions are experienced,

emotional processing (e.g., emotional arousal, reflection on emotion, changing emotion with emotion) is generally targeted to address a presenting emotional concern, based on an individual's goals for emotion change (Pascual-Leone, 2018). For example, when an individual seeks to resolve distressing anger, emotional processing is assumed to have a greater impact on anger than sadness. Similarly, when an individual seeks to resolve distressing sadness, emotional processing is assumed to have a greater impact on sadness than anger. Indeed, results from a study by Lindhiem, Bennett, Orimoto, and Kolko (2016) suggest that psychotherapy, which involves emotional processing, has a larger beneficial impact on specific personal goals than on general symptoms. However, it is unclear whether changes in an emotion state depend on the presenting emotion, during an emotional processing exercise. This line of inquiry was examined in the present study.

Unfinished business affords an excellent context for studying sequences of anger and sadness because it commonly presents as feelings of lingering anger or lingering sadness (Paivio & Greenberg, 1995). Research has also demonstrated that specific forms of emotional processing, including the expression of emotion at moderate to high levels of emotional arousal and the verbal identification of unmet existential needs, are associated with resolution of unfinished business (Greenberg & Foerster, 1996; Greenberg & Malcom, 2002). In addition, although unfinished business is inherently subjective and personal, it has common features that occur across all cases, such as a triggering interpersonal event and feelings of discord towards another person (Greenberg, 2011), which allow some standardization of participants' inherently subjective emotional state. For these reasons, it is appropriate to examine helpful sequences of emotion within this context.

**Rationale for Method**

An extensive body of literature suggests that expressive writing permits recovery from various forms of emotional distress (e.g., Frattaroli, 2006; Pascual-Leone, Yeryomenko, Morrison, Arnold, & Kramer, 2016; Pennebaker, 1997). Even a single session of expressive writing has been demonstrated to reduce negative emotion following a distressing event (Fernandez & Paez, 2008; Henry, Schlegel, Talley, Molix, & Bettencourt, 2010). Moreover, expressive writing has been found to promote resolution of unfinished business. For example, when individuals experiencing negative emotions about an interpersonal transgression were assigned to an expressive writing condition, as compared to a control writing condition, they reported a faster decline in negative affect, and 4 weeks after the intervention, reported a slower increase in negative affect (Liao, Wei, Russell, & Abraham, 2012). Expressive writing also appears to encourage forgiveness following an interpersonal transgression (McCullough, Root, & Cohen, 2006; Romero, 2008), which can contribute to the resolution of unfinished business (Greenberg, 2011).

In addition, expressive writing interventions permit structure and standardization within the study of emotional processing. Prior researchers have used structured writing tools informed by emotion-focused therapy, including sentence stems to facilitate specific emotion states and identification of unmet existential needs (Pascual-Leone, 2010), to facilitate emotional processing among a non-clinical population (Kramer & Pascual-Leone, 2016; Rohde et al., 2015). Through written prompts, these tools are intended to facilitate the emotional processes that occur within psychotherapy that focuses on emotion. The completion of such tasks has been associated with becoming more engaged in working on one's problem (e.g., "problem activation"; Rohde et al., 2015), activation of target emotions (e.g., assertive anger; Kramer &

Pascual-Leone, 2016; negative affect, Rohde et al., 2015), and the resolution of unfinished business (Rohde et al., 2015).

Although researchers have examined sequences of emotion in the context of psychotherapy (e.g., Pascual-Leone, 2018), the observation of naturally occurring patterns in archival data does not permit researchers to guide participants towards specific sequences of emotion. Other studies of sequences of emotion have used film clips (e.g., Zhan et al., 2015) or distressing tasks (e.g., Lutz & Krahé, 2018) to activate target emotions, but these procedures lack the ecological validity of an autobiographical expressive writing task. An experimental context would allow researchers to systematically examine the impact of emotion sequences on processing different types of genuine emotional problems. Therefore, it is appropriate to examine sequences of emotion through a single-session, structured expressive writing task informed by emotion-focused therapy.

**Present Study**

Through a pre-post experimental design using multiple groups, the present study was intended to examine whether the presenting emotion (either anger or sadness) and the order in which subsequent emotions are experienced can provide a useful experience and facilitate the resolution of unfinished business. Two groups of participants, including participants who reported experiencing lingering anger and participants who reported experiencing lingering sadness, participated in parallel experimental designs. Participants were randomly assigned to one of two conditions: the anger-before-sadness condition or sadness-before-anger condition. In the anger-before-sadness condition, participants were guided to experience anger first, followed by sadness second. In the sadness-before-anger condition, participants were guided through the inverse sequence: first experiencing sadness, followed by anger.

**Research questions and hypotheses.**

***Research question 1: The impact of emotion sequence on anger.*** For individuals who present primarily with lingering anger, does the outcome of an emotional processing exercise depend on the sequence in which anger and sadness are experienced?

***Hypothesis 1.*** Individuals who present primarily with lingering anger will report that an emotional processing exercise is more helpful when they experience the presenting emotion (anger) first and an incongruent emotion (sadness) second, as opposed to the inverse order (i.e., of sadness first and anger second). Specifically, when individuals with lingering anger are guided to experience anger first and sadness second (as opposed to the inverse order of emotions), they will report:

*a)* greater resolution of unfinished business,

*b)* a greater decline in unforgiveness,

*c)* a greater decline in anger intensity,

*d)* the emotional processing exercise as being more useful.

***Research question 2: The impact of emotion sequence on sadness.*** For individuals who present primarily with lingering sadness, does the outcome of an emotional processing exercise depend on the sequence in which anger and sadness are experienced?

***Hypothesis 2.*** Individuals who present primarily with lingering sadness will report that an emotional processing exercise is more helpful when they experience the presenting emotion (sadness) first and an incongruent emotion (anger) second, as opposed to the inverse order (i.e., of anger first and sadness second). Specifically, when individuals who present primarily with lingering sadness are guided to experience sadness first and anger second (as opposed to the inverse of emotions), they will report:

*a)* greater resolution of unfinished business,

*b)* a greater decline in unforgiveness,

*c)* a greater decline in sadness intensity,

*d)* the emotional processing exercise as being more useful.

***Research question 3: The impact of presenting emotion (anger/sadness) on the intensity of anger and sadness.*** Does the presenting emotion impact the intensity of anger and sadness in an emotional processing exercise?

***Hypothesis 3.*** As such, following an emotional processing intervention, the reduction in intensity of a target emotion (i.e., anger or sadness) will depend on the presenting emotional concern as opposed to being a general change effect that is unrelated to individual differences in presentation. More specifically:

*Hypothesis 3a.* Because individuals who present primarily with lingering anger are reporting their anger as more distressing than sadness, during an emotional processing intervention, they will experience a greater reduction in anger intensity than participants who present with lingering sadness.

*Hypothesis 3b.* Because individuals who present primarily with lingering sadness are reporting that their sadness is more distressing than their anger, during an emotional processing intervention, they will experience a greater reduction in sadness than participants who present with lingering anger.

***Research question 4: The impact of presenting emotion and emotion sequence on the intensity of other emotion states.*** Do changes in the intensity of fear, shame, disgust, hope and joy depend on the presenting emotion and the sequence in which anger and sadness are

experienced? Due to the paucity of research regarding this question, the present study will involve an exploratory examination of this line of inquiry, without preliminary hypotheses.

# CHAPTER II

# METHOD

## Participants

**Total sample (*N* = 104)**. A total of *N* = 155 participants participated in the present study. After cases were removed due to missing data and non-adherence to instructions for written exercises (for more information, see the Results section), a total sample of *N* = 104 remained. All participants were residents of the United States or Canada. In addition, all participants provided informed consent prior to participation and were treated in accordance with ethical guidelines.

Two groups of participants were recruited in parallel, using analogous procedures. Group membership was based on participants' responses to screening items; as such, the groups were considered "self-identified". The first was an "angry group" of participants (*n* = 35) who had been experiencing primarily lingering *anger*, relative to sadness, because of a distressing interaction with an attachment figure (e.g., parent, present or former romantic partner, sibling, close friend). The second group was a "sad group" of participants (*n* = 69) who, in contrast to the previous group, had been experiencing primarily lingering *sadness*, relative to anger, because of a distressing interaction with an attachment figure (e.g., parent, present or former romantic partner, sibling, close friend).

Although the original criterion for study participation stated that participants must have been experiencing lingering anger or sadness for at least 6 months, which was a specific criterion for unfinished business used by several researchers (e.g., Diamond et al., 2010; Narkiss-Guez et al., 2015; Rochman & Diamond, 2008), insufficient numbers of participants were qualifying to participate in the study. As such, the criterion was eliminated. Similarly, past researchers (i.e., Greenberg & Foerster, 1996; Greenberg & Malcom, 2002; Paivio & Greenberg, 1995) have also recruited participants experiencing unfinished business without requiring a specific minimum

duration of time for lingering emotions. In addition, a meta-analysis of expressive writing studies demonstrated that the perceived effectiveness of the interventions did not depend on the duration of time that had passed since the distressing event selected for the expressive writing intervention (Frattaroli, 2006). Moreover, expressive writing had a greater beneficial effect on psychological health when participants selected more recent events (Frattaroli, 2006). Overall, within the present sample, over 72.1% of participants ($n$ = 75) reported experiencing anger or sadness for at least 6 months, whereas the remaining 27.9% ($n$ = 29) reported experiencing anger or sadness for less than 6 months.

Among participants in the total sample, 66.3% ($n$ = 69) were recruited from the University of Windsor Psychology Participant Pool, 16.3% ($n$ = 17) were recruited through an email sent to the general University of Windsor student body, 13.5% ($n$ = 14) were recruited from Amazon Mechanical Turk, and 3.8% ($n$ = 4) were recruited from social media. Each recruitment method is described in further detail in the Procedure section.

**Total sample ($N$ = 104) demographics.** Within the total sample, over 76.9% of participants identified as women ($n$ = 80), 22.1% identified as men ($n$ = 23), and less than 1.0% identified as gender non-binary ($n$ = 1). Age ranged from 18 to 66, with a mean age of 23 years ($SD$ = 7 years). Most participants (53.8%; $n$ = 56) identified as white/Caucasian, 12.5% ($n$ = 13) identified as East Asian (e.g., Chinese, Japanese), 9.6% ($n$ = 10) were Arab/Middle Eastern, 6.7% ($n$ = 7) described their ethnicity as black/African American/African Canadian, 5.8% ($n$ = 6) identified as multiracial, 2.9% were Latin/Hispanic ($n$ = 3), 1.9% ($n$ = 2) identified as South Asian (e.g., Indian, Pakistani), and 6.7% ($n$ = 7) identified as another race or ethnicity (e.g., Caribbean, South African, Pacific Islander, Southeast Asian, Uyghur, Eastern European). With respect to sexual orientation, 80.8% ($n$ = 84) of the sample identified as heterosexual, 4.8%

identified as homosexual (*n* = 5), 6.7% were bisexual (*n* = 7), 3.0% identified using other sexual orientations (*n* = 3), and 4.8% (*n* = 5) did not report sexual orientation. Most participants (68.3%; *n* = 71) were single, 20.2% (*n* = 21) were partnered, 7.7% (*n* = 8) were married, 1.9% (*n* = 2) were in common-law relationships, and 1.9% (*n* = 2) were divorced. Over 73.1% (*n* = 76) of the sample was employed. Among those employed, 25% (*n* = 19) were employed full-time and 73.7% (*n* = 56) were employed part-time. Among the participants recruited through the University of Windsor, 13.0% (*n* = 11) were first-year students, 42.0% (*n* = 36) were second-year students, 23.2% (*n* = 20) were third year students, and 21.7% (*n* = 19) were in year four and up.

Participants also provided information about the event that they had selected as the focus of the study. The time that had elapsed since the event varied, ranging from less than 1 month (*n* = 4) to over 17 years (*n* =1). On average, about 22 months had passed since the event of interest. When asked about the intensity of distress associated with the event, participants reported that the event had caused distress ranging in intensity from a level 3 to level 7 on a 7-point Likert scale, in which 1 indicated feeling *not at all distressed* and 7 indicated feeling *extremely distressed*. On the scale, the mean distress level was 6 (*SD* = 1). When participants were asked how often they think about the event, the most popular response was three to four times per week (26.9%; *n* = 28), and a large majority of participants (84.6%; *n* = 88) had spoken to another person about the event. Among participants who had spoken to someone about the event, the most common frequency of conversations about the event was once per week (34.6%; *n* = 36). Also, 25.0% of the sample (*n* = 26) indicated that they had previously received some form of therapy or counselling to deal with the distressing event that they had selected for the study and, on average, 13 months had passed since the participants had received the therapy or counselling.

Moreover, 12.5% of participants ($n$ = 13) indicated that they had been prescribed psychiatric medication to help manage distress about the event selected for the study. On average, the participants had last used the medication 1 year ago. In addition, 31.7% ($n$ = 33) of the sample had previously received psychotherapy or counselling for emotional difficulties other than the distressing event selected for the study.

## Measures

### Demographics measure.

A demographics questionnaire was used to assess participant gender, sexual orientation, age, year of study, employment status, marital status, and race/ethnicity (see Appendix A).

### Measures of individual differences.

***The Beck Depression Inventory (BDI-II; Beck, Steer & Brown, 1996).*** The BDI-II is a 21-item, 4-point Likert-type self-report measure of depression symptoms. Possible responses range in value from 0 to 3, and higher scores on this measure indicate greater severity of depression symptoms. A sample item on this measure is "Loss of Pleasure" in which the response options are "I get as much pleasure as I ever did from the things I enjoy", "I don't enjoy things as much as I used to", "I get very little pleasure from the things I used to enjoy", and "I can't get any pleasure from the things I used to enjoy." This measure was found to have strong internal consistency reliability among a non-clinical sample of undergraduate students ($\alpha$ = .91; Dozois, Dobson, & Ahnberg, 1998) and strong test-retest reliability over a one-week period among outpatients ($\alpha$ = .93; Beck et al., 1996), as well as convergent validity (i.e., higher BDI-II scores are related to higher scores on the Beck Depression Inventory; Beck, Rush, Shaw & Emery, 1979; Dozois et al., 1998). In the present study, this measure was used to assess to degree

to which participants experience symptoms of depression. Within the present sample, the scale had strong internal consistency ($\alpha$ = .93).

***Anger-Rumination Scale (ARS; Sukhodolsky, Golub, & Cromwell, 2001).*** The Anger-Rumination Scale is a 19-item self-report measure of the tendency to ruminate on feelings of anger. Items are evaluated on a 4-point Likert-type scale with possible responses ranging from *almost never (1)* to *almost always (7)*. Higher scores on this measure indicate more anger rumination. A sample item on this measure is, "I keep thinking about events that angered me for a long time." (Sukhodolsky et al., 2001, p. 694). This measure contains four subscales assessing various aspects of anger rumination: Angry Afterthoughts, Thoughts of Revenge, Angry Memories, and Understanding of Causes. Each subscale includes between four to six items. Sukhodolsky et al. (2001) have demonstrated that this scale has strong internal consistency reliability, ($\alpha$ = .93) and good test-reliability over one month ($\alpha$ = .77). In addition, the Anger-Rumination Scale has been found to have convergent validity. Higher Anger-Rumination Scale scores were found to be significantly associated with higher scores on the trait anger scale of the State-Trait Anger Expression Inventory (Spielberger, 1988; Sukhodolsky et al., 2001) and with higher scores on a measure of rumination on depression symptoms (Ruminative Response Scale; Gilbert, Cheung, Irons, & McEwan, 2005; Nolen-Hoeksema and Morrow, 1991). In the present study, this measure was used to assess the degree to which participants tend to engage in maladaptive ruminative thinking patterns after the feeling of anger has been activated. In the current sample, the scale had strong internal consistency reliability ($\alpha$ = .93).

***Levels of Self-Criticism Scale (LOSC; Thompson & Zurroff, 2004).*** The Levels of Self-Criticism Scale is a 22-item self-report measure of the degree to which one evaluates oneself negatively. Items are rated on a 7-point Likert-type scale, with possible responses ranging from

*not at all* to *very well*. Higher scores on this measure indicate greater levels of self-criticism. A sample item on this measure is: "Failure is a very painful experience for me." (Thompson & Zurroff, 2004, p. 424). The measure contains two subscales that each assess a unique form of self-criticism: The Comparative Self-Criticism subscale (12 items) and the Internalized Self-Criticism subscale (10 items). Internal consistency reliability was very good for both the Comparative Self-Criticism subscale ($\alpha$ = .81 to .84) and the Internalized Self-Criticism subscale ($\alpha$ = .87 to .88; Thompson & Zurroff, 2004). Based on strong positive correlations with self-criticism (as measured by the Depressive Experiences Questionnaire; Blatt, D'Afflitti, & Quinlan, 1976), moderate positive correlations with psychological distress, and moderate negative correlations with self-esteem, this scale appears to have adequate convergent validity and discriminant validity (Thompson & Zurroff, 2004). In the present study, this measure was used to evaluate participants' self-criticism prior to the intervention because there is evidence to suggest that the tendency to criticize oneself may impact the experience of anger (Choi et al., 2016; Kramer & Pascual-Leone, 2016; Whelton & Greenberg, 2005). This data was used for exploratory purposes when examining the impact of self-criticism on participant performance in the experimental intervention. Within the present sample, internal consistency for the scale was strong ($\alpha$ = .90).

***Interpersonal Event Questionnaire (Pascual-Leone & Sawashima, 2018).*** The Interpersonal Event Questionnaire is an eight-item measure of the qualities of a distressing interpersonal event (see Appendix B). In the present study, it was used to assess the nature of the interpersonal events that participants select for the study, including the amount of time that has passed since the event, the amount of distress caused by the event, and any psychotherapy or psychiatric medications used in response to event. It was also used to examine the frequency of

time spent thinking and speaking to others about the event. A sample item is, "On average, how many times per week do you speak to someone else about this issue?", to which possible responses include *0, 1, 2, 3-4, 5-6,* and *daily or more.*

**Process measures.**

***Anger-Sadness Comparison item (Pascual-Leone & Nardone, 2019; developed for use in the present study).*** This is a single item self-report measure of the relative intensity of participants' state anger and sadness (see Appendix C). Through the prompt, "When I think about this interaction, I feel…", participants are asked to compare their current feelings of anger and sadness on a 9-point scale on which possible responses range from "Only angry, not at all sad" to "Only sad, not at all angry". Typically, measures of emotional arousal assess the intensity of each emotion state individually. However, in the present study, when evaluating the intensity of each emotion state, it was important for participants to directly compare the intensity of their anger to the intensity of their sadness and to provide responses that indicate the relative strength of these emotions. For this reason, the item was developed for use in the present study.

***Emotional Engagement Scale (EES; as used in research by Narkiss-Guez et al., 2015 and Rochman & Diamond, 2008).*** The Emotional Engagement Scale is a single-item self-report measure that is used to assess the intensity of a specific emotion state (e.g., anger, sadness; see Appendix D). Participants are asked to rate the present-moment intensity of an emotion on a 100-point scale, and higher scores on this scale indicate greater emotional arousal. A verbally-administered, 10-point version of the Emotional Engagement Scale has been demonstrated to have convergent validity in the assessment of emotional arousal. Specifically, higher Emotional Engagement Scale scores during verbal expression of anger have been associated with increased physiological arousal in the form of reduced finger temperature (Rochman & Diamond, 2008),

which aligns with the tendency to approach during feelings of anger (Greenberg, 2010). In addition, Emotional Engagement Scale scores during silent reflection on sadness have been associated with emotion regulation in the form of parasympathetic activation. In particular, higher Emotional Engagement Scale ratings of sadness intensity were associated with greater high frequency of heart rate variability (Rochman & Diamond, 2008), which corresponds with the tendency to withdrawal and conserve resources during feelings of sadness (Lazarus, 1991). In the present study, a written seven-item version of the Emotional Engagement Scale was used to assess the intensity of state anger, sadness, fear, shame, disgust, hope, and joy at three points during the experiment. The item wording was modified slightly for written administration. The original Emotional Engagement Scale for anger and sadness asks, "On a scale of 1 to 10, with 1 being the least and 10 being the most, how intensely did you feel [angry/sad]?" (Rochman & Diamond, 2008; p. 98), whereas the modified version asks, "Right now, on a scale of 1 to 100, how intensely do you feel . . . [angry/sad/afraid/ashamed/disgusted/hopeful/joyful]?" and is presented with a 100-point scale in which 1 is labelled as "Least Intense" and 100 is labelled as "Most Intense." The Emotional Engagement Scale was used to assess the efficacy of the experimental manipulation in activating a target emotion, and to measure changes in the intensity of various of emotion states from before to after the intervention.

**Outcome measures.**

***Unfinished Business Resolution Scale (RS; Singh, 1994).*** The Resolution Scale is an 11-item, 5-point Likert-type self-report measure of unfinished business. Possible responses range from *not at all (1)* to *very much (5)*, and higher scores on this measure indicate greater levels of unfinished business. A sample item on this measure is "I feel troubled by my persisting unresolved feelings (such as anger, grief, sadness, hurt, resentment) in relation to this person."

(Singh, 1994, p. 254). The measure contains four subscales (each with two to three items) that assess different facets of unfinished business: Degree of Distress associated with Lingering Feelings, Not Having Needs Met, Perceptions of the Self, and Perception of the Other. The Resolution Scale was found to have good internal consistency among a clinical sample seeking therapy for unfinished business ($\alpha$ = .74; Singh, 1994), and very good internal consistency among a clinical sample who completed therapy for unfinished business ($\alpha$ = .84; Singh, 1994). This measure was also found to have convergent validity. For example, higher Resolution Scale scores were significantly associated with higher therapist and client ratings of global resolution, and higher Resolution Scale scores were significantly associated with higher scores on the Inventory of Interpersonal Problems (Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988; Singh, 1994). Although the Resolution Scale was originally developed to assess unfinished business during psychotherapy (Singh, 1994), it has been used to assess unfinished business among a nonclinical sample within an experimental intervention (Rohde et al., 2015).

In the present study, the original instructions for the Resolution Scale were modified to better reflect the study's focus on a single interpersonal grievance with an attachment figure. The original instructions stated, "This is a list of items that asks you how you feel in relation to a significant other with whom you have unfinished business.", whereas the current modified version stated, "These items ask how you feel in relation to the person (e.g., parent, current or past romantic partner, sibling, close friend) who was involved in the interaction you selected." Also, in the present study, the Resolution Scale was used to assess unfinished business before and after the experimental intervention. Within the present sample, the pre-intervention Resolution Scale had good internal consistency ($\alpha$ = .76), whereas the post-intervention Resolution Scale ($\alpha$ = .85) had very good internal consistency.

***Transgression-Related Interpersonal Motivations Inventory (TRIM; McCullough, Rachal, Sandage, Worthington, Brown, & Hight, 1998).*** The Transgression-Related Interpersonal Motivations Inventory is a 12-item self-report measure of the degree to which one is motivated to not forgive another person against whom one has an interpersonal grievance. This construct is sometimes referred to as "unforgiveness" (Wade & Worthington, 2003) and essentially refers to the drive to "hold a grudge." It is important to note that although forgiveness always involves a decrease in unforgiveness, a decline in unforgiveness does not necessarily involve forgiveness (Wade & Worthington, 2003). Each item in this measure is rated on a 5-point Likert-type scale, with possible responses ranging from *strongly disagree (1)* to *strongly agree (5),* and higher scores indicate higher levels of unforgiveness. There are two subscales, the Avoidance subscale (seven items) and Revenge subscale (five items), which each evaluate a distinct form of unforgiveness. An example item from the Avoidance subscale is "I cut off the relationship with him/her", and example item from the Revenge subscale is "I'm going to get even." (McCullough et al., p. 1603). In past research, Cronbach alpha statistics ranged from $\alpha$ = .84 to $\alpha$ = .94 for the measure subscales, which indicated that internal consistency reliability was very good to strong (McCullough et al., 1998). Moreover, for the measure subscales, test-retest reliabilities over a 3-week period ranged from $r$ = .79 to $r$ = .86 and test-retest reliabilities over a 9-week period ranged from $r$ = .64 to $r$ = .65 (McCullough et al., 1998). In addition, the measure was demonstrated to have predictive and discriminant validity (McCullough et al., 1998). In the present study, this measure was used to evaluate unforgiveness before and after the intervention. Within the present study, internal consistency was strong for the pre-intervention Transgression-Related Interpersonal Motivations Inventory ($\alpha$ = .93), and the post-intervention Transgression-Related Interpersonal Motivations Inventory ($\alpha$ = 94).

***Useful Processes Questionnaire (UPQ; Pascual-Leone & Sawashima, 2018).*** The Useful Processes Questionnaire is a 17-item, 5-point Likert-type self-report measure of the usefulness of a process intended to alleviate emotional distress, regardless of whether it occurs within a therapy session or an experimental intervention (see Appendix E). Possible responses range from *not at all (1)* to *very much (5)*, and higher scores on this measure indicate greater usefulness. Two subscales are present in the Useful Processes Questionnaire. The Sense of Direction subscale is a seven-item measure of the perceived productivity of a specific process, and the extent to which a process provides a sense of direction for emotional recovery. An example item from the Sense of Direction subscale is, "I have a sense that working this way or with this intervention is a promising direction for me." The Self-Awareness subscale is a five-item measure of self-insight into the cause, effects, and nature of one's personal distress. A sample item from the Self-Awareness scale is "I have come to understand myself, my feelings, or my actions better." In a prior study, the overall Useful Processes Questionnaire was demonstrated to have very good internal consistency ($\alpha$ = .84), as did the Self-Awareness subscale ($\alpha$ = .83). The Sense of Direction subscale had good internal consistency ($\alpha$ = .72; Sawashima, 2018). In the present study, the Useful Processes Questionnaire was used to assess participants' views on the usefulness of the emotional processing exercise. Within the present sample, internal consistency was strong ($\alpha$ = .95) for the Useful Processes Questionnaire.

**Design**

Within the present study, two self-identified groups of participants (i.e., angry group; sad group) were each randomly assigned, in parallel, to one of two conditions (i.e., anger-before-sadness condition or sadness-before-anger condition). Among participants in the self-identified angry group ($n$ = 35), 19 were assigned to the anger-before-sadness condition and the remaining

16 were assigned to the sadness-before-anger condition. Moreover, within the self-identified sad group ($n$ = 69), 32 participants were assigned to the anger-before-sadness condition and 37 participants were assigned to the sadness-before-anger condition. In different sequences, each condition included an anger facilitation segment, which was intended to activate the target emotion of anger, and a sadness facilitation segment, which was intended to activate the target emotion of sadness. In the anger-before-sadness condition, participants completed the anger facilitation segment first and the sadness facilitation segment second. Meanwhile, in the sadness-before-anger condition, participants completed the sadness facilitation segment first and the anger facilitation segment second. A schematic diagram of the design is presented in Figure 1.

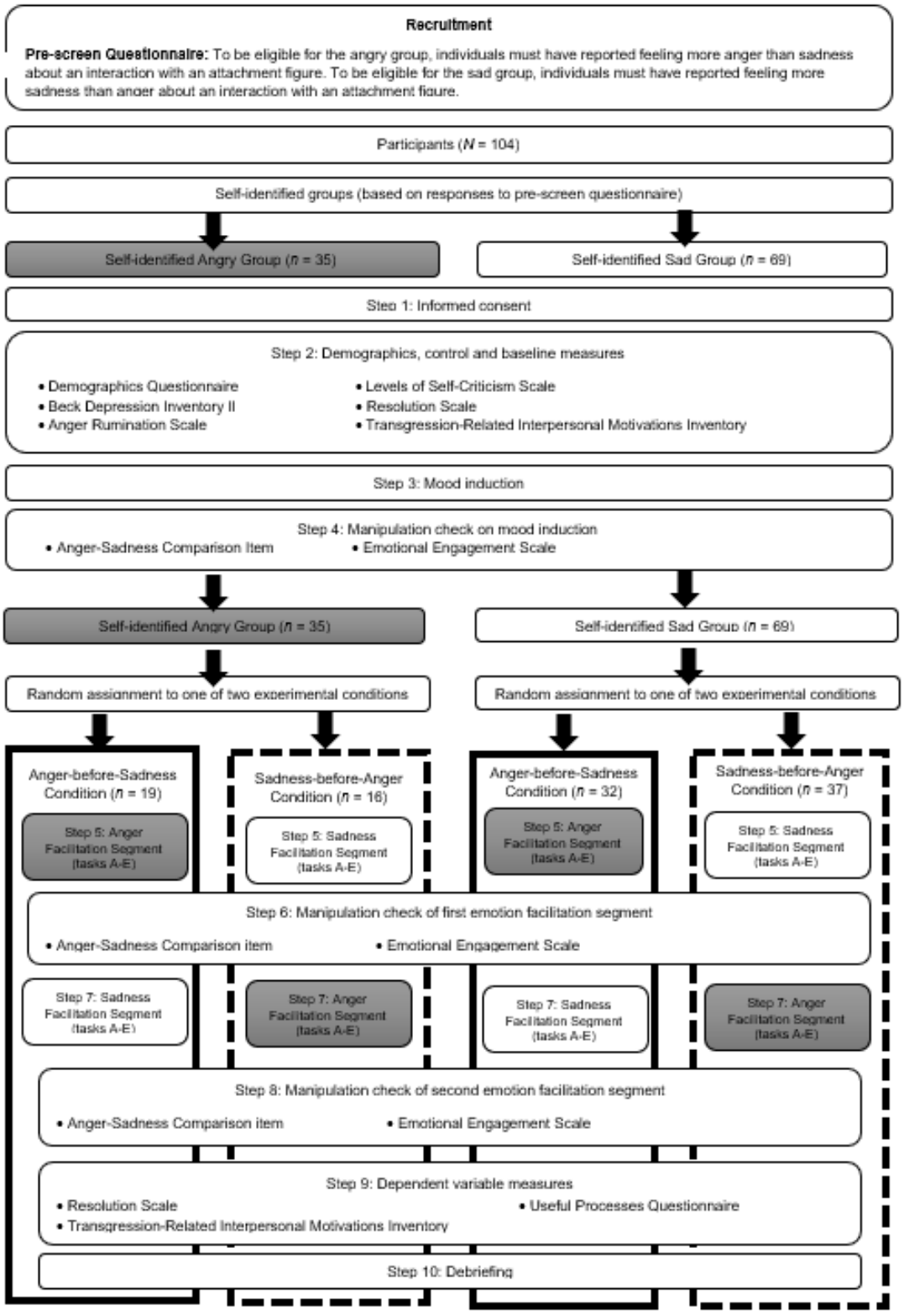


*Figure 1.* Study procedure, design, and measures.

**Emotion facilitation segments.**

Within each emotion facilitation segment, participants were asked to complete five expressive writing tasks (*tasks A through E; outlined below*) intended to activate the target emotion (i.e., either anger or sadness, depending on the condition). These tasks were deliberately ordered from most concrete to increasingly abstract forms of emotional processing, in order to maximize the likelihood that participants would be able to complete them effectively (Pascual-Leone et al., 2016). The emotion facilitation segments, including tasks A through E, represent an intervention tool that should be cited as Pascual-Leone & Nardone (2019). Although each emotion facilitation segment only required about 15 minutes to complete, prior studies using guided emotional sequences have demonstrated that therapeutic emotional change can occur in a single-session exercise (Narkiss-Guez et al., 2015; Zhan et al., 2017a).

For each of the groups, the emotion facilitation exercises began with either the anger facilitation segment or sadness facilitation segment. The instructions seemed more natural when participants were asked to express their presenting emotion of concern, as opposed to an incongruent emotion. For example, the instructions were more natural when participants from the angry group were asked to express their anger, as opposed to sadness. When participants completed an emotion facilitation segment that was inconsistent with their presenting emotion, the segment was preceded by a prompt explaining that it is possible to experience emotions other than the current dominant emotion. For example, when the angry group was asked to complete the sadness facilitation segment, they were informed that, “Sometimes when people feel angry, they also feel sad. During the following questions, please focus on any sadness that you feel about the interpersonal interaction.” A comparable prompt was used when the sad group completed the anger facilitation segment. It is important to note that the series of tasks in the

emotion facilitation segment were intended first and foremost as an experimental intervention, not as assessment tools.

***Task A: Sentence stems***. Participants were asked to complete a modified version of a written task that was based on the Sequential Model of Emotional Processing (Pascual-Leone & Greenberg, 2007) and intended to activate specific emotion states (Pascual-Leone, 2010). Participants were presented with 10 sentence stems that permit expression of target emotions in the facilitation segment and were asked to finish four incomplete sentences. To encourage reflection on the sentence stems, participants were unable to proceed to the next task until at least 2.5 minutes had elapsed. The original version of this task has been used in prior experimental studies to activate target emotions (Kramer & Pascual-Leone, 2016; Rohde et al. 2015). It is possible that participants experienced both maladaptive and primarily adaptive forms of anger or sadness during the emotional processing exercise; therefore, sentence stems associated with maladaptive as well as primary adaptive emotion states were included in a randomized order (a prior body of research has indicated these kinds of emotions as either adaptive or not, see Pascual-Leone, 2018). For example, in the anger facilitation segment, participants were presented with 10 sentence stems: five intended to activate *rejecting anger* (which is not considered adaptive), and five that were intended to activate *assertive anger* (which is considered adaptive). The task used in the anger facilitation segment is presented below:

> Below are a series of incomplete sentence "stems" related to anger that you felt about the interaction. From the list below choose the sentence stems that seem most significant, meaningful, or true for what you feel about the situation. Please complete a total of 4 sentences. For example, you may write something like: "I hate…*him for what he did*," or "I deserved…*to be treated with respect*."

- I'm upset and resent…
- I'm disgusted by…
- I have a right to be assertive because I…
- Sometimes I get so angry and fired up, I want to…
- I deserved…
- What was most unfair was…
- I will not allow…
- It's just really frustrating that…
- I will fight for…
- I hate….

Similarly, in the sadness facilitation segment, participants were presented with a total of 10 sentence stems: five intended to activate global distress (not adaptive), and five intended to activate adaptive hurt/grief (adaptive). The task used in the sadness facilitation segment is presented below.

> Below are a series of incomplete sentence "stems" related to sadness that you felt about the interaction. From the list below choose the sentence stems that seem most significant, meaningful, or true for what you feel about the situation. Please complete a total of 4 sentences. For example, you may write something like "I feel hopeless and discouraged when…*I think about what she said to me*," or "I'm sad about losing...*the person who meant so much to me*."

- What upsets me is…
- I feel sad about…
- What I miss is…

- I'm sad about losing…
- I feel hopeless and discouraged when…
- I felt hurt or wounded...
- I wish I could get past…
- I would have liked…
- I feel confused and lost when….
- I'm starting to be able to "let go" of....

Upon completing the sentence stems, all participants were also asked, "Sometimes sentence stems like these help you find the right words to express how you feel. Which one fits best for you right now and why?" Overall, this task was intended to activate and encourage participants to focus on the target emotion.

***Task B: Somatic sensations***. In this task, participants were instructed to describe their bodily sensations as they experienced the target emotion. To encourage participants to reflect on the task, participants were unable to move to the next task in the intervention until 1.5 minutes had elapsed. To aid with their description, participants were presented with a brief list of eight somatic sensations that are commonly experienced during the target emotion. The task instructions used in the anger facilitation segment are presented below.

> When people feel angry, they often feel it somewhere in their body. For example: a tightness in your chest, clenched jaw, or a racing heartbeat. Take a moment right now, to notice the sensations in your body when you think about what happened. If you don't feel anything right now, then just try to imagine what it would feel like. Using your own words is best, but if you aren't sure, maybe one of these fits for you…
>
> - feeling flushed in the face/neck,

- clenched jaw,
- racing heartbeat,
- stomach ache,
- clenched fists,
- headache,
- tightness or pain in the chest,
- feeling fired up…

In the sadness facilitation segment, the following instructions are used:

When people feel sad, they often feel it somewhere in their body. For example: weakness, a heaviness weighing on their shoulders, or a stomach ache. Take a moment right now, to notice the sensations in your body when you think about what happened. Using your own words is best, but if you aren't sure, maybe one of these fits for you…

- tightness or pain in the chest,
- back pain,
- stomach ache,
- pain in the limbs,
- headache,
- fatigue or weakness,
- heaviness on the shoulders,
- dragged down…

After being presented with the list of somatic sensations, participants were asked, "Where is that feeling in your body? What is it like?" and given two prompts stating, "I have this feeling in my…" and "It's like….". This task was intended to allow participants to explore the somatic

facet of an emotion episode (Pascual-Leone et al., 2016). Similar exercises, such as Gendlin's (1969) focusing task, are used in experiential psychotherapy to encourage clients to access their emotions by attending to physical sensations (Greenberg, 2011).

***Task C: Action tendency***. Participants were asked to describe how the target emotion makes them want to respond, either independently or towards another person. Similar to previous tasks, participants were unable to proceed to the next task until 1 minute had elapsed. In the anger facilitation segment, the instructions for this task were, "Sometimes, when people feel *angry*, they want to fight, to defend something, or to stand up for themselves. What does the anger make you want to do, either by yourself or towards another person?" Similarly, in the sadness facilitation segment, the instructions used for this task were: **"**Sometimes, when people feel *sad*, they want to hide, to run away, or to seek comfort from others. What does the sadness make you want to do, either by yourself or towards another person?" After being presented with either of these sets of instructions, participants were asked to complete the sentence prompt: "My [anger/sadness] makes me want to…", in which the emotion word (anger/sadness) will correspond to the presented segment of emotion facilitation. This task was intended to allow participants to identify and process the action tendency associated with the target emotion, which is an additional element of an emotion episode (Pascual-Leone et al., 2016).

***Task D: Unmet needs.*** Participants completed another modified version of a written task informed by the Sequential Model of Emotional Processing that was intended to promote the identification of unmet existential needs (Pascual-Leone, 2010). To encourage engagement in the task, participants were required to spend at least 1 minute on the webpage displaying this task. As with task A, this task has been used in prior experimental research (Kramer & Pascual-Leone, 2016), but to reduce administration time, the original task was shortened. Participants were asked

to identify what they needed in the interpersonal interaction which they selected for the study. Then to assist them in identifying their needs, participants were presented with a list of unmet existential needs (e.g., a need for support; Pascual-Leone, 2010). The instructions for this task are presented below. The emotion word used, either anger or sadness, corresponded to the emotion facilitation segment being presented.

> As you feel [anger/sadness], consider what you needed most (or maybe still need) in the interpersonal interaction. Your own words are best, but if you aren't sure, maybe one of these fits for you:
>
> What I need(ed) most is…
>
> - recognition or respect from others,
> - to be liked or accepted,
> - love, friendship, or belonging,
> - support or help,
> - sympathy or validation,
> - freedom or autonomy,
> - self-respect or freedom from criticism,
> - joy in life…

After these instructions, participants were asked to complete the prompt, "What I need(ed) most is…" This prompt was followed by a question that was not included in the original version of the task: "Sometimes sentence stems like these help you find the right words. Which one fits best for you right now and why?" This task was intended to permit identification and processing of unmet existential needs, which are an important facet of an emotion episode (Pascual-Leone et al., 2016).

***Task E: Message to Other Person***. Finally, participants were asked to write a brief message to the person who was the focus of the interpersonal interaction. Participants were unable to proceed to the next step of the procedure until they had spent at least 4 minutes on the webpage displaying this task. Within the message, participants were asked to describe their experience of the target emotion and were encouraged to use their completed sentence stems and identified needs, which were visible on the screen as they complete this task. The instructions used to introduce this task are presented below. The emotion word (i.e., angry/sad) used corresponded to the emotion facilitation segment in which the task was presented.

> For this last part, you can use your answers to the questions above to help inspire you as you write. Please pretend you are writing a brief message to the person who is the focus of what happened. This exercise is not practice for real life; the other person will never see this message. So instead, this is an opportunity *for you* to directly express *your* thoughts and feelings *as if* the other person were there. Imagine telling them what you really want to say and how you really feel [angry/sad].

This task was inspired by interventions commonly used in emotion-focused therapy, in which clients are directed to imagine another person and to imagine verbally expressing their emotions to this other person (cf. empty chair intervention; Greenberg, 2011; Paivio & Pascual-Leone, 2010). Moreover, this task was intended to allow expression of concern about the self-in-relation-to-another, which is a key facet of an emotion episode (Pascual-Leone et al., 2016).

## Procedure

**Participant Recruitment.** Participants were recruited using four different methods, described below. Prior to participation in the present study, potential participants were asked to complete an online pre-screen questionnaire to determine eligibility for the study. Based on

responses to the pre-screen questionnaire, potential participants were able to participate in only the angry group or sad group. The exact nature of the pre-screen questionnaire varied by the recruitment used, and differences are also described below.

***Recruitment through University of Windsor Psychology Participant Pool (n = 69).*** Potential participants completed a pre-screen questionnaire that asked about three points: if they had (a) been feeling either especially angry or especially sad because of (b) an interaction with an attachment figure (e.g., parent, current or past romantic partner, sibling, close friend), which (c) had occurred more than 6 months ago (see Appendix F for more information). It is important to note that in future recruitment, criterion c was not used, because insufficient numbers of participants were registering for the study. If pre-screen questionnaire respondents indicated that they were feeling more anger than sadness about an interaction with an attachment figure that had occurred more than 6 months ago, they were eligible to participate in the angry group. Conversely, if they reported feeling more sadness than anger about an interaction with an attachment figure that had occurred more than 6 months ago, they were eligible to participate in the sad group. Individuals who reported feeling equal levels of anger and sadness were excluded because only populations with polarized emotion were of interest in the present study. In addition, individuals who indicated that their anger or sadness was not related to an interaction with an attachment figure or had not been present for more than 6 months, were not eligible to participate in the study. In exchange for participation in the study, participants recruited through the University of Windsor Psychology Participant Pool were awarded course credit.

***Recruitment through email to University of Windsor student body (n = 17).*** Potential participants were emailed a description of the study and a weblink to an online pre-screen questionnaire on Qualtrics that asked about two points: if respondents had (a) been feeling either

especially angry or especially sad because of (b) an interaction with an attachment figure (e.g., parent, current or past romantic partner, sibling, close friend). Although two of the criteria were identical to those used during recruitment of participants from the University of Windsor Psychology Participant Pool, the questions were formatted in a slightly different way, due to technical reasons (see Appendix G). If pre-screen questionnaire respondents indicated that they were feeling more anger than sadness about an interaction with an attachment figure, they were eligible to participate in the angry group. Conversely, if they reported feeling more sadness than anger about an interaction with an attachment figure, they were eligible to participate in the sad group. All other participants were not eligible to participate in the study. Those who were eligible to participate were provided with the weblink to the study at the end of the pre-screen questionnaire, and were reminded about the study through emails, if they agreed to receive emails. In exchange for participating in the pre-screen questionnaire, participants had a chance to win a gift card, and in exchange for participating in the study itself, participants were also given a chance to win an additional gift card.

***Recruitment through Amazon Mechanical Turk (n = 14).*** Potential participants were able to access the pre-screen questionnaire, which was identical to the pre-screen questionnaire used to recruit through an email to University of Windsor students (see Appendix G), through a study advertisement posted on the Amazon Mechanical Turk website. Those who were eligible to participate were provided with the weblink to the study at the end of the pre-screen questionnaire and were able to access the study through a separate advertisement posted on Amazon Mechanical Turk. In exchange for participating in the pre-screen questionnaire, participants were compensated with $0.10 USD, and in exchange for participating in the study itself, participants were compensated with $3.75 USD.

***Recruitment through social media (n = 4).*** To recruit through social media, a Facebook account was created for the study and the researcher placed advertisements containing a weblink to the pre-screen questionnaire on various research and student group Facebook pages. Participants recruited through social media completed a pre-screen questionnaire identical to that used during recruitment through an email to the University of Windsor student body (see Appendix G). Those who were eligible to participate were provided with the weblink to the study at the end of the pre-screen questionnaire, and were reminded about the study through emails, if they agreed to receive emails. In exchange for participating in the pre-screen questionnaire, participants had a chance to win a gift card. In exchange for participating in the study, participants were offered a chance to win an additional gift card.

**Study procedure.** The entire procedure took about 60 to 90 minutes to complete and was accessed on the University of Windsor's Qualtrics website. Participants were not required to complete the study in a lab setting and were able to participate in the study from any computer available for their personal use.

***Step 1***: ***Informed consent (5 minutes)***. Participants were asked to provide informed consent for the present study and consent for the possible use of their data in future studies.

***Step 2: Demographics, control, and baseline measures (30 minutes).*** Participants were asked to complete demographics measures, including a demographics questionnaire as well as control measures (Beck Depression Inventory II, Anger Rumination Scale, Levels of Self-Criticism Scale). Participants then received the following prompt to remind them of the recruitment criteria for the study, and the emotion words used corresponded with the participant self-identified group (i.e., angry/sad).

> When you signed up for this study you indicated that you have been feeling especially [angry/sad] because of an interaction with an attachment figure (e.g., parent, current or past romantic partner, sibling, close friend). Please think about this interaction when responding to the following questions. If there are multiple interactions with this attachment figure that have caused you to feel especially [angry/sad], please select the one interaction during which your feelings of [anger/sadness] were the strongest.

Participants were then asked to complete an additional control measure (Interpersonal Event Questionnaire) and finally the baseline measures on the dependent variable (Resolution Scale, Transgression-Related Interpersonal Motivations Inventory).

***Step 3: Mood induction (4 minutes).*** Participants completed a written mood induction task in which they will be asked to describe the interpersonal interaction that they have selected for the present study. To encourage reflection on the task, participants were unable to progress to the next step of the procedure until at least 4 minutes had elapsed. This step was intended to allow participants to process the external situation associated with their unfinished business, which is an important facet of an emotion episode (Pascual-Leone et al., 2016; Paivio & Pascual-Leone, 2010). The prompts for the mood induction task are presented below.

> Please think about the specific interpersonal interaction that you have selected for this study.
>
> *a)* Describe who was there and what happened in the interaction.
>
> *b)* Describe how you felt inside as this happened.
>
> *c)* What does this feeling mean to you?

***Step 4: Manipulation check on mood induction (2 minutes).*** Participants were asked to complete self-report measures (i.e., Anger-Sadness Comparison item, Emotional Engagement Scale).

***Step 5: First emotion facilitation segment (15 minutes)***. Participants were randomly assigned to either the anger-before-sadness condition or sadness-before-anger condition. At Step 5 of the procedure, participants completed the first emotion facilitation segment, which was either the anger or sadness facilitation segment, depending on their respective conditions. For example, for participants in the anger-before-sadness condition, the anger facilitation segment was the first facilitation segment, whereas for those in the sadness-before-anger condition, the sadness facilitation segment was the first segment. Regardless of the target emotion for the segment, the first facilitation segment consisted of tasks A through E, which were intended to activate the target emotion.

***Step 6: Manipulation check on first emotion facilitation segment (2 minutes)***. Participants completed the Anger-Sadness Comparison item and Emotional Engagement Scale.

***Step 7: Second emotion facilitation segment (15 minutes).*** Participants completed tasks A through E of the second emotion facilitation segment, which was either the anger or sadness facilitation segment, based on their respective conditions. For example, for participants assigned to the anger-before-sadness condition, the second segment was the sadness facilitation segment.

***Step 8: Manipulation check on second emotion facilitation segment (2 minutes)***. Participants completed the Anger-Sadness Comparison item and Emotional Engagement Scale.

***Step 9: Dependent variable measures (10 minutes)***. Participants completed measures of dependent variables: the Resolution Scale, Transgression-Related Interpersonal Motivations Inventory, and Useful Processes Questionnaire.

***Step 10: Debriefing (5 minutes)***. Participants were asked to speculate about the aim of the study, to evaluate the degree to which they were blind to study hypotheses. Participants received a letter of information and a list of campus and community mental health resources, in case they were interested in following up on any of the issues that were raised by the study process. In addition, to monitor the effectiveness of the debrief procedure and to assess the impact of the protocol on participants' overall distress levels, participants were asked to compare their distress at time of the debriefing with their distress at the start of the study (see item in Appendix H).

# CHAPTER III

# RESULTS

## Inspection to assess Adherence to Intervention Protocol

Data was collected from a total of $N = 155$ participants. After data was de-identified, each case was inspected to assess adherence to the intervention. Prior to analyses, $n = 44$ cases were removed because the participants did not complete any of the open-ended items in either the initial mood induction, or in key parts of the experimental manipulations (e.g., anger or sadness facilitation segments). An additional $n = 3$ cases were removed because participants did not complete every exercise in either the anger or sadness facilitation segments. For example, a case was removed because the participant did not provide a response to "Exercise E: Message to Other" in the anger facilitation segment. Furthermore, an additional $n = 4$ cases were removed prior to analyses because the participants appeared to have ignored the instructions for written responses. For example, one participant wrote about topics completely unrelated to the focus for the study, such as world politics, while another participant duplicated their same prior responses in two or more subsequent text fields during the mood induction, which was nonsensical and suggested inattention to the instructions. Two additional participants provided identical responses to the mood induction items and appeared to have copied responses, which were suspected to be either the product of on-line bots or copied from a third source of material. In short, the participants described above did not complete the intervention or did not follow the intervention instructions, and as such, their data was not of interest in the present study. After removing the cases described above, a total sample of $N = 104$ remained.

## Missing Data Analysis

In the total sample ($N = 104$), 165 variables were examined for missing data. Items that were presented only to certain participants, such as Interpersonal Event Questionnaire Item 6b,

which was presented only to participants who reported receiving therapy in response to the event selected for the study, were not analyzed for missing data. It was observed that 5.8% of cases ($n$ = 6) had at least one missing data point, and less than 0.1% of the total data points were missing. On average, less than 0.1% of data was missing per case. Little's MCAR test (1988) suggested that the data was missing at random, $\chi^2(42) = 25.08$, $p = .992$. Because there was minimal missing data and data was missing at random, it was suitable to impute missing values using multiple imputation (Pituch & Stevens, 2016). As per recommendations from Graham, Olchowski, and Gilreath (2007), 20 imputations were completed, which preserves maximum power when less than 1% of data is missing.

It was also observed that $n$ = 23 participants took more than 2 hours to complete the study, which was expected to take between 60 and 90 minutes to complete and suggests they likely took prolonged breaks while participating in the study. The emotion-based intervention was designed to be completed without prolonged breaks, and it is unclear how interruptions to the protocol would impact the effect of the intervention. However, due to limited power, these participants were included in the sample. The remaining sample ($N$ = 104) was examined for all remaining analyses[1].

**Correspondence between Self-Identified Group and Self-Reported Emotional State after Mood Induction**

Participants' self-reported feelings of anger and sadness intensity at the manipulation check of the mood induction (Step 4) were examined to assess whether participants' emotional state after the mood induction was consistent with their self-identified group (e.g., to confirm that people who identified as angry actually felt angry following the mood induction). Responses

[1] Some effects were stronger when these participants were included in the sample and for that reason, reported results are considered to be conservative.

to the bipolar Anger-Sadness Comparison item, as well as the Emotional Engagement Scale anger and sadness intensity items, were both examined (for a summary of what will be described see Table 1). Most participants (57.1%) in the self-identified angry group reported feeling more angry than sad on both the bipolar Anger-Sadness Comparison item and when the Emotional Engagement Scales were compared. Similarly, most participants (63.8%) in the self-identified sad group reported feeling more sad than angry on both the Anger-Sadness Comparison item and the Emotional Engagement Scale. Within the self-identified angry group, 20.0% of participants reported feeling mostly sad on both measures of emotional state, which suggests that their emotional state at the time of the intervention was consistent with the sad group. In addition, within the self-identified sad group, 4.3% of participants endorsed feeling predominantly angry on both measures of emotional state, which suggests that their emotional experience corresponds to that of the angry group.

Table 1

*Self-Identified Group and Response Patterns to Two Measures of Anger and Sadness Intensity (i.e., Anger-Sadness Comparison item and Emotional Engagement Scale) after Mood Induction (N = 104)*

| Self-Identified Group | Response Pattern | Frequency (*n*, % of self-identified group) |
|---|---|---|
| Angry Group (*n* = 35) | Angry: On both the Anger-Sadness Comparison item and Emotional Engagement Scale, participants reported feeling more angry than sad. | 20 (57.1%) |
| | Angry-Equal: On one measure (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), participants reported feeling more angry than sad. On the other measure, participants reported feeling equally angry and sad. | 3 (8.6 %) |
| | Sad: On both the Anger-Sadness Comparison item and Emotional Engagement Scale, participants reported feeling more sad than angry. | 7 (20.0%) |
| | Sad-Equal: On one measure (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), participants reported feeling more sad than angry. On the other measure, participants reported feeling equally angry and sad. | 1 (2.9%) |
| | Equal: On both the Anger-Sadness Comparison item and Emotional Engagement Scale, participants reported feeling equally sad and angry. | 2 (5.7%) |
| | Inconsistent Angry-Sad: On one measure (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), participants reported feeling more sad than angry. On the other measure, participants reported feeling more angry than sad. | 2 (5.7%) |
| Sad Group (*n* = 69) | Angry: On both the Anger-Sadness Comparison item and Emotional Engagement Scale, participants reported feeling more angry than sad. | 3 (4.3%) |
| | Angry-Equal: On one measure (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), participants reported feeling more angry than sad. On the other measure, participants reported feeling equally angry and sad. | 3 (4.3%) |
| | Sad: On both the Anger-Sadness Comparison item and Emotional Engagement Scale, participants reported feeling more sad than angry. | 44 (63.8%) |
| | Sad-Equal: On one measure (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), participants reported feeling more sad than angry. On the other measure, participants reported feeling equally angry and sad. | 6 (8.7%) |
| | Equal: On both the Anger-Sadness Comparison item and Emotional Engagement Scale, participants reported feeling equally sad and angry. | 4 (5.8 %) |

| | | |
|---|---|---|
| | Inconsistent Angry-Sad: On one measure (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), participants reported feeling more sad than angry. On the other measure, participants reported feeling more angry than sad. | 9 (13.0%) |

Furthermore, within each self-identified group, between 5.7-5.8% of participants reported feeling the exact same levels of anger and sadness on both measures of emotional state. Although these participants may have been feeling mostly anger or mostly sadness at the time of the pre-screen questionnaire, they were no longer endorsing polarized emotional experience at the time of the experiment, and their responses are not consistent with their self-identified group. Also, 5.7% of participants in the self-identified angry group and 13% of participants in the self-identified sad group reported feeling predominantly angry on one measure of emotional state, but reported feeling mostly sad on the other measure of emotional state (see Inconsistent Angry-Sad response pattern in Table 1). It is possible that these participants were responding carelessly, unaware of their emotional state, or in a mixed state of global distress; and their responses are not consistent with either self-identified group. The remaining participants provided other response patterns that warranted further examination to determine whether participants' emotional states were consistent with either the angry or sad group.

Of note, in the overall sample, 12.5% of participants reported feeling either predominantly angry or predominantly sad on one measure of emotional state (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), while reporting equal anger and sadness on the other measure of emotional state (see Angry-Equal and Sad-Equal response patterns in Table 1). These responses were inspected further to examine whether the participants' emotional states were sufficiently polarized for inclusion in either the angry or sad groups. Among participants who endorsed the Angry-Equal and Sad-Equal response patterns, 85.6% (*n* =

11) indicated equal levels of anger and sadness on the first measure of emotional state (i.e., the Anger-Sadness Comparison item) and reported more polarized feelings of anger or sadness on the second measure of emotional state (i.e., Emotional Engagement Scale).[2] Among participants who reported equal levels of anger and sadness on the Anger-Sadness Comparison item but unequal levels of anger and sadness on the Emotional Engagement Scale, the disparity between anger and sadness intensity on the Emotional Engagement Scale ranged from 1 to 87 points, with an average disparity of 17 points. The finding that people approximately twice as many people initially identified as feeling "mostly sad"; and that for a subset of each group (angry vs. sad) around 60% of the emotional experiences that were reported were consistent with the initially self-identified group, are both considered findings in this study that speak to the phenomenon of interpersonal grievances.

**Experimenter-identified groups.** Based on responses to the Anger-Sadness Comparison item, Emotional Engagement Scale anger item, and Emotional Engagement Scale sadness item at Step 4 of the procedure, the experimenter identified those participants whose emotional experience differed from the emotional experience expected, based on self-identified group membership (see Table 2). The experimenter-identified groups were intended to ensure that participants' group reflected their emotional state after the mood induction, rather than emotional state at the time of the pre-screen questionnaire, which typically took place several weeks later. The *experimenter-identified angry group* ($n$ = 26) includes participants who reported feeling more angry than sad on both measures of emotional state (i.e., Anger-Sadness Comparison item

[2] It is possible that the Emotional Engagement Scale offered a more nuanced method of evaluating one's mood than the Anger-Sadness Comparison item because each emotion was examined independently. Moreover, when responding to the Emotional Engagement Scale, which followed the Anger-Sadness Comparison item, participants may have gained a better understanding of their emotional state than they possessed while completing the Anger-Sadness Comparison item, because they were being asked to reflect on their emotions a second time.

and Emotional Engagement Scale). It also includes participants who on one measure of mood, reported equal levels of anger and sadness, but on the other measure, reported feeling slightly more anger than sadness or at least 5 more units of anger intensity than sadness intensity. The *experimenter-identified sad group* (*n* = 56) includes participants who reported feeling more sad than angry on both measures of emotional state (i.e., Anger-Sadness Comparison item and Emotional Engagement Scale). In addition, it includes participants who on one measure of mood, reported equal levels of anger and sadness, but on the other measure, reported feeling slightly more sad than angry or at least 5 more units of sadness intensity than anger intensity.

The *experimenter-identified equal group* (*n* = 11) consists of participants who reported equal levels of anger and sadness on both measures of emotional state (i.e., Anger-Sadness Comparison item and Emotional Engagement Scale), as well as participants who reported equal levels of anger and sadness intensity on the Anger Sadness Comparison item and less than a 5-unit difference in sadness and anger intensity on the Emotional Engagement Scale. Lastly, the *experimenter-identified inconsistent group* (*n* = 11) includes participants who reported feeling predominantly angry on one measure of emotional state (i.e., the Anger-Sadness Comparison item or Emotional Engagement Scale) but reported feeling predominantly sad on the other measure of emotional state. Because the present study is intended to examine emotional processing in people who feel mostly angry or mostly sad, the experimenter-identified equal and inconsistent groups were excluded from main analyses. Nevertheless, again in itself, the observed proportion of participants who reported presenting with mostly anger, mostly sadness, and mixed anger and sadness, is considered a finding worthy of discussion.

Table 2

*Experimenter-Identified Groups and Corresponding Response Patterns for Total Sample (N = 104)*

| Experimenter-Identified Group | Group Size (*n*) | Response Pattern | Frequency of Response Pattern (*n*, % of experimenter-identified group) |
|---|---|---|---|
| Experimenter-Identified Angry Group | 26 | On both the Anger-Sadness Comparison item and Emotional Engagement Scale, participants reported feeling more angry than sad. | 23 (88.5%) |
| | | On one measure (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), participants reported feeling at least slightly more angry than sad, or at least 5 units more of anger intensity than sadness intensity. On the other measure, participants reported feeling equally angry and sad. | 3 (11.5%) |
| Experimenter-Identified Sad Group | 56 | On both the Anger-Sadness Comparison item and Emotional Engagement Scale, participants reported feeling more sad than angry. | 51 (91.1%) |
| | | On one measure (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), participants reported feeling at least slightly more sad than angry or at least 5 units more sad than angry. On the other measure, participants reported feeling equally angry and sad. | 5 (8.9%) |
| Experimenter-Identified Equal Group | 11 | Participants reported feeling equally sad and angry on both the Anger-Sadness Comparison item and Emotional Engagement Scale. | 6 (54.5%) |
| | | Participants reported feeling equally sad and angry on the Anger-Sadness Comparison Item while reporting less than a 5-unit difference in the intensity of their anger and sadness on the Emotional Engagement Scale. | 5 (45.5%) |
| Experimenter-Identified Inconsistent Group | 11 | On one measure (i.e., Anger-Sadness Comparison item or Emotional Engagement Scale), participants reported feeling more sad than angry. On the other measure, participants reported feeling more angry than sad. | 11 (100.0%) |

After the classification of experimenter-identified groups, demographic characteristics and details about the interpersonal event selected for the study, were examined for the

experimenter-identified angry and sad groups. Demographic characteristics are presented in Table 3, and information about the event selected for the study is presented in Table 4. Demographic characteristics and details about the event selected for the study were not examined within the experimenter-identified equal and inconsistent groups, as only the angry and sad groups are of interest in the present study.

Table 3

*Demographics of Experimenter-Identified Angry and Sad Groups*

| Demographic Characteristic | | Experimenter-Identified Angry Group (*n = 26*) | Experimenter-Identified Sad Group (*n = 56*) |
|---|---|---|---|
| Age (*M, SD*) | | 23 years (6) | 23 years (7) |
| Gender (%, *n*) | Men | 26.9% (7) | 23.2% (13) |
| | Women | 69.2% (18) | 76.8% (43) |
| | Non-binary | 3.8% (1) | NA |
| Sexual Orientation (%, *n*) | Heterosexual | 76.9% (20) | 78.6% (44) |
| | Homosexual | NA | 5.4% (3) |
| | Bisexual | 11.5% (3) | 7.1% (4) |
| | Other Sexual Orientations (e.g., demisexual, queer, pansexual) | 7.7% (2) | 1.8% (1) |
| | Did not report sexual orientation | 3.8% (1) | 7.1% (4) |
| Race (%, *n*) | Caucasian | 53.8% (14) | 60.7% (34) |
| | Black/African American/African Canadian | 11.5% (3) | 5.4% (3) |
| | Arab/Middle Eastern | 11.5% (3) | 5.4% (3) |
| | Latin/Hispanic | 3.8% (1) | 3.6% (2) |
| | East Asian | 3.8% (1) | 12.5% (7) |
| | South Asian | NA | 1.8% (1) |
| | Multiracial | 3.8% (1) | 5.4% (3) |
| | Other | 11.5% (3) | 5.4% (3) |
| Relationship Status (%, *n*) | Single | 76.9% (20) | 58.9% (33) |
| | Partnered | 15.4% (4) | 26.8% (15) |
| | Common-Law | NA | 3.6% (2) |
| | Married | 3.8% (1) | 8.9% (5) |
| | Divorced | 3.8% (1) | 1.8% (1) |
| Employment Status (%, *n*) | Employed | 76.9% (20) | 66.1% (37) |
| | Unemployed | 23.1% (6) | 33.9% (19) |

Table 4

*Interpersonal Event Questionnaire Responses from Experimenter-Identified Angry and Sad Groups*

| Item | Experimenter-Identified Angry Group ($n$ = 26) | Experimenter-Identified Sad Group ($n$ = 56) |
|---|---|---|
| Months Since Event Selected for the Study (*M, SD*) | 24 months (35.97) | 22 months (38.79) |
| Distress about Event (*M, SD*) | 6.08 (1.00) | 6.13 (1.03) |
| Weekly Frequency of Thinking about Event Per Week (*Mdn)* | 3-4 times per week | 3-4 times per week |
| Participants who Spoke to Another Person about the Event *(%, n*) | 92.3% ($n$ = 24) | 83.9% ($n$ = 47) |
| Weekly Frequency of Speaking to Others about the Event *(Mdn*) | 1 time per week | 1 time per week |
| Participants who Received Counselling or Therapy in response to the Event *(%, n*) | 19.2% ($n$ = 5) | 28.6% ($n$ = 16) |
| Months Since Counselling or Therapy for the Event (*M, SD*) | 30 months (46.09) | 8 months (12.72) |
| Participants Prescribed Psychiatric Medication in response to the Event *(%, n*) | 11.5% ($n$ = 3) | 12.5% ($n$ = 7) |
| Months Since using Psychiatric Medication for the Event (*M, SD*) | 8 months (14.43) | 14 months (16.49) |
| Participants who Received Counselling or Therapy for Emotional Difficulties Other than the Event *(%, n*) | 34.6% ($n$ = 9) | 33.9% ($n$ = 19) |

**Statistical Assumptions for Planned Analyses.**

**Sample size.** For multiple regression analysis, Pituch and Stevens (2016) recommend at least 15 observations per predictor, whereas Tabachnick and Fidell (2007) recommend at least 8 observations per predictor, plus 50 additional observations. According to the aforementioned guidelines, a sample size of $N$ = 104 is sufficient for planned analyses, which include a maximum of four predictors. The sample size for the experimenter-identified angry and sad groups combined is $n$ = 82, which is sufficient according to guidelines of both Pituch and Stevens (2016) and Tabachnick and Fidell (2007). When the sample size was examined within condition by experimenter-identified angry group and sad groups, there were at least 15

participants in three of the four cells (see Table 5 and Figure 2). The remaining cell (experimenter-identified angry group and the sadness-before-anger condition) contained 11 participants; but in general, cells were of adequate size to conduct a multiple regression with four predictors.

Table 5

*Total Sample (N =104) by Condition and Experimenter-Identified Groups*

| | | Experimenter-Identified Group | |
|---|---|---|---|
| | | Angry (*n = 26*) | Sad (*n = 56)* |
| Experimental Condition | Anger-before-sadness Condition | 15 (14.4%) | 29 (28.0%) |
| | Sadness-before-anger Condition | 11 (10.6%) | 27 (26.0%) |

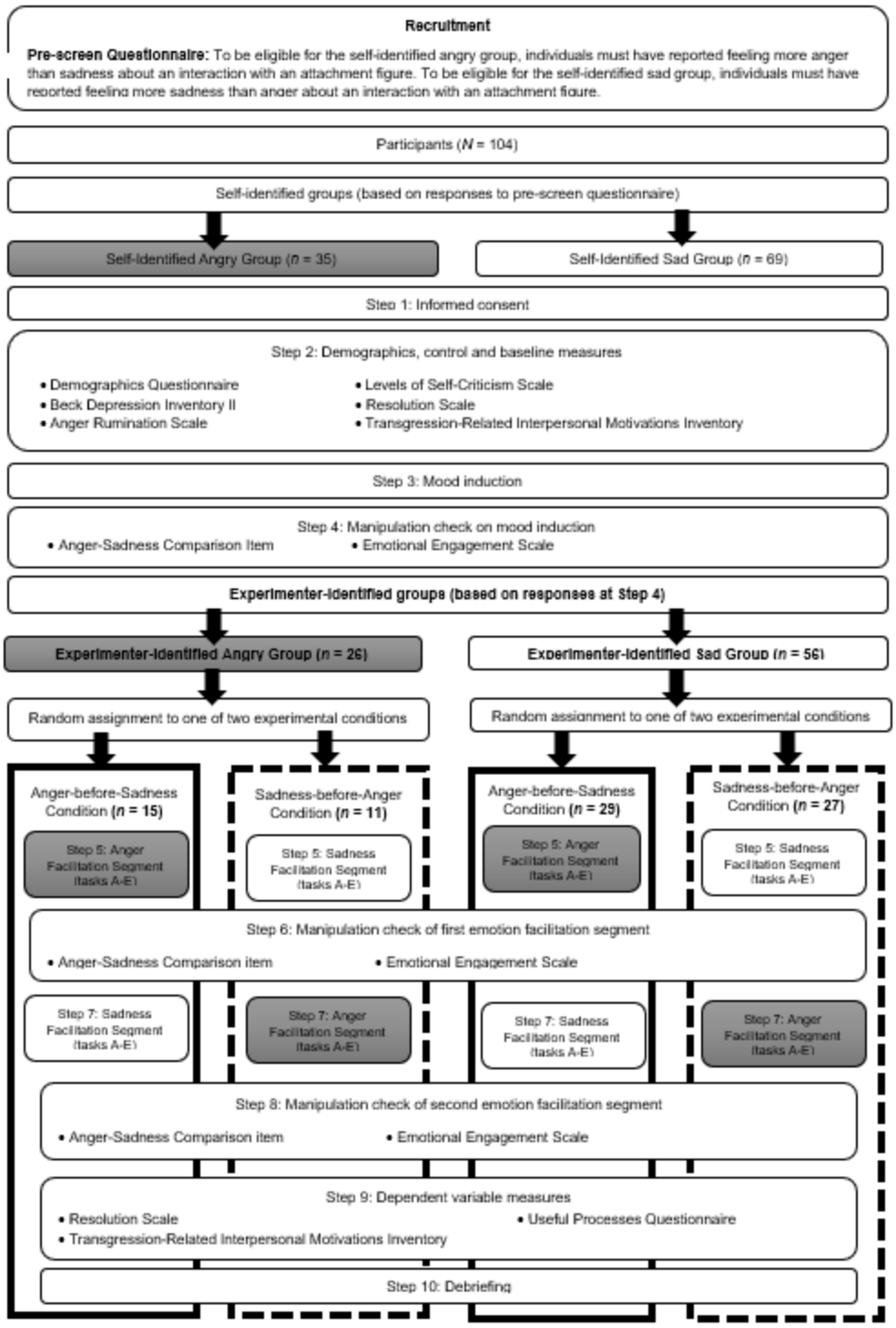


*Figure 2.* Experimenter-identified groups in study design and procedure.

**Normality.** Normality was assessed for variables of interest in the present study. During assessment of normality, five cases were excluded due to missing data. Across the total sample,

the Kolmogorov-Smirnov test suggested that the distributions of the Levels of Self-Criticism Scale, pre- and post-intervention Resolution Scale, post-intervention Transgression-Related Interpersonal Motivations Inventory, and post-intervention sadness Emotional Engagement Scale were not significantly different from a normal distribution, $p > .05$ (see Table 6). Results suggested that all other variable distributions were significantly different from a normal distribution, $p < .05$. Even so, across the total sample, skewness and kurtosis statistics for all variables (see Table 4) had an absolute value less than two, which suggests that the data is still normally distributed within acceptable limits (Pituch & Stevens, 2016). Furthermore, upon visual inspection, histograms for variables of interest did not appear reasonably different from a normal distribution.

Table 6

*Normality for Variables of Interest across the Total Sample (N = 99): Kolmogorov-Smirnov Test Results, Skewness Values, and Kurtosis Values*

| Step of Experimental Procedure | Variable | Kolmogorov-Smirnov test of normality | | Skewness | Kurtosis |
|---|---|---|---|---|---|
| | | *t* (99) | *P* | | |
| Baseline (Step 2) | Anger Resolution Scale Total | .10 | .010* | .55 | .11 |
| | Beck Depression Inventory Total | .10 | .013* | .70 | .10 |
| | Levels of Self-Criticism Scale Total | .06 | .200 | -.01 | -.18 |
| | Resolution Scale Total | .09 | .064 | .11 | -.51 |
| | Transgression-Related Interpersonal Motivations Inventory Total | .09 | .040* | -.04 | -1.02 |
| | Transgression-Related Interpersonal Motivations Inventory: Avoidance | .13 | <.001*** | -.37 | -1.15 |
| | Transgression-Related Interpersonal Motivations Inventory: Revenge | .19 | <.001*** | 1.14 | .65 |
| Manipulation Check of Mood Induction (Step 4) | Emotional Engagement Scale: Anger Intensity | .12 | .001** | .49 | -1.02 |
| | Emotional Engagement Scale: Sadness Intensity | .10 | .026* | -.12 | -1.36 |
| | Emotional Engagement Scale: Fear Intensity | .21 | <.001*** | .99 | -.27 |
| | Emotional Engagement Scale: Shame Intensity | .18 | <.001*** | .27 | -1.26 |

| | | | | | |
|---|---|---|---|---|---|
| | Emotional Engagement Scale: Disgust Intensity | .12 | .002** | .20 | -1.41 |
| | Emotional Engagement Scale: Hope Intensity | .12 | .002** | .50 | -.86 |
| | Emotional Engagement Scale: Joy Intensity | .14 | <.001*** | .76 | -.07 |
| Manipulation Check Immediately before Anger Facilitation Segment (Step 4 or 6, depending on Experimental Condition) | Emotional Engagement Scale: Anger Intensity | .13 | <.001*** | .42 | -1.11 |
| | Emotional Engagement Scale: Sadness Intensity | .11 | .008** | -.19 | -1.35 |
| Manipulation Check Immediately before Sadness Facilitation Segment (Step 4 or 6, depending on Experimental Condition) | Emotional Engagement Scale: Anger Intensity | .14 | <.001*** | .37 | -1.22 |
| | Emotional Engagement Scale: Sadness Intensity | .08 | .103 | -.179 | -1.20 |
| Manipulation Check Immediately after Anger Facilitation Segment (Step 6 or 8, depending on Experimental Condition) | Emotional Engagement Scale: Anger Intensity | .13 | <.001*** | .18 | -1.36 |
| | Emotional Engagement Scale: Sadness Intensity | .08 | .085 | -.09 | -1.04 |
| Manipulation Check Immediately after Sadness Facilitation Segment (Step 6 or 8, depending on Experimental Condition) | Emotional Engagement Scale: Anger Intensity | .16 | <.001*** | .54 | -1.06 |
| | Emotional Engagement Scale: Sadness Intensity | .10 | .016* | -.29 | -1.28 |
| Manipulation Check of Second Facilitation Segment (Step 8) | Emotional Engagement Scale: Anger Intensity | .14 | <.001*** | .42 | -1.24 |
| | Emotional Engagement Scale: Sadness Intensity | .09 | .064 | -.12 | -1.22 |
| | Emotional Engagement Scale: Fear Intensity | .23 | <.001*** | 1.24 | .46 |
| | Emotional Engagement Scale: Shame Intensity | .21 | <.001*** | 1.03 | -.25 |
| | Emotional Engagement | .19 | <.001*** | .37 | -1.48 |

| | | | | | |
|---|---|---|---|---|---|
| | Scale: Disgust Intensity | | | | |
| | Emotional Engagement Scale: Hope Intensity | .14 | <.001*** | .49 | -1.06 |
| | Emotional Engagement Scale: Joy Intensity | .18 | <.001*** | .85 | -.28 |
| Post Intervention (Step 9) | Resolution Scale Total | .05 | .200 | .01 | -.62 |
| | Transgression-Related Interpersonal Motivations Inventory Total | .07 | .200 | .15 | -1.07 |
| | Transgression-Related Interpersonal Motivations Inventory: Avoidance | .12 | .002** | -.18 | -1.38 |
| | Transgression-Related Interpersonal Motivations Inventory: Revenge | .25 | <.001*** | 1.16 | .41 |
| | Useful Processes Questionnaire | .11 | .006** | -.64 | .11 |

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

Within the combined experimenter-identified angry and sad groups ($n = 82$), the Kolmogorov-Smirnov test indicated that the distributions of the following variables were not significantly different from a normal distribution: the Beck Depression Inventory II, Levels of Self-Criticism Scale, pre- and post-intervention Resolution Scale, Useful Processes Questionnaire, post-intervention Transgression-Related Interpersonal Motivations Inventory, and the Emotional Engagement Scale for sadness at Step 4 and Step 8. All other variables were distributed in a manner that found to be significantly different from a normal distribution, $p < .05$. Again, however, skewness and kurtosis for all variables were in the acceptable range (< |2|), which suggested that the data was reasonably normally distributed.

Normality for variables of interest was also examined within each of the experimenter-identified angry and sad groups. Within the experimenter-identified angry group, the kurtosis statistics for the Anger Resolution Scale (kurtosis = 3.52) and Useful Processes Scale (kurtosis = 2.14) were both greater than two, which indicated that the distributions were leptokurtic. Skewness and kurtosis statistics for all other variables had an absolute value less than two, which suggests that the data was normally distributed (Pituch & Stevens, 2016). Within the

experimenter-identified angry group, the Shapiro-Wilk test also suggested that the distributions of some variables, including the Anger Rumination Scale, were significantly different from a normal distribution, $p < .05$. However, the Useful Processes Questionnaire was not found to be distributed in a manner significantly different from a normal distribution, $t(23) = .94$, $p = .158$. Within the experimenter-identified sad group, the Kolmogorov-Smirnov test suggested that the distributions of some variables were significantly different from a normal distribution, $p < .05$. However, skewness and kurtosis statistics for all variables were in the acceptable range for a normal distribution.

Among the self-identified groups, the Emotional Engagement Scales for anger and sadness at Step 4 of the procedure were examined for normality. Within the self-identified angry group, the Shapiro-Wilk test indicated that Emotional Engagement Scale for sadness at Step 4 was distributed in a manner significantly different from a normal distribution, $p < 05$. Within the self-identified sad group, the Kolmogorov-Smirnov test indicated that distributions of the Emotional Engagement Scales for anger and sadness at Step 4 were each significantly different from a normal distribution, $p < 05$. As before, in both self-identified groups, skewness and kurtosis statistics for all variables examined were less than |2|, which suggested that the data were reasonably normally distributed.

Normality was also examined within each experimental condition. Within the anger-then-sadness condition ($n = 50$), the Kolmogorov-Smirnov test indicated that the distributions of some variables were significantly different from a normal distribution; $p < .05$. Similarly, within the sadness-before-anger condition ($n = 49$), the Shapiro-Wilk test indicated that the distributions of some variables were significantly different from a normal distribution. However, within both

experimental conditions, skewness and kurtosis statistics for all variables examined had an absolute value less than two.

When examining the normality for only the participants in the experimenter-identified angry and sad groups assigned to the Anger-then-Sadness condition, the Shapiro-Wilk test indicated that all examined variables were significantly different from a normal distribution ($p < .05$), except for the Levels of Self-Criticism Scale, Useful Process Questionnaire, and pre- and post-intervention Resolution Scale. When conducted among participants in the experimenter-identified angry and sad groups assigned to the sadness-before-anger condition, the Shapiro-Wilk test indicated that all variables were significantly different from a normal distribution ($p < .05$), except for the Anger Rumination Scale, Beck Depression Inventory II, Levels of Self-Criticism, pre- and post-intervention Resolution Scale, pre- and post-intervention Transgression-Related Interpersonal Motivations Inventory, and the Emotional Engagement Scale for sadness at Step 8. All skewness and kurtosis statistics were less than |2|, which suggested that the data was reasonably normally distributed.

**Absence of influential outliers.** For planned regression analyses, univariate outliers should be reduced through windsorizing or transformation; and multivariate outliers should be deleted (Tabachnick & Fidell, 2001). In the present study, outliers were identified within only the experimenter-identified angry and sad groups ($n = 82$) because the other experimenter-identified groups (i.e., equal, inconsistent groups) were not of interest in the present study and were not included in planned regression analyses. To prepare data for regression analysis on the Transgression-Related Interpersonal Motivations Inventory and each of its subscales, outliers were examined on the Avoidance and Revenge subscales of the Transgression-Related Interpersonal Motivations Inventory, rather than the total scale.

Within the experimenter-identified angry and sad groups, outliers on the predictor variables were identified by inspection of Leverage values, due to their sensitivity to outliers in small samples (Jackson, 2017). No outliers were identified on the pre-intervention Resolution Scale, pre-intervention Transgression-Related Interpersonal Motivations Inventory Avoidance subscale, or Emotional Engagement Scales for sadness, fear, shame, disgust, hope, and joy at Step 4 of the procedure. Two outliers were found on the pre-intervention Transgression-Related Interpersonal Motivations Inventory Revenge subscale, as well as the Emotional Engagement Scales for anger at step 4 of the procedure.

Within the experimenter-identified angry and sad groups, outliers on outcome variables were identified through examination of the studentized residuals and deleted studentized residuals. Both types of residuals were examined because each are appropriate for identifying outliers in small samples (Jackson, personal communication, December 2, 2017), but they vary in their sensitivity of outlier detection, wherein deleted studentized residuals are more sensitive to outliers. When examining studentized and deleted studentized residuals, seven cases were identified as outliers on the post-intervention Resolution Scale variable, six cases were identified as outliers on the Transgression-Related Interpersonal Motivations Inventory Revenge subscale, eight cases were identified as outliers on the Transgression-Related Interpersonal Motivations Inventory Avoidance subscale, six cases were identified as outliers on the post-intervention Emotional Engagement anger item, eight cases were identified as outliers on the Emotional Engagement sadness item, eight were identified on the scale for fear, another eight for shame, five for disgust, six for joy, and seven outliers were identified on the Emotional Engagement Scale for hope. There were also six outliers identified on the Useful Processes Questionnaire variable. In addition, because the distribution of the Anger Rumination Scale appeared to differ

from a normal distribution within the experimenter-identified angry group, z-scores were used to identify outliers on this variable. Within the experimenter-identified angry group, there were two outliers on the Anger Rumination Scale, which were in the outer 5% of data.

To reduce their impact on prediction or model fit, outliers on predictor variables were reduced through winsorization within experimenter-identified group, and outliers on the outcome variables were reduced through winsorization within experimenter-identified group and condition. Outliers on the Anger Rumination Scale in the experimenter-identified angry group were also winsorized within the group. When multiple outliers were present within a cell, the rank of outliers was maintained.

After winsorizing outliers on the Anger Rumination Scale with the experimenter-identified angry group, the skewness and kurtosis statistics were in the acceptable range for normal data. In addition, after univariate outliers were reduced through winsorization, across the experimenter-identified angry and sad groups, multivariate outliers were identified. Standardized DFFITS values were inspected to identify multivariate outliers because the cut-off value is based on sample size, as well as the number of predictors (Jackson, 2017). No influential observations were observed, across all planned analyses.

**Linearity.** To examine linearity, correlations between the outcome variables and continuous predictor variables were examined. The correlations were each significant and greater than $r = .30$, which suggested that there was a reasonable linear relationship between the outcome variables and predictors (Mayers, 2013). The relationship between the standardized predicted values of the outcome variable and the standardized residuals was also observed on a scatterplot. Mild deviations from linearity were observed; however, multiple regression is robust to such mild deviations (Jackson, personal communication; December 7, 2017).

**Absence of multicollinearity.** To examine multicollinearity, the Tolerance statistics were examined. Tolerance statistics for all predictor variables were greater than .10, which suggests an absence of multicollinearity. In addition, Yates' continuity correction was conducted to examine the correlation between categorical predictor variables (i.e., group and condition), and results suggested that the variables were not significantly correlated, Yates' (1, $N$ = 82) = .07, $p$ = .794. Also, point-biserial correlations indicated that correlations between categorical predictor variables and continuous predictor variables were each less than $r$ = .80, which is in the acceptable range for multiple regression (Mayers, 2013).

**Homoscedasticity of errors.** To evaluate homoscedasticity of errors, the standardized predicted values of outcome variables were plotted with the standardized residuals. The data were evenly distributed, with the exception of some mild negative skewness in the distributions for the Emotional Engagement Scale for sadness, as well as the Transgression-Related Interpersonal Motivations Inventory total scale and Avoidance subscale. Mild positive skewness was also present in the distribution for the Emotional Engagement Scale for anger. No funnel shapes were observed. Because the data is reasonably normally distributed and any deviations from homoscedasticity were mild, the assumption was met.

**Homogeneity of variance.** Levene's test of homogeneity of variance was examined prior to conducting an ANOVA to test hypotheses 1d and 2d, which predicted that the self-reported usefulness of an emotional processing intervention would depend on both group and condition. The assumption of homogeneity of variance was violated; $F(3, 78) = 3.09$, $p$ = .032. To further examine the location of the violation of homogeneity of variance, Levene's test was conducted within each of the angry and sad experimenter-identified groups. Within the experimenter-identified angry group, there were no significant differences between variances, depending on

experimental condition; $F = .00$, $p = .987$. Moreover, within the experimenter-identified sad group, there were also no significant differences in variances across condition, $F = 2.48$, $p = .121$. Upon examination of the variances across group and condition, the largest variance was less than four times the size of the smallest variance, which suggests only mild violations of homogeneity of variance. Also, the largest variance in Useful Processes Questionnaire scores was observed in the cell with the largest sample size ($n = 29$): participants in the sad group assigned to the anger-before-sadness condition. As such, there is increased risk of Type II error (Mayers, 2013). Because the Useful Processes Questionnaire data is reasonably normally distributed and violations to the assumption of homogeneity of variance are mild, ANOVA is robust to any violations of homogeneity of variance (Jackson, personal communication; September 12, 2017).

Levene's test of homogeneity of variance was also examined prior to conducting independent samples t-tests to evaluate the effectiveness of the mood induction in activating the presenting emotional concern, and to examine differences in baseline variables among the experimenter-identified groups. Results indicated that there were no significant differences in the variances of all variables examined, except for variance of the Anger Rumination Scale, which differed significantly among the angry and sad experimenter-identified groups; $p = .002$. As such, equal variances were not assumed when examining the results of the independent samples t test.

In preparation for repeated measures ANOVA analyzing changes in anger and sadness intensity by group and condition during their respective segments, Levene's test and Box's M test were examined. The tests indicated that variances and covariances were not significantly different, $p > .05$. In addition, Levene's test was examined prior to multiple univariate ANOVA, which were conducted to assess whether post-intervention anger and sadness intensity differed

by condition within each experimenter-identified group, while controlling for pre-intervention anger and sadness intensity. Results indicated that variances did not differ significantly among conditions; $p > .05$.

**Preliminary Analyses**

Prior to missing data imputation and after winsorization of univariate outliers, means and standard deviations for variables of interest were identified within the total sample and experimenter-identified groups (see Table 7). In addition, prior to missing data imputation and after winsorization of univariate outliers, Pearson's bivariate correlations between variables of interest were examined across the combined angry and sad experimenter-identified groups (see Table 8). For a table displaying Pearson's bivariate correlations between variables of interest for the total sample ($N = 104$), see Appendix I.

Table 7

*Means and Standard Deviations for Variables of Interest by Experimenter-Identified Group, prior to Missing Data Imputation and after Outlier Winsorization*

| | | *M (SD)* | | | | | |
|---|---|---|---|---|---|---|---|
| Step in Procedure | Variable | Total Sample *N* = 104 | Combined Angry and Sad Groups *n* = 82 | Angry Group *n* = 26 | Sad Group *n* = 56 | Equal Group *n* = 11 | Inconsistent Group *n* = 11 |
| Baseline (Step 2) | Anger Rumination Scale | 43.99 (11.49) | 42.88 (10.07) | 42.64 (5.90) | 42.98 (11.50) | 49.54 (14.54) | 43.36 (12.37) |
| | Beck Depression Inventory II | 19.23 (11.63) | 19.83 (11.71) | 16.40 (10.05) | 21.36 (12.14) | 20.09 (13.77) | 14.00 (7.73) |
| | Levels of Self-Criticism Scale | 94.54 (20.54) | 92.77 (20.05) | 93.00 (19.76) | 92.66 (20.36) | 101.64 (22.71) | 100.55 (21.24) |
| | Resolution Scale | 34.83 (7.85) | 34.28 (7.81) | 36.08 (6.11) | 33.48 (8.38) | 36.18 (9.41) | 37.45 (6.33) |
| | Transgression -Related Interpersonal Motivations Inventory Total | 32.41 (12.38) | 31.51 (12.47) | 38.38 (8.80) | 28.32 (12.69) | 33.81 (13.02) | 37.73 (10.53) |
| | Transgression -Related Interpersonal Motivations Inventory: Avoidance | 23.08 (12.38) | 22.27 (9.11) | 27.81 (6.56) | 19.70 (9.03) | 24.00 (9.42) | 28.18 (7.10) |
| | Transgression -Related Interpersonal Motivations Inventory: Revenge | 9.28 (4.66) | 9.17 (4.65) | 10.58 (4.28) | 8.52 (4.71) | 9.82 (4.62) | 9.55 (5.11) |
| After Mood Induction (Step 4) | Emotional Engagement Scale: Anger Intensity | 36.60 (30.31) | 35.43 (28.97) | 57.92 (26.61) | 24.98 (24.04) | 50.91 (38.45) | 31.00 (30.28) |
| | Emotional Engagement Scale: Sadness Intensity | 51.50 (33.41) | 53.80 (32.61) | 23.96 (20.28) | 67.66 (27.62) | 51.00 (38.41) | 34.82 (32.52) |
| | Emotional Engagement Scale: Fear Intensity | 23.37 (26.82) | 25.82 (27.83) | 18.04 (22.85) | 29.43 (29.35) | 15.73 (19.77) | 12.73 (22.51) |
| | Emotional Engagement Scale: Shame | 35.90 (31.61) | 37.96 (31.93) | 28.00 (28.13) | 42.59 (32.76) | 27.18 (30.75) | 29.27 (30.32) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Intensity | | | | | | |
| | Emotional Engagement Scale: Disgust Intensity | 42.89 (34.41) | 44.35 (34.95) | 54.12 (35.50) | 39.82 (34.06) | 35.27 (34.83) | 39.64 (31.58) |
| | Emotional Engagement Scale: Hope Intensity | 39.57 (32.07) | 41.10 (31.84) | 36.92 (32.50) | 43.04 (31.64) | 31.09 (31.24) | 36.64 (35.99) |
| | Emotional Engagement Scale: Joy Intensity | 30.42 (26.38) | 29.41 (24.25) | 35.85 (25.05) | 26.43 (23.50) | 38.18 (30.68) | 30.18 (37.30) |
| After Second Emotion Facilitation Segment (Step 8) | Emotional Engagement Scale: Anger Intensity | 39.11 (31.90) | 37.93 (29.77) | 50.23 (27.46) | 32.21 (29.28) | 49.45 (44.13) | 37.55 (35.06) |
| | Emotional Engagement Scale: Sadness Intensity | 54.87 (31.57) | 56.99 (30.79) | 41.42 (27.24) | 64.21 (29.85) | 44.18 (36.07) | 49.73 (33.05) |
| | Emotional Engagement Scale: Fear Intensity | 19.40 (23.68) | 21.83 (24.87) | 16.00 (20.63) | 24.54 (26.34) | 14.73 (20.48) | 6.00 (8.63) |
| | Emotional Engagement Scale: Shame Intensity | 23.84 (27.44) | 26.35 (28.12) | 22.58 (25.42) | 28.11 (29.34) | 20.00 (28.32) | 8.91 (15.04) |
| | Emotional Engagement Scale: Disgust Intensity | 38.74 (36.07) | 40.30 (34.81) | 45.08 (32.97) | 38.09 (35.71) | 44.00 (44.15) | 21.82 (35.65) |
| | Emotional Engagement Scale: Hope Intensity | 36.79 (31.51) | 37.61 (30.06) | 31.54 (26.86) | 40.43 (31.26) | 34.73 (38.69) | 32.73 (37.21) |
| | Emotional Engagement Scale: Joy Intensity | 26.13 (26.51) | 26.35 (24.45) | 29.81 (25.14) | 22.96 (24.04) | 35.36 (40.11) | 24.27 (26.10) |
| Post-Intervention (Step 9) | Resolution Scale | 33.72 (8.48) | 33.23 (8.19) | 33.64 (7.43) | 33.05 (8.56) | 34.64 (11.38) | 36.36 (7.62) |
| | Transgression-Related Interpersonal Motivations Inventory Total | 31.19 (13.02) | 30.14 (12.69) | 37.36 (8.95) | 26.80 (12.83) | 34.91 (15.84) | 35.00 (12.22) |
| | Transgression-Related Interpersonal Motivations Inventory: | 22.31 (9.64) | 21.63 (9.58) | 27.68 (6.34) | 18.83 (9.58) | 23.63 (10.84) | 25.81 (8.72) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Avoidance | | | | | | |
| | Transgression-Related Interpersonal Motivations Inventory: Revenge | 8.89 (4.74) | 8.24 (3.83) | 9.36 (3.94) | 7.73 (3.71) | 11.27 (5.92) | 9.18 (5.29) |
| | Useful Processes Questionnaire | 60.93 (13.01) | 62.37 (11.24) | 61.96 (8.78) | 62.55 (12.28) | 57.64 (17.54) | 53.55 (18.06) |

*Note.* The mean values for baseline variables, including the Anger Rumination Scale, Beck Depression Inventory II, Levels of Self-Criticism Scale, Resolution Scale, Transgression-Related Interpersonal Motivations Inventory total scale and subscales, and the Emotional Engagement Scale, were examined across condition by independent samples t-tests. There were no significant different differences ($p < .05$), which indicates that randomization was successful in this regard.

Table 8

*Pearson's Bivariate Correlations (r) between Variables of Interest among Combined Angry and Sad Experimenter-Identified Groups (n = 82), After Outlier Winsorization*

| Step of Experimental Procedure | Variable | Baseline (Step 2) | | | | | | | Manipulation Check of Mood Induction (Step 4) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ARS | BDI-II | LOSC | RS | TRIM | TRIM: Avoid | TRIM: Revenge | EES: Anger | EES: Sad | EES: Fear | EES: Shame | EES: Disgust | EES: Hope | EES: Joy |
| Baseline (Step 2) | ARS | - | .47*** | .46*** | .47*** | .32** | .19 | .44*** | .28* | .29** | .38*** | .31** | .24* | .05 | -.23* |
| | BDI-II | - | - | .57*** | .53*** | .13 | .04 | .25* | .12 | .42*** | .26* | .37** | .19 | -.20 | -.40*** |
| | LOSC | - | - | - | .36** | .13 | .07 | .20 | .06 | .24* | .31** | .28** | .16 | -.11 | -.26* |
| | RS | - | - | - | - | .47*** | .44*** | .37** | .43*** | .17 | .06 | .32** | .35** | -.24* | -.29** |
| | TRIM | - | - | - | - | - | .95*** | .80*** | .52*** | -.12 | -.03 | .19 | .42*** | -.07 | -.02 |
| | TRIM: Avoid | - | - | - | - | - | - | .56*** | .49*** | -.16 | -.11 | .15 | .39*** | -.14 | -.00 |
| | TRIM: Revenge | - | - | - | - | - | - | - | .43*** | -.05 | .14 | .18 | .33** | .06 | -.02 |
| Manipulation Check of Mood Induction (Step 4) | EES: Anger | - | - | - | - | - | - | - | - | -.14 | .04 | .08 | .43*** | -.04 | -.10 |
| | EES: Sad | - | - | - | - | - | - | - | - | - | .32** | .49*** | .08 | .04 | -.39*** |
| | EES: Fear | - | - | - | - | - | - | - | - | - | - | .14 | .01 | .16 | -.15 |
| | EES: Shame | - | - | - | - | - | - | - | - | - | - | - | .40*** | .10 | -.29** |
| | EES: Disgust | - | - | - | - | - | - | - | - | - | - | - | - | .01 | -.24* |
| | EES: Hope | - | - | - | - | - | - | - | - | - | - | - | - | - | .51*** |
| Manipulation Check of Second Emotion Facilitation Segment (Step 8) | EES: Anger | .33** | .06 | .02 | .37** | .42*** | .31** | .49*** | .65*** | -.06 | .08 | -.01 | .38*** | .11 | -.06 |
| | EES: Sad | .25* | .26* | .12 | .16 | -.09 | -.08 | -.08 | -.07 | .73*** | .23* | .51*** | .08 | .12 | -.29** |
| | EES: Fear | .36** | .27* | .24* | .26* | .20 | .08 | .35** | .22* | .29** | .60*** | .24* | .13 | .00 | -.21 |
| | EES: Shame | .24* | .33** | .34** | .36** | .13 | .08 | .20 | .10 | .28* | .24* | .64*** | .31** | -.02 | -.32** |
| | EES: Disgust | .42*** | .25* | .24** | .40*** | .43*** | .35** | .44*** | .28* | .08 | .11 | .28* | .75*** | -.05 | -.31** |
| | EES: Hope | .02 | -.19 | -.26* | -.28* | -.09 | -.14 | .02 | -.05 | -.03 | .03 | .00 | -.07 | .68*** | .39*** |
| | EES: Joy | -.10 | -.24* | -.12* | -.23* | .01 | -.02 | .08 | .00 | -.33** | -.09 | -.29** | -.12 | .31** | .62**. |
| .Post-Intervention (Step 9) | RS | .42*** | .42*** | .31** | .83*** | .31** | .30** | .24* | .33** | .17 | .01 | .24* | .20 | -.27* | -.31** |
| | TRIM | .29* | .07 | .13 | .44*** | .94*** | .89*** | .75*** | .49*** | -.11 | -.01 | .19 | .39*** | -.07 | -.02 |
| | TRIM: Avoid | .17 | -.01 | .07 | .39*** | .88*** | .92*** | .55*** | .41*** | -.16 | -.11 | .13 | .35** | -.09 | .07 |
| | TRIM: Revenge | .48*** | .24* | .22 | .39*** | .74*** | .52*** | .93*** | .48*** | .04 | .18 | .25* | .33** | -.02 | -.19 |
| | UPQ | .04 | -.11 | -.18 | .04 | .24* | .27* | .10 | .02 | .01 | -.14 | .16 | .17 | .22 | .05 |

| Step of Experimental Procedure | Variable | Manipulation Check of Second Emotion Facilitation Segment (Step 8) | | | | | | Post-Intervention (Step 9) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EES: Sadness | EES: Fear | EES: Shame | EES: Disgust | EES: Hope | EES: Joy | RS | TRIM | TRIM: Avoid | TRIM: Revenge | UPQ |
| Manipulation Check of Second Emotion Facilitation Segment (Step 8) | EES: Anger | -.20 | .26* | .21 | .52*** | .00 | -.02 | .38*** | .42*** | .30** | .51*** | .03 |
| | EES: Sadness | - | .26* | .28* | .02 | .02 | -.33** | .13 | -.02 | -.02 | -.01 | .13 |
| | EES: Fear | - | - | .43*** | .17 | -.07 | -.15 | .23* | .24* | .12 | .40*** | .00 |
| | EES: Shame | - | - | - | .41*** | -.09 | -.22* | .34** | .17 | .11 | .24 | .00 |
| | EES: Disgust | - | - | - | - | -.13 | -.15 | .36** | .45*** | .35** | .48*** | .09 |
| | EES: Hope | - | - | - | - | - | .58*** | -.25* | -.09 | -.12 | .00 | .15 |
| | EES: Joy | - | - | - | - | - | - | -.24* | -.01 | .00 | .01 | -.05 |
| Post-Intervention (Step 9) | RS | - | - | - | - | - | - | - | .37** | .34** | .30** | -.18 |
| | TRIM | - | - | - | - | - | - | - | - | .95*** | .75*** | .16 |
| | TRIM: Avoid | - | - | - | - | - | - | - | - | - | .51*** | .18 |
| | TRIM: Revenge | - | - | - | - | - | - | - | - | - | - | .08 |

*Note.* * Correlation is significant at the $p < .05$ level. ** Correlation is significant at the $p < .01$ level. *** Correlation is significant at the $p < .001$ level. *ARS:* Anger Rumination Scale Total Score. *BDI-II Total*: Beck Depression Inventory II Total Score. *LOSC*: Levels of Self-Criticism Scale Total Score. *RS*: Unfinished Business Resolution Scale Total Score. *TRIM*: Transgression-Related Interpersonal Motivations Inventory Total Score. *TRIM Avoid*: Transgression-Related Interpersonal Motivations Inventory Avoidance Subscale. *TRIM Revenge*: Transgression-Related Interpersonal Motivations Inventory Revenge Subscale. *EES*: Emotional Engagement Scale. *UPQ*: Useful Processes Questionnaire Total Score.

**Between-group demographic differences.** Independent samples t-tests were conducted to assess differences between the experimenter-identified angry and sad groups at baseline. Anger rumination, as measured by the Anger Rumination Scale, did not differ significantly across the groups; $t(80) = -.14$, $p = .866$. Depression symptoms, assessed by the Beck Depression Inventory II, also did not differ significantly across groups; $t(80) = 1.84$, $p = .070$. In addition, there were no significant differences in self-critical tendencies, measured by the Levels of Self-Criticism Scale, across the experimenter-identified angry and sad groups; $t(80) = .21$, $p = .838$.

**Manipulation check of mood induction.** To examine whether the mood induction activated feelings of anger in the angry group and feelings of sadness in the sad group, responses provided after the mood induction (i.e., Step 4 of the procedure) were examined. Specifically, responses to the Anger-Sadness Comparison item and Emotional Engagement Scales for anger and sadness were analyzed. It is important to note that responses to these measures were used to identify the experimenter-identified groups. As such, any analyses demonstrating differences between the responses provided by the experimenter-identified groups can be viewed as confirming the magnitude of differences experienced between the groups, rather than demonstrating that the mood induction per se was what activated the emotion. To address this limitation, analyses were conducted on both the experimenter-identified and self-identified angry and sad groups. Recall that the purpose of recruiting self-identified groups was to maximize the contrast between groups that felt either mostly angry or mostly sad, while the purpose of experimenter-identified groups was to ensure that contrast was further maximized and then subjected to the experimental conditions. Therefore, comparisons of the self-identified groups are included in footnotes for completeness and to confirm they were already in the intended

direction. Even so, subsequent analyses are focused on the difference experienced between experimenter-identified groups, and the presenting emotion as a target of interventions.

***Mood induction for angry group.*** An independent samples t-test was conducted to examine whether the experimenter-identified angry group reported experiencing more anger than the experimenter-identified sad group after the mood induction. The independent variable was experimenter-identified group (i.e., angry or sad), and the dependent variable was the intensity of anger, as measured by the Emotional Engagement Scale. Results indicated that after the mood induction, the experimenter-identified angry group ($M$ = 57.92; $SD$ = 26.01) felt significantly angrier than the experimenter-identified sad group ($M$ = 24.98; $SD$ = 24.04); $t(80) = 5.63$, $p < .001$, $d = 1.32$. [3]

A paired-samples t-test was also conducted to determine whether the angry group reported feeling more anger than sadness after the mood induction. The independent variable was the type of Emotional Engagement Scale (i.e., anger or sadness) and the dependent variable was the Emotional Engagement scale rating of emotional intensity. Results showed that after the mood induction participants in the experimenter-identified angry group felt significantly more angry ($M$ = 57.92; $SD$ = 26.01) than sad ($M$ = 23.96; $SD$ = 20.28); $t(25) = 6.63$, $p < .001$, $d = 1.06$.[4]

***Mood induction for sad group.*** An independent samples t-test was conducted to examine whether the experimenter-identified group sad group reported experiencing more sadness than

[3] The analysis was repeated such that the independent variable was self-identified group (angry/sad). After the mood induction, the self-identified angry group ($M$ = 48.51; $SD$ = 28.41) reported significantly more anger than the self-identified sad group ($M$ = 30.55; $SD$ = 29.63); $t(102) = 2.96$, $p = .004$.

[4] When the analysis was conducted for participants in the self-identified angry group, results also showed that after the mood induction, participants in the self-identified angry group felt significantly more angry ($M$ = 48.51; $SD$ = 28.41) than sad ($M$ = 33.03; $SD$ = 25.66); $t(34) = 2.53$, $p = .016$.

the experimenter-identified group angry group after the mood induction. The independent variable was participant group (i.e., angry or sad), and the dependent variable was sadness intensity, as measured by the Emotional Engagement Scale. Results showed that the experimenter-identified sad group ($M$ = 67.66; $SD$ = 27.62) reported significantly more sadness than the experimenter-identified angry group ($M$ = 23.96; $SD$ = 20.28); $t(80) = 7.21$, $p < .001$, $d = 1.80$.[5] A paired-samples t-test was also conducted to examine whether the sad group felt more sadness than anger after the mood induction. In accordance with their group, participants in the experimenter-identified sad group reported feeling significantly more sad ($M$ = 67.66; $SD$ = 27.62) than angry ($M$ = 24.98; $SD$ = 24.04) after the mood induction; $t(55) = 10.25$, $p < .001$, $d = 1.19$.[6]

**Manipulation check of anger facilitation segment.** Analyses were conducted to examine whether the anger facilitation segment activated feelings of anger among the total sample of interest (i.e., *combined* experimenter-identified angry and sad groups). First, a paired-samples t-test was conducted to determine whether the intensity of anger increased from before to after the anger facilitation segment. The independent variable was time, and levels of the independent variable included the manipulation check before the anger facilitation segment (at either Step 4 or 6 of the procedure, depending on experimental condition) and the manipulation check immediately the anger facilitation segment (at either Step 6 or 8 of the procedure, depending on experimental condition). The dependent variable was the intensity of anger, as measured by the anger item of the Emotional Engagement Scale. Results showed that among the

[5] After the mood induction, the self-identified sad group ($M$ = 60.87; $SD$ = 33.12) felt significantly more sad than the self-identified angry group ($M$ = 33.03; $SD$ = 33.12); $t(102) = 4.35$; $p < .001$.

[6] After the mood induction, participants in the self-identified sad group felt significantly more sad ($M$ = 60.87; $SD$ = 33.12) than angry ($M$ = 30.55; $SD$ = 29.63); $t(68) = 6.75$, $p < .001$.

combined experimenter-identified angry and sad groups, anger intensity significantly increased from before ($M$ = 35.83; $SD$ = 28.55) to after ($M$ = 43.52; $SD$ = 30.76) the anger facilitation segment; $t(81) = 3.11$, $p = .003$, $d = .343$.

To determine whether the anger facilitation segment might have activated feelings of sadness in addition to feelings of anger, additional paired samples t-tests were conducted. The independent variable was time, and levels were identical to those in the aforementioned analysis. The dependent variables were single Emotional Engagement Scale items for the intensity of sadness, fear, shame, disgust, hope and joy. Within the combined experimenter-identified angry and sad groups, sadness intensity did not change significantly from before ($M$ = 56.82; $SD$ = 32.35) to after ($M$ = 52.45; $SD$ = 28.20) the anger facilitation segment; $t(81) = 1.90$, $p = .082$, $d = .20$. However, there was a trend suggesting that sadness may have declined during the anger facilitation segment. In addition, there was a significant reduction in the intensity of shame from before ($M$ = 34.74; $SD$ = 31.25) to after ($M$ = 27.32; $SD$ = 27.80) the anger facilitation segment, $t(81) = 3.17$, $p = .002$, $d = 35$. There was also a trend towards a significant increase in the intensity of disgust from before ($M$ = 44.24; $SD$ = 33.85) to after ($M$ = 49.05; $SD$ = 35.61) the anger facilitation segment, $t(81) = 1.90$, $p = .061$, $d = .21$. Changes in the intensity of all other emotions during the anger facilitation segment were non-significant.

An additional paired samples t-test was conducted to assess whether participants felt more angry than sad following the anger facilitation segment. The independent variable was the type of Emotional Engagement Scale (i.e., anger or sadness), and the dependent variable was the Emotional Engagement Scale rating of emotional intensity after the anger facilitation segment (at either Step 6 or 8; depending on participants' experimental condition). For participants in the experimenter-identified angry and sad groups, after the anger facilitation segment, there was no

significant difference in the intensity of anger ($M$ = 43.52; $SD$ = 30.76) and intensity of sadness ($M$ = 52.45; $SD$ = 28.20), $t(81) = 1.83$; $p = .071$. A trend towards significance was observed, suggesting that participants may have felt more sad than angry even after the anger facilitation segment. Because this finding was unexpected, paired samples t-tests were conducted within each of the experimenter-identified groups to determine whether participants felt more angry than sad after the anger facilitation segment. As was observed in the combined angry and sad groups, within only the experimenter-identified sad group, participants reported feeling significantly more sad ($M$ = 61.75; $SD$ = 26.27) than angry ($M$ = 36.75; $SD$ = 30.42) after the anger facilitation segment; $t(55) = 5.17$, $p < .001$, $d = 69$. In contrast to findings observed within the combined angry and sad groups, within only the experimenter-identified angry group, participants reported feeling significantly more angry ($M$ = 58.12; $SD$ = 26.57) than sad ($M$ = 32.42; $SD$ = 21.14) after the anger facilitation segment; $t(25) = 3.28$, $p = .003$, $d = 64$. Together, these results suggest that for participants who presented with anger, during the anger facilitation segment, anger increased to levels exceeding those of sadness. However, for participants who presented with sadness, anger increased but remained less intense than feelings of sadness.

To further examine the emotional impact of the anger facilitation segment, an additional paired samples t-test was conducted. This analysis was intended to assess whether participants felt angrier after the anger facilitation segment than the sadness facilitation segment. For this analysis, the independent variable was the type of facilitation segment (i.e., anger or sadness), and the dependent variable was the Emotional Engagement Scale rating for anger intensity after the facilitation segment (either Step 6 or 8 of the procedure, depending on experimental condition). Participants in the total sample (i.e., combined experimenter-identified angry and sad groups) reported feeling significantly angrier after the anger facilitation segment ($M$ = 43.52; SD

= 30.76) than after the sadness facilitation segment ($M$ = 34.57; $SD$ = 29.59); $t(81) = 3.38$; $p$ = .001, $d$ = 3.73.

***Effect of experimenter-identified group and condition on anger activation during the anger facilitation segment.*** To examine the effect of experimenter-identified group and condition on changes in anger intensity from before to after the anger facilitation segment, a repeated measures ANOVA was conducted. The dependent variable was the Emotional Engagement Scale for anger intensity before and after the anger facilitation segment, which was administered at either Steps 4 and 6, or Steps 6 and 8, of the procedure, depending on condition. The independent variables were experimenter-identified group (i.e., angry or sad group) and condition. Results indicated there was a significant main effect of experimenter-identified group; $F(1, 78) = 17.40$, $p < .001$, $\eta^2 = .18$ (see Figure 3). Regardless of experimental condition, participants in the experimenter-identified sad group reported a greater increase in anger during the anger facilitation segment, compared to participants in the experimenter-identified angry group. The main effect of condition was non-significant; $F(1, 78) = 1.05$, $p = .310$, $\eta^2 = .01$, as was the interaction of experimenter-identified group and condition; $F(1, 78) = .831$, $p = .365$, $\eta^2 = .01$.

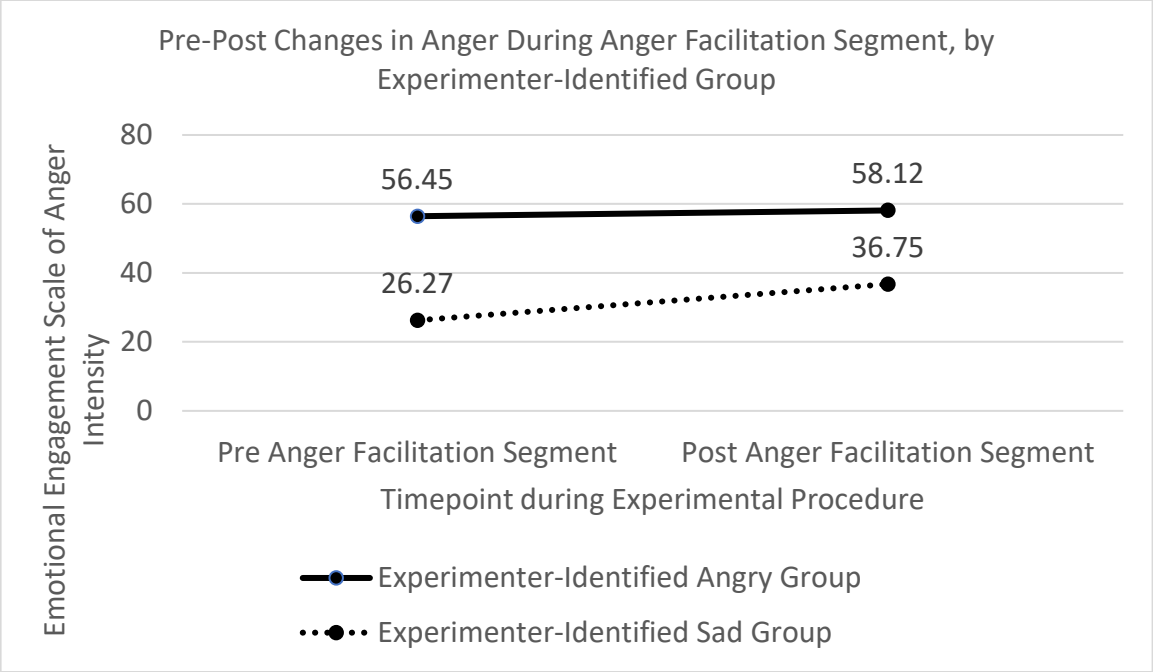


*Figure 3.* Regardless of experimental condition, participants in the experimenter-identified sad group reported a greater increase in anger intensity during the anger facilitation segment, compared to participants in the experimenter-identified angry group; $F(1, 78) = 17.40$, $p < .001$, $\eta^2 = .18$.

**Manipulation check of sadness facilitation segment.** Comparable analyses were conducted to examine whether the sadness facilitation segment activated feelings of sadness among the total sample of participants. A paired-samples t-test was conducted to determine whether the intensity of sadness increased from before to after the sadness facilitation segment. The independent variable was time, and levels of the independent variable included the manipulation check before the sadness facilitation segment (occurring at either Step 4 or 6 of the procedure, depending on experimental condition) and the manipulation check immediately the sadness facilitation segment (occurring at either Step 6 or 8 of the procedure, depending on experimental condition). The dependent variable was sadness intensity, as measured by the Emotional Engagement Scale sadness item. Among all participants, sadness intensity

significantly increased from before ($M$ = 52.56; $SD$ = 30.96) to after ($M$ = 60.11; $SD$ = 32.76) the sadness facilitation segment; $t(81) = 2.84$, $p = .006$, $d = .31$.

To examine whether the sadness facilitation segment impacted feelings of anger in addition to feelings of sadness, additional paired samples t-tests were conducted among the combined experimenter-identified angry and sad groups. The independent variable was time, and levels were identical to those in the aforementioned analysis. The dependent variables were Emotional Engagement Scale single items for the intensity of anger, fear, shame, disgust, joy and hope. Anger intensity did not change significantly from before ($M$ =39.76; $SD$ = 31.65) to after ($M$ = 34.57; $SD$ = 29.59) the sadness facilitation segment; $t(81) = 1.92$, $p = .058$, $d = .212$. However, there was a trend suggesting anger intensity may have decreased during the sadness facilitation segment. In addition, there was a significant decrease in the intensity of disgust from before ($M$ = 48.67; $SD$ = 37.09) to after ($M$ = 39.75; $SD$ = 36.08) the sadness facilitation segment, $t(81) = 3.28$, $p = .002$, $d = .36$. Changes in the intensity of all other emotions during the sadness facilitation segment were non-significant.

To further examine the emotional impact of the sadness facilitation segment, a paired samples t-test was conducted among the combined experimenter-identified angry and sad groups. This analysis was intended to assess whether participants felt more sad than angry after the sadness facilitation segment. The independent variable was the type of Emotional Engagement Scale (i.e., anger or sadness), and the dependent variable was the Emotional Engagement Scale rating of emotional intensity after the sadness facilitation segment (at either Step 6 or 8; depending on participants' experimental condition). Overall, after the sadness facilitation segment, participants felt significantly more sad ($M$ = 60.11; $SD$ = 32.57) than angry ($M$ = 34.57; $SD$ = 29.59), $t(81) = 4.77$; $p < .001$, $d = .53$.

A paired samples t-test was also conducted to assess whether participants felt sadder after the sadness facilitation segment than the anger facilitation segment. For this analysis, the independent variable was the type of facilitation segment (i.e., anger or sadness), and the dependent variable was the Emotional Engagement Scale sadness intensity rating after each facilitation segment (either Step 6 or 8 of the procedure, depending on experimental condition). Participants in the combined experimenter-identified angry and sad groups reported feeling significantly more sad after the sadness facilitation segment ($M$ = 60.11; $SD$ = 32.76) than after the anger facilitation segment ($M$ = 52.45; $SD$ = 28.20); $t(81) = 3.00$; $p = .004$, $d = .31$.

***Effect of experimenter-identified group and condition on sadness activation during the sadness facilitation segment.*** To examine the effect of experimenter-identified group and condition on changes in sadness intensity from before to after the sadness facilitation segment, a repeated measures ANOVA was conducted. The dependent variable was the Emotional Engagement Scale for sadness intensity before and after the sadness facilitation segment, which was administered at either Steps 4 and 6, or Steps 6 and 8, of the procedure, depending on condition. The independent variables were experimenter-identified group (i.e., angry or sad group) and condition. Results indicated there was a significant main effect of experimenter-identified group; $F(1, 78) = 26.92$, $p < .001$, $\eta^2 = .26$ (see Figure 4). Regardless of experimental condition, during the sadness facilitation segment, participants in the experimenter-identified angry group reported a greater increase in sadness, compared to participants in the experimenter-identified sad group. The main effect of condition was non-significant; $F(1, 78) = 1.15$, $p = .288$, $\eta^2 = .01$, as was the interaction of experimenter-identified group and condition; $F(1, 78) = .67$, $p = .42$, $\eta^2 = .01$.

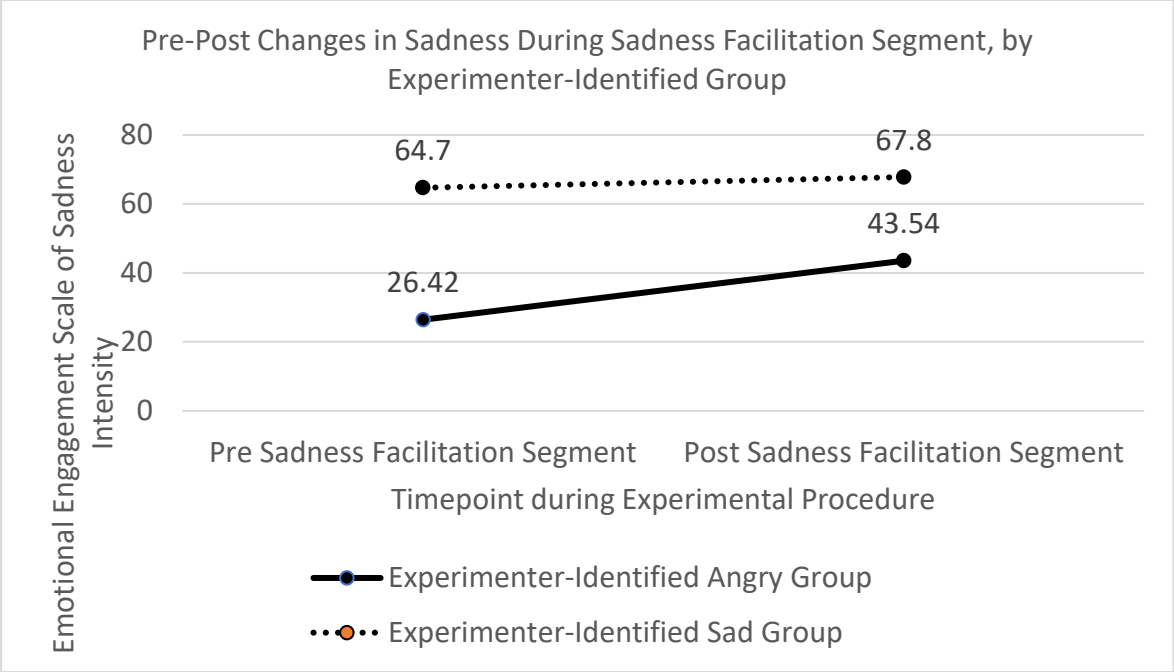


*Figure 4*. Regardless of experimental condition, during the sadness facilitation segment, participants in the experimenter-identified angry group reported a greater increase in sadness, compared to participants in the experimenter-identified sad group; $F(1, 78) = 26.92$, $p < .001$, $\eta^2 = .26$.

**Emotional trajectory during experimental protocol.** In summary, results suggest that the manipulation generally activated emotions as intended within each condition, across combined angry and sad groups (see Figures 5 and 6). Contrary to expectations, when participants who presented with lingering sadness were guided to feel angry, feelings of anger increased, but remained less intense than sadness. While the patterns of change are consistent across groups that were identified as primarily angry or primarily sad, the main differences were one of intercept reflecting baseline anger and/or sadness. For a breakdown of these findings by angry vs. sad group, see Appendices J and K.

The procedure for evoking a series of very specific emotional experiences, through an online interface using an emotion-focused experiential approach, was developed uniquely for this study. It is also the first of its kind. For that reason, documenting the effectiveness of the

evolving emotional experience of participants in this protocol is itself a finding worthy of discussion.

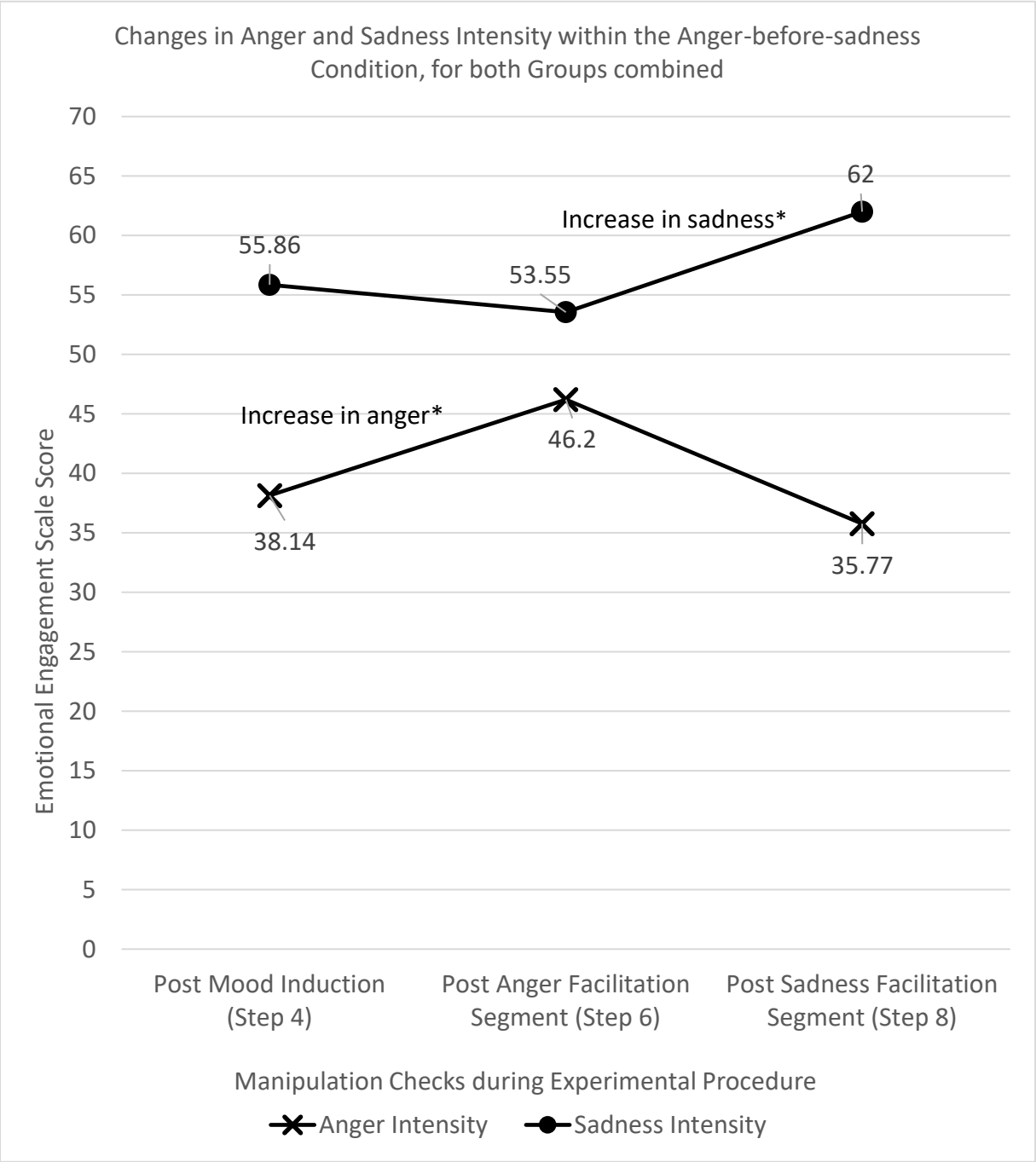


*Figure 5.* Within the anger-before-sadness condition, the combined angry and sad groups experienced a significant increase in anger from after the mood induction to after the anger facilitation segment, followed by a significant increase in sadness from after the anger facilitation segment to after the sadness facilitation segment.

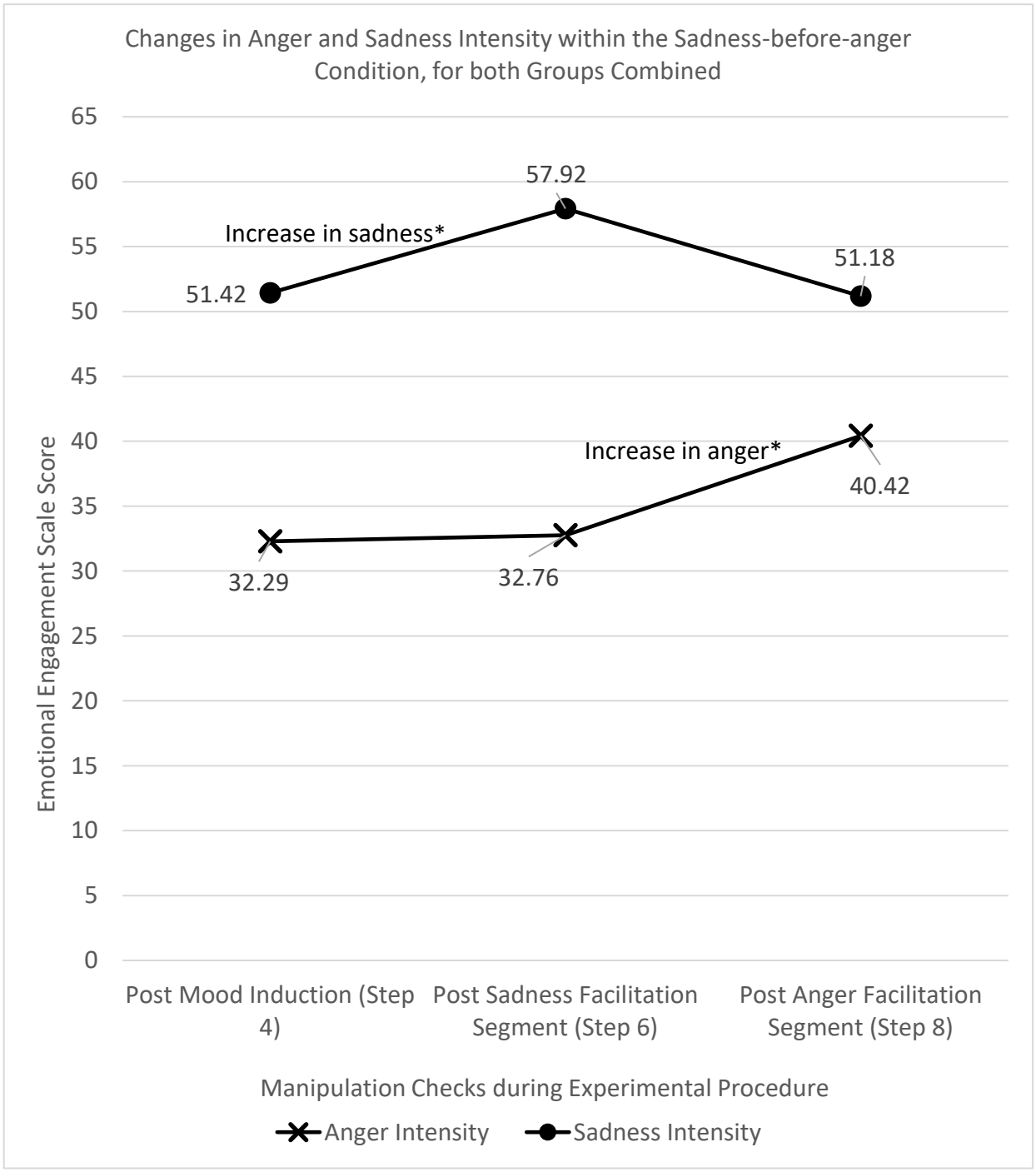


*Figure 6.* Within the sadness-before-anger condition, both the angry and sad experimenter-identified groups experienced a significant increase in sadness from after the mood induction to after the sadness facilitation segment, followed by a significant increase in anger intensity from after the sadness facilitation segment to after the anger facilitation segment.

## Hypothesis Testing

Hypothesis testing was conducted only on the experimenter-identified angry and sad groups ($n$ = 82), because only these groups were of interest in the present hypotheses.[7] Hypotheses 1a through 1b, 2a through 2b, 3a, and 3b, were each evaluated through stepwise multiple regression analyses in which four predictors were entered in three steps. The outcome variable was a post-intervention score. As a reminder: in parallel sets of analyses that outcome variable was measured by either the Resolution Scale, or the Transgression-Related Interpersonal Motivations Inventory, or the Emotional Engagement Scale. In the first step of the regression analysis, the pre-intervention level of the outcome variable was entered as a predictor. In step two of the regression equation, two dummy coded variables were entered as predictors: the experimenter-identified group and experimental condition. In the third step of the regression analysis, a dummy-coded variable representing the interaction of experimenter-identified group and experimental condition was entered as a predictor.

**Hypotheses 1a and 2a: Unfinished business.** Hypotheses 1a and 2a state that individuals will report a greater decline in unfinished business during an emotional processing exercise when they are guided to first feel their presenting emotion and secondly feel an incongruent emotion of either anger or sadness. Specifically, individuals who present with anger will feel a greater decline in unfinished business when they are guided to feel anger first and sadness second, as opposed to the inverse order of emotions. Also, individuals who present with

[7] When the same analyses were conducted on self-identified groups, results were comparable to those involving the experimenter-identified groups. The most salient difference was that analyses with self-identified groups were less cohesive. In the end, the difference between these two approaches to group identification is whether they are based on self-reports several weeks prior to the experimental intervention or immediately before the intervention. It was decided that the groups identified based on emotional experience immediately before the intervention were more clinically meaningful. For this reason, analyses using experimenter-identified groups are presented.

sadness will report greater resolution of unfinished business when they are guided to feel sadness first and anger second, rather than the inverse sequence of anger and sadness. To evaluate this prediction, a stepwise multiple regression analysis was conducted (see Table 9). The outcome variable was the Resolution Scale at step 9 of the procedure, after the intervention sequence. It is important to emphasize that higher scores on this measure indicate greater levels of unfinished business. In step 1 of the regression analysis, the level of unfinished business reported at Step 2 of the procedure, before the emotional processing intervention, was entered as a predictor. Remaining predictors were identical to those described in the introduction to the "Hypothesis Testing" section.

Table 9

*Stepwise Multiple Regression Analysis to Predict Post-Intervention Unfinished Business, measured by the Resolution Scale*

| Entry Step | Predictor |
|---|---|
| 1 | Pre-intervention level of unfinished business, measured by the Resolution Scale |
| 2 | Experimenter-identified Group |
| | Condition |
| 3 | Interaction of Experimenter-identified Group by Condition |

A significant final model predicted 64.20% of the variance in post-intervention Resolution Scale scores (*Adj.* $R^2$ = .642; see Table 10), $F(1, 80) = 146.10$, $p < .001$. Levels of unfinished business reported on the pre-intervention Resolution Scale significantly predicted variance in post-intervention Resolution Scale scores; $t = 12.09$, $p < .001$, $B = .84$. The three other predictors were excluded from the model because they were not significant predictors of variance in the outcome score: experimenter-identified group, condition, and the interaction of experimenter-identified group and condition.

Table 10

*Condition and Experimenter-Identified Group Predicting Post-Intervention Unfinished Business, measured by the Resolution Scale*

| Model | Predictor | *B* | *Beta* | *P* | 95% CI | Semi-partial correlation |
|---|---|---|---|---|---|---|
| 1 | Pre-intervention level of unfinished business, measured by the Resolution Scale | .84 | .80 | <.001*** | [.70, .98] | .80 |
| | **Excluded Variables** | | | | | |
| 1 | Experimenter-Identified Group | - | .13 | .064 | - | - |
| | Condition | - | -.04 | .543 | - | - |
| | Experimenter-Identified Group x Condition | - | .03 | .624 | - | - |

**Hypotheses 1b and 2b: Unforgiveness.** According to hypotheses 1b and 2b, individuals were expected to report a greater reduction in unforgiveness after they are guided to feel their presenting emotion first and an incongruent emotion second. To evaluate the hypotheses, a stepwise multiple regression analysis was conducted. The outcome variable was the post-intervention score on the Transgression-Related Interpersonal Motivations Inventory. In step 1, the pre-intervention score on the Transgression-Related Interpersonal Motivations Inventory was entered as a predictor. Predictors entered at steps 2 and 3 were identical to those in the previous analysis for testing hypotheses 1a and 2a.

A final model that significantly explained 87.90% of the variance in post-intervention unforgiveness scores was observed (*Adj.* $R^2$ = .879; see Table 11); $F(2, 79) = 315.99$, $p < .001$.

Two predictors significantly predicted variance in the level of unforgiveness reported on the post-intervention Transgression-Related Interpersonal Motivations Inventory: the pre-intervention score on the Transgression-Related Interpersonal Motivations Inventory, $t = 25.10$, $p < .001$, $B = .93$; and condition; $t = -2.43$, $p = .017$, $B = -2.21$. When experimental condition was entered as a predictor, $R^2$ increased by .01. As the level of unforgiveness reported pre-intervention was held constant, within the sadness-before-anger condition, unforgiveness declined 2.21 units faster during the intervention than it did in the anger-before-sadness condition ($B = -2.21$; see Figure 7*).* The remaining predictors were excluded from the model, which indicates that the effect of condition stated above does not depend on whether people presented with either sadness or anger (i.e., experimenter-identified group).

Table 11

*Condition and Experimenter-Identified Group Predicting Post-Intervention Unforgiveness, measured by the Transgression-Related Interpersonal Motivations Inventory*

| Model | Predictor | *B* | *Beta* | *P* | 95% CI | Semi-partial correlation |
|---|---|---|---|---|---|---|
| 2 | Pre-intervention unforgiveness, measured by the Transgression-Related Interpersonal Motivations Inventory | .93 | .94 | <.001*** | [.85, 1.0] | .94 |
| | Condition | -2.21 | -.09 | .017* | [-4.01, -.40] | -.09 |
| | | | Excluded Variables | | | |
| 2 | Experimenter-Identified Group | - | -.02 | .597 | - | - |
| | Experimenter-Identified Group x Condition | - | -.02 | .696 | - | - |

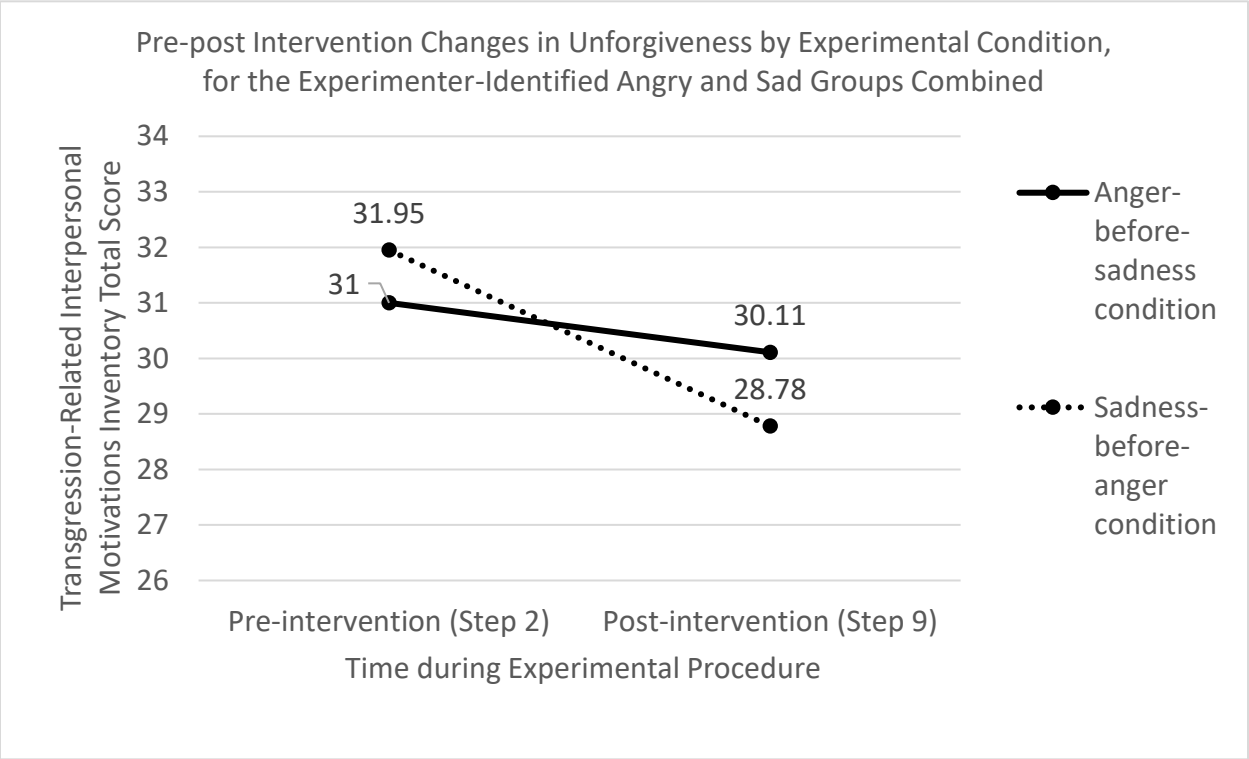


*Figure 7.* As the level of unforgiveness reported pre-intervention was held constant, within the sadness-before-anger condition, unforgiveness declined 2.21 units faster during the intervention than it did in the anger-before-sadness condition; $B$ = -2.21, $t$ = -2.43, $p$ = .017.

Based on the finding that experimental condition significantly predicted variance in post-intervention unforgiveness scores, paired samples t-tests were conducted to examine pre-post changes in unforgiveness within each experimental condition. First, a paired samples t-test was conducted to assess whether there was a significant decline in unforgiveness in the sadness-before-anger condition. Results indicated that within there was a significant decline in unforgiveness from before ($M$ = 31.95, $SD$ = 13.01) to after the intervention ($M$ = 28.78, $SD$ = 11.69), $t(37) = 3.66$, $p$ = .001, $d$ = .59. Second, a comparable paired samples t-test was conducted to assess whether there was a significant decline in unforgiveness within the anger-before-sadness condition. Results indicated that within the anger-before-sadness condition, there was also a significant decline in unforgiveness from before ($M$ = 31.00, $SD$ = 11.84) to after the

intervention ($M$ = 30.11, $SD$ = 12.59), $t(43) = 2.09$, $p = .043$, $d = .31$. Together, these findings indicate that unforgiveness declined during expression of both emotion sequences; however, there was a greater reduction in unforgiveness during the sadness-before-anger condition.

Finally, given the significant findings related to the overall score of the Transgression-Related Interpersonal Motivations Inventory, further analyses were then conducted to explore the effect by examining the two subscales of the Transgression-Related Interpersonal Motivations Inventory. The two subscales each assess a different aspect of unforgiveness, including the desire to avoid and the desire to seek revenge. The additional analyses are reported in the subsections that immediately follow.

***Predicting variance in the Avoidance subscale of the Transgression-Related Interpersonal Motivations Inventory.*** To further evaluate hypotheses 1b and 2b, a stepwise multiple regression analysis was conducted, in which the outcome variable was the post-intervention Avoidance subscale of the Transgression-Related Interpersonal Motivations Inventory. In the first step of the regression analysis, the pre-intervention Avoidance subscale was entered as a predictor. Remaining predictors were identical to those used in previous multiple regression analyses. The stepwise multiple regression analysis produced a final model that significantly explained 84.9% of the variance in post-intervention scores on the Avoidance subscale of the Transgression-Related Interpersonal Motivations Inventory (*Adj.* $R^2 = .849$; see Table 12); $F(1, 80) = 456.28$, $p < .001$. One predictor significantly explained variance in post-intervention Avoidance subscale scores, $t = 21.36$, $p < .001$, $B = .99$. All other predictors were excluded from the model.

Table 12

*Condition and Experimenter-Identified Group Predicting Post-Intervention Desire to Avoid, measured by the Transgression-Related Interpersonal Motivations Inventory Avoidance Subscale*

| Model | Predictor | *B* | *Beta* | *p* | 95% CI | Semi-partial correlation |
|---|---|---|---|---|---|---|
| 2 | Pre-intervention Avoidance subscale | .99 | .92 | <.001*** | [.90, 1.08] | .92 |
| | | | Excluded Variables | | | |
| 2 | Experimenter-Identified Group | - | -.02 | .713 | - | - |
| | Condition | - | -.07 | .127 | - | - |
| | Experimenter-Identified Group x Condition | - | -.05 | .274 | - | - |

***Predicting variance in the Revenge subscale of the Transgression-Related Interpersonal Motivations Inventory.*** To further evaluate hypotheses 1b and 2b, a stepwise multiple regression analysis was conducted in which the outcome variable was the post-intervention Revenge subscale of the Transgression-Related Interpersonal Motivations Inventory. In the first step of the regression analysis, the pre-intervention Revenge subscale was entered as a predictor. Remaining predictors were identical to those used in previous multiple regression analyses. A final model that significantly explained 84.30% of the variance in post-intervention Transgression-Related Interpersonal Motivations Inventory Revenge subscale scores was observed (*Adj.* $R^2$ = .843; see Table 13); $F(2, 79) = 218.50$, $p < .001$. Two predictors significantly predicted variance in post-intervention the Revenge scores: the pre-intervention Revenge subscale scores, $t = 20.90$, $p < .001$; and condition; $t = 2.44$, $p = .017$, $B = -.83$. When the pre-intervention Revenge subscale score was held constant, within the sadness-before-anger condition, the desire to seek revenge declined .83 units faster during the intervention than it did

in the anger-before-sadness condition (*B* = -.83*).* The remaining predictors were excluded from the model.

Table 13

*Condition and Experimenter-Identified Group Predicting Post-Intervention Desire to seek Revenge, measured by the Transgression-Related Interpersonal Motivations Inventory Revenge Subscale*

| Model | Predictor | *B* | *Beta* | *P* | 95% CI | Semi-partial correlation |
|---|---|---|---|---|---|---|
| 2 | Pre-intervention Revenge subscale | .77 | .93 | <.001*** | [.69, .84] | .92 |
| | Condition | -.83 | -.11 | .017 | [-1.50, -.15] | -.11 |
| | | | Excluded Variables | | | |
| 2 | Experimenter-Identified Group | - | -.03 | .552 | - | - |
| | Experimenter-Identified Group x Condition | - | -.04 | .533 | - | - |

**Hypotheses 1c and 3a: Anger intensity.** According to hypothesis 1c, when individuals with lingering anger are guided to experience anger first and sadness second (as opposed to the inverse order of emotions), they will report a greater decline in anger intensity. Also, according to hypothesis 3a, during an emotional processing intervention, individuals with lingering anger will experience a greater reduction in anger intensity than participants who present with lingering sadness. To evaluate the predictions, a stepwise multiple regression analysis was conducted. The dependent variable was the level of anger intensity reported on the Emotional Engagement Scale after the intervention, at Step 8 of the procedure. Four predictors were entered in three steps. In the first step of the regression analyses, the only predictor entered was anger intensity reported on the Emotional Engagement Scale before the intervention, at step 4 of the procedure. The predictors entered at steps 2 and 3 of the regression were identical to those used in the previous

stepwise multiple regression analyses. A final model significantly explained 41.70% of the variance in post-intervention Emotional Engagement Scale ratings of anger (*Adj.* $R^2$ = .417); $F(1, 80) = 59.01$, $p < .001$ (see Table 14). Pre-intervention ratings of anger intensity significantly predicted post-intervention ratings of anger intensity, $t = 7.68$, $p < .001$, $B = .67$. All other predictors entered were excluded from the model.[8]

Table 14

*Condition and Experimenter-Identified Group Predicting Post-Intervention Anger, measured by the Emotional Engagement Scale*

| Model | Predictor | *B* | *Beta* | *p* | 95% CI | Semi-partial correlation |
|---|---|---|---|---|---|---|
| 1 | Pre-intervention anger intensity, measured by the Emotional Engagement Scale | .67 | .65 | <.001*** | [.50, .84] | .65 |
| | | | Excluded Variables | | | |
| 1 | Experimenter-Identified Group | - | .09 | .380 | - | - |
| | Condition | - | .15 | .087 | - | - |
| | Interaction of Experimenter-Identified Group by Condition | - | .14 | .105 | - | - |

[8] Because there was a trend towards statistical significance suggesting that experimental condition may predict post-intervention anger intensity, a univariate ANOVA was conducted within only the experimenter-identified angry group to determine whether the post-intervention level of anger intensity depended on condition, while controlling for pre-intervention levels of anger intensity. There was no main effect of condition; $F(1, 23) = .89$, $p = .355$, $\eta^2 = .04$. A univariate ANOVA was also conducted within only the experimenter-identified sad group to determine whether the post-intervention level of anger intensity depended on condition, while controlling for pre-intervention anger intensity. There was also no main effect of condition; $F(1, 53) = 1.93$, $p = .170$, $\eta^2 = .04$.

**Hypotheses 2c and 3b: Sadness intensity.** In parallel to hypothesis 1c, hypothesis 2c stated that when individuals with lingering sadness are guided to feel sadness first and anger second, rather than the inverse sequence of emotions, they will experience a greater reduction in sadness intensity over time. According to hypothesis 3b, during an emotional processing intervention, individuals with lingering sadness will experience a greater reduction in sadness intensity than participants who present with lingering anger. An additional stepwise multiple regression analysis was conducted to evaluate these predictions. The dependent variable was the level of sadness intensity reported on the Emotional Engagement Scale after the intervention, at Step 8 of the procedure. Four predictors were again entered in three steps. In the first step of the regression, sadness intensity reported on the pre-intervention Emotional Engagement Scale, at Step 4 of the procedure, was entered as a predictor. The same predictors used in previous analyses were entered at steps 2 and 3 of the regression. Results showed a final model that significantly explained 53.30% of the variance in post-intervention Emotional Engagement Scale ratings of sadness (*Adj.* $R^2$ = .533); $F(1, 80) = 93.48$, $p < .001$ (see Table 15). Pre-intervention ratings of sadness intensity significantly predicted post-intervention ratings of sadness intensity, $t = 9.67$, $p < .001$, $B = .69$. All other predictors entered were excluded from the model.[9]

[9] Because there was a trend towards statistical significance suggesting that the interaction of experimental condition and group may predict post-intervention sadness intensity, a univariate ANOVA was conducted within only the experimenter-identified angry group to determine whether post-intervention sadness intensity depended on condition, while controlling for pre-intervention sadness intensity. There was no main effect of condition; $F(1, 23) = .77$, $p = .390$, $\eta^2 = .03$. A comparable analysis was conducted within only the experimenter-identified sad group. There was also no main effect of condition; $F(1, 53) = 1.37$, $p = .246$, $\eta^2 = .03$.

Table 15

*Condition and Experimenter-Identified Group Predicting Post-Intervention Sadness, measured by the Emotional Engagement Scale*

| Model | Predictor | *B* | *Beta* | *p* | 95% CI | Semi-partial correlation |
|---|---|---|---|---|---|---|
| 1 | Pre-intervention level of sadness, measured by the Emotional Engagement Scale | .69 | .73 | <.001*** | [.55, .84] | .73 |
| | Excluded Variables | | | | | |
| 1 | Experimenter-Identified Group | - | -.188 | .053 | - | - |
| | Condition | - | -.127 | .096 | - | - |
| | Interaction of Experimenter-Identified Group by Condition | - | -.144 | .065 | - | - |

**Hypotheses 1d and 2d: Usefulness.** A two-way univariate ANOVA was conducted to evaluate hypotheses 1d and 2d, which predicted that participants would report that an emotional processing exercise was experienced as more useful or promising for change when they were first guided to feel their presenting emotion and subsequently guided to feel an incongruent emotion, either anger or sadness. The dependent variable was the Useful Processes Questionnaire, which is a measure where participants retrospectively appraise an experience. Independent variables were experimenter-identified group and experimental condition. The main effect of group on usefulness of the intervention was non-significant; $F(1, 78) = .00$, $p = .989$, $\eta^2 = .00$. The main effect of experimental condition on usefulness of the intervention was also non-significant; $F(1, 78) = 3.03$, $p = .086$, $\eta^2 = .04$. However, a trend towards significance was

observed, which suggested that participants assigned to the sadness-before-anger condition ($M$ = 64.29; $SD$ = 10.11) may have reported that that intervention was more useful than those assigned to the anger-before-sadness condition ($M$ = 60.23; $SD$ = 11.99). The interaction of experimenter-identified group and condition was also not statistically significant; $F(1, 78) = 1.21$, $p = .274$, $\eta^2 = .02$.

To examine the effect of condition within the experimenter-identified angry group, an independent samples t-test was conducted in which the dependent variable was the Useful Processes Questionnaire and the independent variable was condition. Within the angry group, participants in the sadness-before-anger condition ($M$ = 66.36, $SD$ = 8.25) reported that the intervention was significantly more useful than participants in the anger-before-sadness condition ($M$ = 58.73, $SD$ = 7.91); $t(24) = 2.39$, $p = .025$, $d = .94$. An identical independent samples t-test was conducted within the experimenter-identified sad group. Results showed that within the sad group, self-reported usefulness of the intervention did not differ significantly between the sadness-before-anger ($M$ = 63.44; $SD$ = 10.80) and anger-before-sadness condition ($M$ = 61.72; $SD$ = 13.66); $t(54) = .520$, $p = .605$, $d = .14$ (see Figure 8).

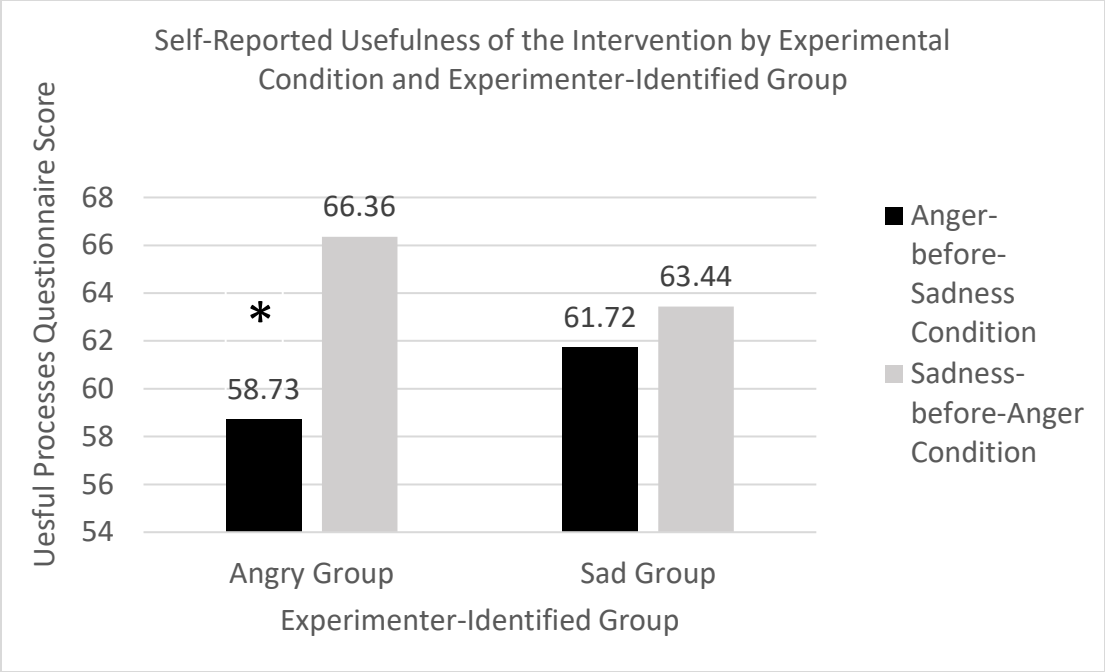


*Figure 8.* Within the experimenter-identified angry group, participants assigned to the sadness-before-anger condition ($M$ =66.36; $SD$ = 8.25) reported that the emotional processing exercise was significantly more useful than those assigned to the anger-before-sadness condition ($M$ = 58.73; $SD$ = 7.91); $t(24) = 2.39$, $p = .025$. Within the experimenter-identified sad group, self-reported usefulness of the intervention did not differ significantly between the sadness-before-anger ($M$ = 63.44; $SD$ = 10.80) and anger-before-sadness condition ($M$ = 61.72; $SD$ = 13.66); $t(54) = .520$, $p = .605$.

## Exploratory Analyses

**Research Question 4: Changes in other emotions.** Exploratory analyses were conducted to evaluate whether the changes in the intensity of other emotions (i.e., fear, shame, disgust, hope, joy) depended on presenting emotion and the sequence in which anger and sadness are experienced. Specifically, five additional stepwise multiple regression analyses were conducted in which the outcome variable was either the fear, shame, disgust, hope or joy single item of the Emotional Engagement Scale at Step 8 of the procedure. The predictor variables and their order of entry were identical to those used above in analyses for hypothesis 1c and 2c. The pre-intervention intensity of the respective emotion, from Step 4 of the procedure, was entered as the first predictor. The remaining predictors were group and condition, entered in the second

step, and the interaction of group and condition, entered in the third step. For all regression analyses, the pre-intervention Emotional Engagement Scale score was the only predictor that significantly explained variance in the outcome measure. These findings indicate that the emotional change in question is not attributable to feeling or affective intensity in general but rather limited to specific discrete emotions that were part of the experimental procedure.

**Pre-post intervention changes in unfinished business, unforgiveness, and emotional state; across all groups.** Paired samples t-tests were conducted to assess changes in outcome measures across the total sample ($N$ = 104). Analyses were conducted using all three outcomes measures: unfinished business, unforgiveness, and emotional state. First, a paired samples t-test was conducted to examine pre-post changes in unfinished business, as measured by the Resolution Scale, regardless of participant group or condition. There was a significant reduction in unfinished business from before ($M$ = 34.91; $SD$ = 7.86) to after ($M$ = 33.65; $SD$ = 8.47) the intervention; $t(103) = 2.67$, $p = .009$, $d = .26$.

Second, a paired samples t-test was conducted to assess pre-post changes in unforgiveness across the overall sample. The dependent variable was the Transgression-Related Interpersonal Motivations Inventory. Within the total sample, there was a significant decrease in unforgiveness from before ($M$ = 32.36; $SD$ = 12.28) to after ($M$ = 30.65; $SD$ = 12.63) the intervention, $t(103) = 3.62$, $p < .001$, $d = .36$. Further paired samples t-tests were conducted to assess pre-post changes in various types of unforgiveness, as measured by the Avoidance and Revenge subscales of the Transgression-Related Interpersonal Motivations Inventory. Results showed that across all participants, there was a significant decrease in both types of unforgiveness during the intervention: the desire to avoid and the desire to seek revenge. The desire to avoid significantly decreased from pre-intervention ($M$ = 23.08; S$D$ = 9.07) to post-

intervention ($M$ = 21.99; $SD$ = 9.81), $t(103) = 2.96$, $p = .004$, $d = .29$. Moreover, the desire to seek revenge significantly decreased from before ($M$ = 9.27; S$D$ = 4.66) to after ($M$ = 8.69; $SD$ = 4.31) the intervention, $t(103) = 2.52$, $p = .013$, $d = .25$.

Third, paired samples t-tests were conducted to examine changes in emotional state during the intervention, across the overall sample ($N$ = 104). A significant decrease in shame from before ($M$ = 35.90; $SD$ = 31.61) to after ($M$ = 24.32; $SD$ = 28.49) the intervention was observed, $t(103) = 4.70$, $p < .001$, $d = .48$. Pre-post changes in all other emotions measured by the Emotional Engagement Scale were non-significant across the overall sample; $p < .05$. In particular, the intensity of anger did not change significantly from before ($M$ = 36.60; $SD$ = 30.31) to after the intervention ($M$ = 39.11; $SD$ = 31.90), $t(103) = 1.01$, $p = .315$, $d = .10$. Moreover, the intensity of sadness did not change significantly from before ($M$ = 51.50; $SD$ = 33.41) to after the intervention ($M$ = 54.87; $SD$ = 31.57), $t(103) = 1.40$, $p = .164$, $d = .14$.

# CHAPTER IV

# DISCUSSION

Across competing theories of emotion change, there is a lack of consensus on whether the moment-by-moment order in which emotions are felt influences longstanding trajectories of emotion change. A small body of empirical findings suggests that individuals will experience greater resolution of lingering emotional pain if they are first guided to feel the lingering emotion and secondly guided to feel an incongruent emotion, as opposed to being guided to feel an incongruent emotion first and the lingering emotion second (e.g. Rochman & Diamond, 2008; Zhan et al., 2017a). However, no published studies to date have compared the effectiveness of different emotion sequences in alleviating different lingering emotions.

Anger and sadness are incongruent in their action tendencies (e.g., Mikulincer, 1988). As such, the present study sought to examine whether the sequence in which anger and sadness are felt impacts resolution of lingering anger or sadness. Hypotheses were partially supported by the current findings. The first key finding was that, as predicted, the self-reported usefulness of the intervention depended on the presenting emotional concern, as well as the order in which anger and sadness were felt. This finding was based on participants' subjective experience of what seemed useful, through a retrospective evaluation. The second key finding converged with those reports using pre-to-post symptom changes. As such, in support of stated hypotheses, a decline in the desire to hold a grudge after the experiment depended on the order in which emotions were felt during the intervention. Furthermore, a significant decline in participants' shame was observed during the intervention. Each of the effect sizes for main findings were generally in the small to medium range, which is noteworthy given the brevity and instructional nature of the intervention. However, hypotheses regarding changes in other outcome variables were not

supported, as pre-post changes in unfinished business, anger intensity, and sadness intensity did not depend on the presenting emotional concern or order of anger and sadness.

**Summary of Current Findings**

When reviewing current findings, it is important to consider the potential impact of demographic variables, including culture, gender, and race. All participants in the present study were American or Canadian residents, and there is evidence to suggest that members of Western cultures, like residents of the United States and Canada, may be more likely to express emotions than members of collectivistic cultures (Matsumoto, Yoo, & Fontaine, 2008). Also, in the present sample, most participants (77%) identified as women. Past research has also suggested that men may be more likely than women to express anger, whereas women may be more likely than men to express sadness (Safdar et al., 2009). As such, the gender distribution of the present sample may have impacted anger and sadness activation in the present study. In addition, most participants in the present sample were Caucasian (54%), and past research has demonstrated that race can impact emotional expression. For example, individuals of Caucasian decent may be more likely to outwardly express anger, relative to individuals of African decent (Magee & Louie, 2016). Overall, the present findings should be interpreted in the context of the cultural, racial, and gender identities of the participants.

**The best sequence sometimes depends on the presenting emotion.** In accordance with hypotheses, results suggested that the usefulness of an emotional processing intervention depends on both the presenting emotional concern and the order in which anger and sadness are felt. Although it has been previously demonstrated that emotions are influenced by the order in which they are experienced (e.g., Frederickson et al., 2000), the present finding is novel in that it

demonstrates that the self-reported usefulness of various emotion sequences differ by the presenting emotional concern.

***Expressing sadness before anger appears useful for those presenting with anger.*** For individuals who present with lingering anger, the expression of sadness first and anger second appears to be more useful than the inverse sequence of emotions. In contrast to hypotheses, individuals with lingering anger reported that the intervention was more useful if they were guided to feel sadness-before-anger, as opposed to anger-before-sadness. The effect of sadness-before-anger, compared to the inverse sequence, on self-reported usefulness of the intervention, was large ($d$ = .94; Cohen, 1988). As such, it appears that feeling sadness-before-anger is noticeably more helpful to those experiencing anger, compared to feeling anger-before-sadness.

The present finding can be interpreted in the context of work by Rochman and Diamond (2008), who found that physiological arousal increased when individuals with lingering anger felt anger-before-sadness, but not when they felt sadness-before-anger. An increase in physiological arousal may be an adaptive mechanism of change because high levels of observer-rated emotional arousal have been associated with resolution of unfinished business (Greenberg & Foerster, 1996; Greenberg & Malcom, 2002). However, increases in physiological arousal are not necessarily associated with the specific kind of elevations in emotional arousal that facilitate the resolution of unfinished business. Although Rochman and Diamond (2008) demonstrated that when working with lingering anger, feeling anger-before-sadness helps promote emotional activation and presumably engagement, their study did not actually test the assumption that resulting activation was related to symptom change or personal change. Rather the assumption was that more activation, which is indeed often an intermediate process goal in psychotherapy, was presumably helpful for personal change. However, the current findings test the impact of

sequences on personal change directly and suggest that the opposite sequence (i.e., sadness-before-anger) is more useful for coping with lingering anger, despite the possibility that, as demonstrated by Rochman and Diamond, the more helpful sequence is less physiologically activating. Clearly, the role of arousal, in maximizing the potential of a sequential emotional process, is less straight forward than it may have seemed.

It is possible that for individuals with lingering anger, expressing anger before sadness is more useful than the inverse order because of the relative "malleability" of anger as compared to sadness. Perhaps, when anger is expressed first and fully explored, it is difficult to modify subsequent emotional experience by facilitating new emotion states, including incongruent emotions. In contrast to anger, sadness may be a more malleable (i.e., fluid or transmutable) emotion, such that when it is expressed and explored first, it is relatively easier to transform that emotional experience through sequences, as compared to the sequential transformation of anger. Although there is little research on this point, arguably the proactive and agentic nature of anger as an approach emotion creates an action tendency that is less "negotiable" than the action tendency of sadness, which is to withdraw. Speaking to this interpretation, in a study of married heterosexual couples, Sanford (2012) observed that when a couple had been experiencing "hard emotions," including anger and irritation, they were less likely to express and detect soft emotions, such as sadness and disappointment. However, the experience of soft emotions did not have similar impacts on the expression or detection of hard emotion. Moreover, in accordance with the view that anger is less malleable than other emotions, emotion-focused theory has posited that anger can be characterized by a tendency to reject other viewpoints or assert oneself (Pascual-Leone, Gillis, Singh, & Andreescu, 2013), which may make one less likely to willingly explore incongruent emotions. If it is relatively challenging to activate incongruent emotions in

the context of anger, then attempts to activate and explore an incongruent emotion may be more effective *before* feelings of anger gain too much momentum and are fully explored, as compared to after the fuller activation and exploration of anger. When sadness is expressed first and anger is expressed second, anger may be transformed by the preceding feelings of sadness, such that the anger is effectively "softened" by preceding sadness.

Initially, this explanation appears inconsistent with Lutz and Krahé's (2018) finding that sadness induction reduced aggressive behaviours, regardless of the order in which anger and sadness were induced. However, it is important to note that Lutz and Krahé studied anger that was induced by instructing participants to complete challenging numerical problems, as opposed to anger that was related to a previous interpersonal interaction. In addition, Lutz and Krahé assessed anger through the frequency of aggressive behaviour, rather than the degree of perceived anger intensity. In contrast to Lutz and Krahé (2018), the present finding involves self-reported usefulness of an emotional processing intervention.

***For individuals with lingering sadness, both emotion sequences are equally useful.*** For individuals presenting with lingering sadness, the order in which anger and sadness are felt does not impact the self-reported usefulness of an emotional processing intervention. Both emotion sequences seem to be equally productive. The present hypothesis is partly supported in the sense that sadness-before-anger is reported by participants to be a productive sequence. However, it turns out the alternative hypothesis is also true: anger-before-sadness seems to be reported by participants to be equally productive. There are multiple possible explanations for this finding, which contrasts with that of reports by participants presenting with anger. First, individuals with lingering sadness may differ from people with lingering anger in specific ways, which reduce the impact of temporal sequence on emotional processing. For example, individuals with lingering

sadness may be more likely than those with lingering anger to be in a state of global distress, which is commonly described as a sense of "hopelessness" or "loneliness" and consequently may be mistaken for sadness (Pascual-Leone & Greenberg, 2007; Pascual-Leone, 2018). If, unlike those presenting primarily with anger, people presenting with lingering sadness are in fact feeling global distress, then they will have relatively less differentiation in the meaning of their emotional state, which may impede their ability to attend to guided emotional sequences.

Secondly, it is possible that people experiencing lingering sadness are less aware of actual differences in the usefulness of emotional expression, due to symptoms of depression or due to their understanding of or beliefs about emotional experience. Recent research has demonstrated that individuals experiencing clinical depression (i.e., lingering sadness) overestimated the intensity of future sad moods and underestimated the intensity of future happy moods, which are cognitive biases that were not observed in non-depressed individuals (Zetsche, Bürkner, & Renneberg, 2019). If individuals feeling depressed (i.e., lingering sadness), have biased negative expectations about their future mood, they may underestimate the usefulness of an emotional processing exercise. This last issue reflects a question of measurement validity: participant self-reports on how useful an intervention experience, such as the Useful Processes Questionnaire, may not always reflect how productive it actually was. For example, there are some examples in the literature of therapy clients reporting any kind of painful emotional exploration as having been unproductive, even if it was an objective predictor of a subsequent reduction in symptoms (Pascual-Leone, in progress). Thirdly, it is still possible that among individuals with lingering sadness, the experimental manipulation of anger and sadness does not affect the usefulness of an emotional processing intervention. In a prior study suggesting that the sequence of sadness-before-anger may benefit individuals experiencing self-critical depression

(i.e., lingering sadness), emotions were observed in the naturalistic setting of therapy (Choi et al., 2016), as opposed to being experimentally manipulated, as they were in the current study. Perhaps for individuals feeling lingering sadness, the sequence of emotions affects the usefulness of emotional processing only when emotions emerge spontaneously, whereas the current study used prescriptive instruction.

**To relinquish a grudge, express sadness before anger.** Regardless of presenting emotional state (i.e., angry or sad group), or the order in which anger and sadness were experienced (i.e., experimental condition), all participants in the present study experienced a decline in unforgiveness from before to after the intervention, including the desire to avoid and the desire to seek revenge. The observed effect of the intervention on overall unforgiveness was small to medium in size ($d$ =. 36). Results regarding changes in unforgiveness were in partial support of hypotheses. As predicted, the temporal sequence of emotions influenced changes in unforgiveness, but the presenting emotional concern did not necessarily influence the trajectory of unforgiveness during in the intervention. Regardless of differences in presenting emotion, a medium effect ($d$ = .60) was observed wherein individuals who felt sadness first and anger second reported a greater decline in overall unforgiveness and the desire to seek revenge, compared to individuals who expressed emotions in the reverse order. Because past research suggests that the sequence of sadness-before-anger may benefit those with lingering sadness (Choi et al., 2016), it is not surprising that those presenting with sadness reported a greater reduction in unforgiveness when they were guided to feel sadness first and anger second, rather than the reverse sequence. It is, however, unexpected that individuals with lingering anger would experience declines in unforgiveness similar to those experienced by individuals with lingering sadness, after expression of sadness followed by anger. As mentioned in response to findings

about usefulness of emotional processing among angry individuals, the sequence of sadness followed by anger may be more beneficial than its inverse because anger may be less malleable than sadness. Overall, findings suggest that it is better to express sadness before anger when seeking to resolve a grudge, and the benefit of using that order has a medium effect size.

**After expressing anger and sadness, shame is the only emotion to reduce as an outcome.** Within the present study, the researcher assessed changes in the intensity of various emotions including anger, sadness, shame, fear, disgust, joy, and hope. No emotions significantly increased in intensity as outcomes of the intervention, and shame was the only emotion to reduce in intensity over the course of the emotional processing intervention. The effect for this change was small to medium in size ($d$ = .48). Furthermore, the reduction in shame did not depend on the presenting emotional concern or the temporal sequence of anger and sadness. When changes in the intensity of various emotions were examined within each type of emotion facilitation segment (i.e., anger and sadness), it was observed that shame declined significantly during the anger facilitation segment, but not during the sadness facilitation segment.

Within Pascual-Leone and Greenberg's (2007) formulation, shame is assumed to promote withdrawal, whereas anger is assumed to promote assertion. In accordance with the theoretical notion that shame and anger embody incongruent action tendencies, recent research has demonstrated that among individuals who endorsed minimal use of immature defense styles, the expression of anger reduced shame (Sawashima, 2018). Moreover, for individuals experiencing lingering shame, anger expression was reported as more useful than expression of sadness or ongoing rumination on shame (Sawashima, 2018). Furthermore, a large body of literature shows that feelings of shame predict longstanding sadness (i.e., depression; e.g., Cheung, Gilbert & Irons, 2004; De Rubeis & Hollenstein, 2009). Clearly, past research and emotion-focused theory

both align with the present finding that shame reduced during activation of anger, but not sadness. As such, the expression of anger, either before or after sadness, may have contributed to a reduction in shame.

Results also indicated that participants experienced a significant decline in feelings of disgust when being guided to express sadness. Within Pascual-Leone and Greenberg's (2007) model, sadness is characterized by a tendency to withdrawal, while disgust is thought to be a form of anger in which the prevailing action tendency is an urge to reject (for more on disgust see Pascual-Leone et al., 2013). Therefore, the current finding that disgust becomes less intense during sadness activation parallels research suggesting that sadness counters feelings of anger (e.g., Zhan et al. 2017b). The current results underscore the importance of assessing emotions other than those being explicitly activated during an emotional processing intervention.

In contrast to findings regarding the intensity of shame, the intensity of anger and sadness did not change as an outcome during the emotional processing intervention. Despite the fact that the protocol successfully moved participants through a sequence of emotions, the present study did not detect any significant changes in either anger or sadness from before to after the emotional processing intervention. Support was also not found for hypotheses predicting that there would be a greater reduction in anger and sadness for individuals who presented with that emotion and expressed it first in a sequence. Changes in anger and sadness intensity during the intervention did not depend on the presenting emotional concern, nor the order in which the emotions were felt.

In prior research, when facilitating anger was found to influence the intensity of sadness, or facilitating sadness influenced the intensity of anger, both emotions (i.e., sadness and anger) were typically each facilitated only a single occasion (e.g., Zhan et al., 2015, Zhan et al., 2017b).

This differed from the present study, wherein individuals with lingering anger completed two tasks intended to activate their anger, and individuals with lingering sadness completed two comparable tasks that were intended to facilitate sadness. It is possible that changes in emotions were mitigated because the presenting emotions of concern were activated twice during the present study. Recall from descriptive statistics that participants in the current study reported their interpersonal grievance to have occurred an average of 22 months before the mood induction. In contrast, most studies that suggest the impact of incongruent emotions have examined the effect of those emotions on a momentarily induced feeling (e.g., Lutz & Krahé, 2018; Zhan et al., 2015; Zhan et al., 2017b), as opposed to emotion related to a lingering personal concern or past interaction with a close other. Few prior studies have examined the impact of facilitating an incongruent emotion on a lingering emotional concern (Zhan et al., 2017a, Rochman & Diamond, 2008). The present intervention may have been too brief to make a lasting impact on a lingering, predominant emotion.

**Unfinished business declines during emotional processing, regardless of presenting emotion or sequence.** The present study found a small effect showing that unfinished business declined during the emotional processing intervention, but support was not found for hypotheses predicting that participants would experience a greater reduction in unfinished business when they expressed their presenting emotion first in a sequence. Changes in unfinished business did not differ by presenting emotional concern or the sequence of emotional expression. It appears that the temporal sequence of anger and sadness affects changes in the desire to hold a grudge, especially in the form of seeking revenge, but not the changes in unfinished business. Perhaps activating emotions with opposite action tendencies influences ones' overall action tendency, such as a desire to seek revenge (e.g., "I'll make her pay," or "I'm going to get even";

McCullough et al., 1998, p. 1603), but does not impact a sense of unfinished business, which includes one's self-perception (e.g., "I feel worthwhile in relation to this person."), perception of the other (e.g., "I see this person negatively."), distress (e.g., "I feel troubled by my persisting unresolved feelings in relation to this person.") and sense of need fulfillment (e.g., "I feel frustrated about not having my needs met by this person."; Singh, 1994, p. 254).

Even though the temporal sequence of emotion did not appear to impact resolution of unfinished business, ratings of unfinished business did appear to decline over the course of the intervention for all participants. It appears that expressing anger and sadness, in any order, helps to resolve unfinished business. This finding aligns with past research demonstrating that the expression of emotion at high levels of arousal was associated with a decline in unfinished business, and that the exploration of both anger and sadness play important complementary roles (Greenberg & Foerster, 1996; Greenberg & Malcom, 2002; Paivio & Pascual-Leone, 2010). Perhaps expressing anger and sadness at high levels of arousal, in any order, is beneficial to the resolution of unfinished business.

**Research Implications**

**Unfinished business may be more likely to present as sadness than anger.** At the time of the pre-screen questionnaire and the study procedure, participants were more likely to report feeling predominantly sad than to report feeling predominantly angry. Among the 104 participants who completed the study, over two thirds of the sample reported feeling predominantly sad on the pre-screen questionnaire, whereas only about one third reported feeling predominantly angry on the pre-screen questionnaire. Moreover, after the mood induction of the present study, about half of participants reported feeling mostly sadness, whereas only a quarter

reported feeling mostly anger. This finding may offer some insight into the description of emotional experience and presentation in the phenomenon of unfinished business.

It is possible that individuals are more likely to report feeling sad than angry because they are responding in a socially desirable manner. Past research has demonstrated that higher levels of socially desirability are associated with lower levels of physical and non-physical expression of anger (Biaggio, 1980). Alternatively, individuals may be more likely to experience lingering sadness than lingering anger because sadness is more common than anger. Indeed, through an experience sampling study examining emotions among older adults and university students living in Estonia, Mill, Kööts-Ausmees, Allik, and Realo (2018) found that sadness was felt about 21% of the time, whereas anger was felt only about 6% of the time. Similarly, through an experience sampling study conducted among a sample consisting primarily of female residents of France, Trampe, Quoidbach, and Taquet (2015) found that sadness was experienced 20% of time, but anger was felt only 10% of the time. These past studies concur that sadness may occur more frequently than anger in response to negative interpersonal interactions.

In addition, it is possible that the gender distribution in the present study contributed to the finding that lingering sadness was more common than lingering anger in response to an interpersonal grievance. The present sample consisted primarily of women, and past research suggests that women are more likely to express sadness and less likely to express anger, relative to men (Safdar et al., 2009). It is important to note; however, that the gender distribution within the angry group was relatively similar to that of the sad group. For example, 69% of participants in the experimenter-identified angry group identified as women, compared to 77% of participants in the experimenter-identified sad group. Through the observation in the current study that

participants are more likely to report feeling sadness than anger about an interpersonal grievance, this study provides a novel contribution to literature on unfinished business.

**Unfinished business may present in the context of unpolarized emotion.** Within the present study, about one in 10 individuals experiencing unfinished business were feeling equal levels of anger and sadness. Another one in 10 of individuals reporting unfinished business indicated inconsistent levels of anger and sadness. On one measure of emotion state, they reported feeling predominantly angry, but on another measure of emotion state, which was administered at the same time as the first measure, they reported feeling predominantly sad. It is possible that individuals who endorsed inconsistent levels of anger and sadness were responding carelessly; however, it is also possible that they had low emotional awareness or were in a state of global distress, which impeded their ability to clearly identify the intensity at which they were feeling specific emotions. Prior research on unfinished business has examined individuals presenting with specific emotional experiences, such as anger (Rochman & Diamond, 2008) or without seeking to identify specific emotional experiences (e.g., Greenberg & Malcom, 2002). However, no prior research has documented the frequency at which persons experiencing unfinished business feel mixed or inconsistent emotions. Because this experience appears to be relatively common (10-20%) among those with unfinished business, it may be of interest to researchers studying the emotional trajectory during recovery from lingering interpersonal grievances.

**The experimental protocol successfully manipulated a precise emotional experience.** An online protocol using prompts for specific emotional experiences was developed and used for the first time in the current study. Manipulation checks successfully demonstrated that the sequence of interventions successfully moved participants through an ordered sequence of

emotions as prescribed (recall Figures 5 and 6). Feelings of sadness and anger both increased in intensity during their respective facilitation segments but did not significantly increase in intensity during facilitation segments intended to activate the opposite emotion. Moreover, the overall pre-post intervention changes in fear, shame, disgust, joy and hope did not depend on the presenting emotional concern or the order in which anger and sadness were felt. Together, these findings on changes in emotional intensity suggest that the guided expression of anger and sadness in specific sequences did not produce a general affective change (e.g., an overall change in the intensity of multiple emotion states). Instead, it appears to have activated anger and sadness in a particular emotion sequence, while prompting an overall decline in feelings of shame. These findings support the use of the present intervention as a tool for activating specific emotions in sequence.

The present study also demonstrated that structured writing prompts in which participants are directed to reflect on their feelings about a past distressing event can sequentially activate both lingering emotions and emotions incongruent to lingering emotions. During each emotion facilitation segment, there was a greater increase in the target emotion among participants who did not present with the target emotion, relative to participants who presented with the target emotion, which suggests that it is easier to facilitate a greater increase in the intensity of incongruent emotion than the intensity of lingering emotion. Moreover, those presenting or incongruent emotions can be activated in systematic way through a prescribed series of steps. In accordance with the current findings, past research has shown that a structured writing task can activate lingering emotions related to past events (e.g., assertive anger; Kramer & Pascual-Leone, 2016; negative affect, Rohde et al., 2015). Studies have also shown that film clips (e.g., Zhan et al., 2017a) or recalling past events (Rochman & Diamond, 2008) can activate emotions

incongruent to a lingering emotion. Within past studies, incongruent emotions were facilitated through tasks in which participants are directed to think about topics other than the event that caused lingering bad feelings. Prior to the present study, no past research has demonstrated that completing written prompts about one's emotions in response to a single, past interpersonal event can activate both lingering and novel, incongruent emotions. The present research offers the first empirical evidence that a computer-mediated intervention containing structured writing prompts can be used to activate lingering and incongruent emotions.

## Clinical Implications

**Computer-mediated interventions for emotional processing.** The present study has demonstrated that structured, computer-mediated interventions can be used to facilitate helpful emotional processing. Through a 30-minute online intervention, a small to medium reduction in shame, a small to medium reduction of unforgiveness (or revengefulness) and a small reduction in unfinished business were observed. Notably, these effect sizes were greater than those observed in expressive writing, which is the most similar intervention and one that has been extensively both studied and touted as having a reaching potential for impact. For example, the present effects were over 2 to 7 times larger than the effects of expressive writing on psychological health (Frattaroli, 2006; Frisina, Borod, & Lepore, 2004). It is possible that the highly structured nature of the present intervention contributed to the difference in effect sizes, as past studies in the meta-analyses of expressive writing typically involved less structured writing interventions, in which participants were asked to describe a past event or to describe their emotions in a more open-ended format. The observed effects in the present study should also be interpreted in the context of research comparing the effects of therapist-assisted and self-directed psychological interventions. Past research has demonstrated that therapist-assisted

interventions generally have greater effects than self-directed interventions (Ingersoll, Wainer, Berger, Pickard & Bonter, 2016; Jarry & Ip, 2005; Tolin et al., 2007). As such, the current intervention would be likely more powerful if it were conducted in-person by a clinician.

Guided, online writing interventions, such as the intervention in the current study, could be explored as an adjunct treatment to therapy or a helpful exercise for individuals who are experiencing lingering distress about an interpersonal interaction. Through a computer or cell phone application, clients can be guided towards certain emotion sequences over the course of several days, without needing to visit a treatment facility. These tools may prove convenient for facilitating repeated emotion sequences (e.g., "emotional push-ups"; Pascual-Leone, 2009) to foster long-term recovery from emotional distress.

**Sequences of emotional processing within psychotherapy.** The results of the study could inform the sequences of emotion that therapists choose to guide clients through within experiential psychotherapy, including emotion-focused therapy. Expressing anger and sadness, in either order, shows promise as a means of reducing unfinished business and shame, regardless of one's presenting emotional state. If clients wish to let go of a grudge, expressing sadness first and anger second may be especially beneficial. Lastly, if individuals are experiencing lingering, interpersonally-relevant anger, expressing sadness first and anger may help them to access emotions in a way that is personally useful and relevant.

## Limitations and Future Research Directions

The present study was limited by a low sample size. In particular, there were relatively few participants endorsing predominant feelings of anger in response to a past event. Future studies should focus recruitment on identifying potential participants who are feeling angry about an interpersonal interaction. Moreover, many participants who initially qualified for the study at

the time of the pre-screen questionnaire no longer qualified at the time of the study itself, because they were not feeling predominantly angry nor predominantly sad at the time of the experimental task. As such, future studies should encourage participants to complete the study as soon as possible following the pre-screen questionnaire, in order to reduce the likelihood that their emotions regarding the past interpersonal event change before they complete the study. The current study was also limited by its use of a non-clinical sample. Although participants were not identified members of a clinical population, one quarter of participants reported seeking psychotherapy or counseling in response to the event that they had selected for the study. In addition, the total sample and the experimenter-identified group endorsed mild symptoms of depression, while the experimenter-identified sad group endorsed moderate symptoms of depression. These characteristics of the sample may improve generalizability to a clinical population, but the present findings cannot be assumed to generalize to clinical settings. Future researchers should explore the impacts of systematically facilitating emotional sequences on a clinical sample, either through structured, in-person tasks or computer-mediated interventions, in order to better apply findings to psychotherapy.

In addition, approximately half of the participants in the present sample were Caucasian and over three quarters identified as women. Previous research has demonstrated that emotional expression is influenced by both culture and gender (Safdar et al., 2009); therefore, the results of the present study may not generalize to individuals of diverse racial or cultural backgrounds, or individuals who do not identify as women. During future studies of emotional sequences, researchers should continue to consider the impact of race, culture, and gender when recruiting samples and interpreting findings.

The computer-mediated nature of the intervention created several difficulties that should be noted to inform future development of online emotional processing interventions. Over 22% of participants took prolonged breaks during the study, which may have interrupted the sequential processing of emotion that occurred during the intervention. Moreover, the attrition rate for the current study was high. Just under a third of participants who began the study did not complete it. It is possible that participants were not motivated to sustain attention to an online intervention when they completed the emotional processing intervention from a personal computer because they were distracted by other tasks on their computer or in their environment. It is also possible that participants became frustrated during the intervention because they were not able to move to the next page of the study until several minutes had passed, which may have prompted them to discontinue the study early. As such, to minimize attrition, future computer-mediated emotional processing interventions should be designed so that individuals are guided to activate emotion in a timely manner. In addition, several participants reported suicidal ideation and urges to harm others during the study, particularly during "Task C: Action tendency". These incidents were reported to the University Research Ethics Board, and all participants were provided with a list of mental health resources and instructions for a relaxation exercises, as part of the debriefing procedure. Future researchers should anticipate incidents of a similar nature when developing online emotional processing tools.

This study was also limited by its exclusive use of self-report measures. There is evidence to suggest that when participants are experiencing elevated levels of arousal, they may not be able to determine whether emotional processing was useful or beneficial to them (for a summary see Pascual-Leone, in progress). For example, during a 6-day expressive writing intervention, Pascual-Leone et al. (2015) observed that participants experienced an overall

decline in negative affect, relative to a control group, despite reporting temporary increases in negative affect during the expressive writing. The short bursts of negative affect during expressive writing may have occluded the overall benefits of the writing intervention from participants. In addition, participants in the present study may have been providing socially desirable responses based on expectations about the hypotheses of the study. For example, participants may have reported lower levels of unfinished business post-intervention than pre-intervention, due to the expectation that researchers were predicting a decline in unfinished business. Although this is a limitation of the present study, steps were taken to manage this limitation. For example, at the conclusion of the study, participants were asked to guess the hypotheses of the present study, and no participants identified any of the hypotheses, which suggests that findings regarding the impact of presenting emotion and the temporal sequence of emotions are not due to socially desirable responses. Also, when participants responded to the Emotional Engagement Scale, they were unable to see the numerical value of their response. Future researchers may address the limitations of self-report measures through use of observer ratings or narrative coding to measure emotional arousal, unfinished business, and unforgiveness.

In addition, this study did not examine whether changes in outcome variables persisted beyond the conclusion of the intervention. Researchers would need to employ a longitudinal design with one or more follow-up assessments of dependent variables, in order to demonstrate that changes in the outcomes persist beyond the conclusion of the study. Research on psychotherapy has also demonstrated that even if changes in outcome variables are not sustained at follow-up, repeated processing of lingering and incongruent emotions is needed to sustain long-term change (Pascual-Leone, Yeryomenko, Sawashima & Warwar, 2017).

This study also did not include a control condition in which participants were guided to experience two consecutive emotion facilitation segments both intended to activate a single target emotion (i.e., either only anger or only sadness). For example, no participants were assigned to a condition in which they were guided to complete two variations of the anger facilitation segment, or some longer version to account for time-on-task. Moreover, this study did not involve a control condition in which participants experienced a non-intervention time delay following either the mood induction or first emotion facilitation segment. As such, it is not possible to fully conclude that experiencing either the anger-before-sadness or sadness-before sequences is more helpful than experiencing any single emotion or a time delay. Still, other researchers (e.g., Rochman & Diamond, 2008) have used control or time delay conditions similar to those suggested above, in order to control for the effects of time within emotional processing interventions. In future experimental studies examining the sequence of emotional processing, researchers should employ similar control conditions.

In addition, the Useful Processes Questionnaire, which was used in the present study, is a newly developed self-report measure, and the present study was one of the first empirical studies to examine the psychometrics of the measure. Participant responses in the present study generally suggested that both examined emotion sequences were useful, as scores ranged from 58.7 to 66.4 on a scale in which 17 is the minimum possible score and 85 is the maximum possible score. Thus, the retrospective reports of the usefulness of the interventions, does suggest they had some value to participants that presumably was better than nothing at all. However, it is still unclear what score participants might report on the Useful Processes Questionnaire following a no-intervention control (e.g., a time delay) or another type of unhelpful process. It is possible that after no-intervention or benign intervention, participants might report a Useful

Process Questionnaire score that exceeds the minimum possible value (17) of the measure. Thus, the Useful Processes Questionnaire does not indicate with certainty the extent to which a process, such as a sequence of emotional processing, is significantly more useful than a "no intervention or a benign intervention".

In the future, researchers should continue to recruit non-clinical samples from university participant pools or other university-based recruitment methods. In the present study, participants recruited through a university were more likely to complete the study and to provide detailed responses to open-ended items, when compared to participants recruited though other methods, such as Amazon Mechanical Turk and social media. University-based recruitment appears particularly useful for two-part studies as well as studies that require participants to complete open-ended writing tasks.

Researchers should also continue to monitor the relative frequency of sadness and anger among cases of unfinished business. If sadness is indeed more common than anger following an interpersonal grievance, then researchers should examine possible confounding variables that may contribute to this finding, such as socially desirable response patterns. This line of inquiry would contribute to future research on emotional recovery from unfinished business.

Future researchers should also examine whether the specific sequence in which emotions are activated influences the characteristics or quality of emotions. From an emotion-focused theoretical perspective (Pascual-Leone & Greenberg, 2007), the order in which anger and sadness are felt may influence whether sadness manifests as global distress or grief, and whether anger presents as rejecting or assertive. This type of research may also refine the understanding of helpful emotion sequences for angry or sad individuals experiencing qualitatively specific forms of anger or sadness that are either adaptive or not.

Lastly, more research is needed to clarify the impact of expressing lingering and incongruent emotions on the resolution of lingering emotions about interpersonal grievances. Although the present study provided evidence suggesting that the expression of anger and sadness may benefit individuals experiencing lingering anger or sadness about interpersonal interactions, it did not examine whether expression of other lingering and incongruent emotions help to resolve other forms of unfinished business, such as predominant feelings of shame. Future studies could examine the effectiveness of other incongruent emotions in counteracting lingering emotional distress.

**Conclusion**

Through an experimental intervention, the present study has demonstrated that the benefits of emotional processing depend on the sequence in which emotions are felt. Moreover, to address certain types of emotional problems, including lingering anger and the desire to hold a grudge, specific sequences of emotion appear to be more helpful than others. The present findings support the notion that the temporal sequence of emotion is a mechanism of change for resolving lingering distress.

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# APPENDICES

## Appendix A

Demographics Questionnaire

Please select or provide the responses that best describe you.

Gender: _____
Age: _____
Sexual orientation:_____

Self-identified racial/ethnic background:

- ☐ White/Caucasian
- ☐ Black/African Canadian
- ☐ Arab/Middle Eastern
- ☐ Hispanic/Latino
- ☐ Aboriginal/Native Canadian
- ☐ South Asian (e.g., Indian, Pakistani)
- ☐ East Asian (e.g., Chinese, Japanese)
- ☐ Other (please specify):_____

Marital Status (select one):

- ☐ Single
- ☐ Never married
- ☐ Common-law
- ☐ Married
- ☐ Separated
- ☐ Divorced
- ☐ Widowed

Employment status (select one):

- ☐ Employed full-time
- ☐ Employed part-time
- ☐ Unemployed

Year in school (select one):

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4

## Appendix B

Interpersonal Event Questionnaire (Pascual-Leone & Sawashima, 2018)

1. When did you experience the upsetting interpersonal event?

2. How upsetting was this event?

1----------2----------3----------4----------5----------6----------7

Not at all Extremely

3. On average, how many times per week do you think about this issue?

0 1 2 3-4 times 5-6 times daily or more

4. Have you spoken to anyone about this issue?

Yes No

5. On average, how many times per week do you speak to someone else about the issue?

0 1 2 3-4 times 5-6 times daily or more

6. Have you ever received any type of therapy or counselling to help you deal with this issue?

a) No Yes

b) If yes, long ago from now? (if currently in progress write "0")
Months_____ Year_____

7. Have you ever been prescribed psychiatric medication, antidepressants, or others, to help deal with this issue?

a) No Yes

b) If yes, long ago from now? (if currently in progress write "0")
Months_____ Year_____

8. Have you received any type of therapy or counselling for other emotional difficulties?

Yes No

## Appendix C

Anger-Sadness Comparison Item (Pascual-Leone & Nardone, unpublished measure, University of Windsor)

Please choose the statement that describes your current feelings of anger and sadness about the interaction.

When I think about this interaction, I feel . . .

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Only angry, not at all sad | Much more angry than sad | Some-what more angry than sad | Slightly more angry than sad | Equally angry and sad | Slightly more sad than angry | Some-what more sad than angry | Much more sad than angry | Only sad, not at all angry |

## Appendix D

Emotional Engagement Scale (as used in research by Narkiss-Guez et al., 2015 and Rochman & Diamond, 2008)

Right now, on a scale of 1 to 10, how intensely do you feel . . .

angry?

1_____100

Least intense Most intense

sad?

1_____100

Least intense Most intense

afraid?

1_____100

Least intense Most intense

ashamed?

1_____100

Least intense Most intense

disgusted?

1_____100

Least intense Most intense

hopeful?

1_____100

Least intense Most intense

joyful?

1_____100

Least intense Most

## Appendix E

Useful Processes Questionnaire (Pascual-Leone & Sawashima, 2018; unpublished measure, University of Windsor)

*Instructions*: Rate how true the following items are for you or your perspective right now, particularly as a result of the session/ exercise/ process you just participated in…..

1. Do you feel this (session, exercise, etc.) was productive?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

2. Even if you did not resolve the issue today, do you think doing more of what we did would be helpful?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

3. If someone like you was in counselling for this issue, do you think doing this kind of exercise would be useful?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

4. In this session something shifted for me. I saw something differently or experienced something freshly.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

Not at all Very Much

5. The exercise or work I have been doing gives me new ways of looking at my problem.

1 2 3 4 5

Not at all Very Much

6. I feel that I understand my problems better.

1 2 3 4 5

Not at all Very Much

7. I have a sense that working this way or with this intervention is a promising direction for me.

1 2 3 4 5

Not at all Very Much

8. I am more aware of what I want now.

1 2 3 4 5

Not at all Very Much

9. I am now a bit clearer as to how I might be able to change.

1 2 3 4 5

Not at all Very Much

10. I have realized or clarified more of what I need to work on, or what my problems or goals are.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

11. I have come to understand myself, my feelings, or my actions better.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

12. Today it became clearer to me why I react in a certain way and not differently towards certain people.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

13. I have become more aware of things about other people or my situation; or of another person's responsibility for things that have happened.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

14. Today I was very involved emotionally.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

15. The themes discussed touched me and are relevant to me.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

16. What I said and felt was generally representative of the thoughts, feelings, and reactions I have in everyday life when it comes to this issue.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

17. I now feel less negative, depressed, guilty, anxious or hurt; emotionally, I feel more positive, relieved, unburdened, safe, relaxed, generally confident or encouraged.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not at all | | | | Very Much |

## Appendix F

Pre-screen Questionnaire Item for Recruitment through University of Windsor Psychology Participant Pool

Have you been feeling either especially angry or especially sad because of an interaction with an attachment figure (e.g., parent, current or past romantic partner, sibling, close friend) that occurred more than 6 months ago? If so, please choose the statement that describes your current feelings of anger and sadness about the interaction:

- □ Only angry, not at all sad
- □ Much more angry than sad
- □ Somewhat more angry than sad
- □ Equally angry and sad
- □ Somewhat more sad than angry
- □ Much more sad than angry
- □ Only sad, not at all angry
- □ I did not have an interaction with an attachment figure (e.g., parent, current or past romantic partner, sibling, close friend) more than 6 months ago that has led me to feeling either especially angry or especially sad.

*Many of the response options are identical to those in the Anger-Sadness Comparison item. However, the Anger-Sadness Comparison item uses a 9-point scale to assess the relative intensity of anger and sadness, whereas the screening item used a 7-point scale, due to technical constraints on the number of response options. Only respondents who selected the response options "Only angry, not at all sad", "Much more angry than sad", or "Somewhat more angry*

*than sad" were eligible to participate in the angry group. Only participants who selected the response options "Only sad, not at all angry", "Much more sad than angry", or "Somewhat more sad than angry" were eligible to participate in the sad group.*

## Appendix G

Pre-screen Questionnaire Items for Recruitment through Email to University of Windsor Student Body, Amazon Mechanical Turk, and Social Media

1. Please select all the statements that describe how you have been feeling recently:
   - ☐ I have been feeling especially angry because of an interaction with another person.
   - ☐ I have been feeling especially sad because of an interaction with another person.
   - ☐ I have NOT been feeling especially angry or especially sad because an interaction with another person.

*If respondents selected the response option, "I have NOT been feeling especially angry or especially sad because an interaction with another person", they were excluded from further participation in the pre-screen questionnaire or study.*

2. The other person in the interaction was an attachment figure (e.g., parent, current or past romantic partner, sibling, close friend.
   - ☐ True
   - ☐ False

*Respondents who indicated that the other person in the interaction was not an attachment figure, by selecting the "false" response option, were excluded from participating further in the pre-screen or in the study.*

3. *Anger-Sadness Comparison Item*: Please choose the statement that describes your current feelings of anger and sadness about the interaction.

When I think about this interaction, I feel . . .

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Only angry, not at all sad | Much more angry than sad | Some-what more angry than sad | Slightly more angry than sad | Equally angry and sad | Slightly more sad than angry | Some-what more sad than angry | Much more sad than angry | Only sad, not at all angry |

*If participants had responded to question 1 by indicating that they felt especially angry and reported feeling more anger than sadness when responding to question 3, they were eligible to participate in the angry group. Similarly, if participants had reported feeling especially sad when responding to question 1 and reported feeling more sad than angry when responding to question 3, they were eligible to participate in the sad group. All other participants were not eligible to participate in the study.*

## Appendix H

Debriefing Item

How are you feeling right now, compared to how you felt when you first began this study?

- I am feeling more distressed than I was when I started this study.
- I am feeling equally as distressed as I was when I started this study.
- I am feeling less distressed than I was when I started this study.

*If participants indicated that they were feeling more distressed than they were at the start of the study, participants were then encouraged to repeat the relaxation exercise, do something else enjoyable, or consider using the mental health resource list.*

# Appendix I

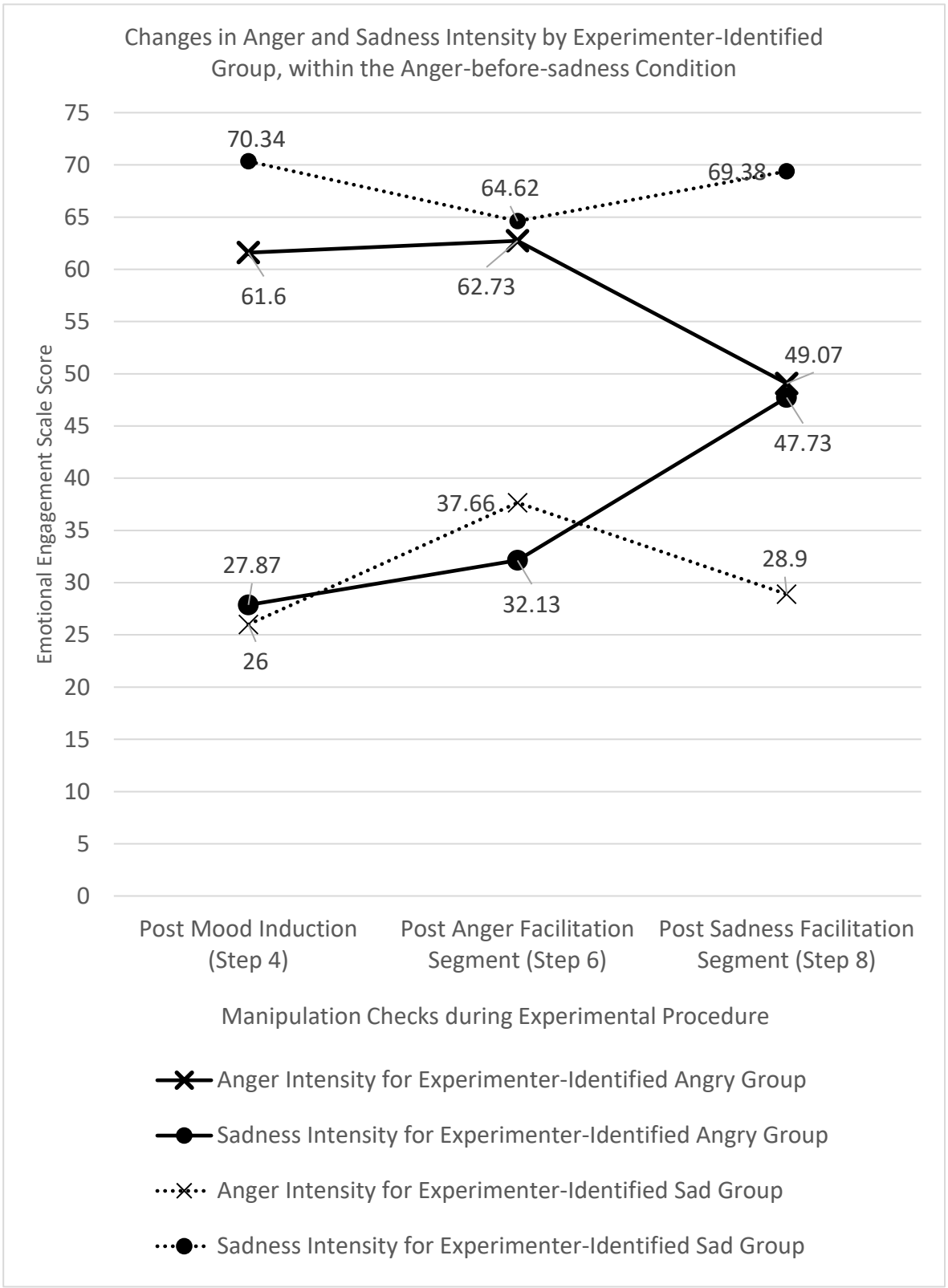
*Pearson's Bivariate Correlations between Variables of Interest among Total Sample (N = 104), Prior to Missing Data Imputation and After Outlier Winsorization*

| Step of Experimental Procedure | | Baseline (Step 2) | | | | | | | Manipulation Check of Mood Induction (Step 4) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Variable | ARS | BDI-II | LOSC | RS | TRIM | TRIM: Avoid | TRIM: Revenge | EES: Anger | EES: Sadness | EES: Fear | EES: Shame | EES: Disgust | EES: Hope | EES: Joy |
| Baseline (Step 2) | ARS | - | .31** | .48** | .52** | .40*** | .26** | .53*** | .42*** | .37*** | .19* | .18 | .28** | -.03 | -.26** |
| | BDI-II | - | - | .46** | .40** | .09 | .03 | .17 | .14 | .39*** | .24* | .39*** | .13 | -.22* | -.37** |
| | LOSC | - | - | - | .43** | .24* | .18 | .28** | .21* | .30** | .16 | .15 | .22* | -.27** | -.39** |
| | RS | - | - | - | - | .52*** | .49*** | .41*** | .45*** | .23* | -.03 | .25* | .40*** | -.27** | -.28** |
| | TRIM | - | - | - | - | - | .95*** | .79*** | .51*** | -.05 | -.10 | .11 | .42*** | -.16 | -.10 |
| | TRIM: Avoid | - | - | - | - | - | - | .56*** | .44*** | -.11 | -.16 | .10 | .39*** | -.20* | -.07 |
| | TRIM: Revenge | - | - | - | - | - | - | - | .50*** | .08 | .07 | .10 | .32** | -.05 | -.14 |
| Manipulation Check of Mood Induction (Step 4) | EES: Anger | - | - | - | - | - | - | - | - | .10 | -.01 | .09 | .39*** | -.16 | -.24* |
| | EES: Sad | - | - | - | - | - | - | - | - | - | .26** | .44*** | .13 | -.05 | -.39** |
| | EES: Fear | - | - | - | - | - | - | - | - | - | - | .19* | .01 | .18 | -.06 |
| | EES: Shame | - | - | - | - | - | - | - | - | - | - | - | .19* | .01 | .18 |
| | EES: Disgust | - | - | - | - | - | - | - | - | - | - | - | - | .36** | .14 |
| | EES: Hope | - | - | - | - | - | - | - | - | - | - | - | - | - | .00 |
| Manipulation Check of Second Emotion Facilitation Segment (Step 8) | EES: Anger | .41*** | .08 | .20* | .44** | .39*** | .29** | .46*** | .67*** | .17 | .05 | .05 | .40*** | -.02 | -.15 |
| | EES: Sad | .29** | .23* | .19. | .23* | .01 | .00 | .02 | .07 | .72*** | .22* | .49*** | .18 | .05 | --.27** |
| | EES: Fear | .25* | .30** | .15 | .16 | .13 | .03 | .29** | .18 | .27** | .61** | .29** | .13 | .04 | -.16 |
| | EES: Shame | .17 | .39** | .21* | .24* | .08 | .03 | .16 | .13 | .30** | .30** | .65** | .24* | .00 | -.24* |
| | EES: Disgust | .46*** | .21* | .34** | .45** | .41*** | .32** | .46*** | .35*** | .24* | .08 | .22* | .73*** | -.13 | -.35** |
| | EES: Hope | -.03 | -.20* | -.38** | -.31* | -.14 | -.18 | -.05 | -.13 | -.09 | .06 | .05 | -.11 | .70*** | .46** |
| | EES: Joy | -.10 | -.18 | -.24* | -.29* | -.04 | -.05 | .02 | -.08 | -.31** | -.06 | -.18 | -.18 | .34** | .60** |
| .Post-Intervention (Step 9) | RS | .47*** | .31** | .41** | .85** | .36*** | .34** | .30** | .41*** | .27** | -.08 | .17 | .29** | -.30** | -.37** |
| | TRIM | .38*** | .08 | .27** | .52** | .93*** | .89*** | .73*** | .50*** | -.02 | -.10 | .12 | .40*** | -.19 | -.12 |
| | TRIM: Avoid | .25* | .02 | .21* | .47** | .88*** | .92*** | .53*** | .39*** | -.09 | -.17 | .08 | .37*** | -.19 | -.03 |
| | TRIM: Revenge | .56*** | .20 | .32** | .46** | .73*** | .53*** | .89*** | .55*** | .15 | .08 | .16 | .33** | -.13 | -.26* |
| | UPQ | -.14 | -.01 | -.33** | -.17 | .03 | .64*** | -.03 | -.08 | -.06 | .04 | .23* | .03 | .26** | .16 |

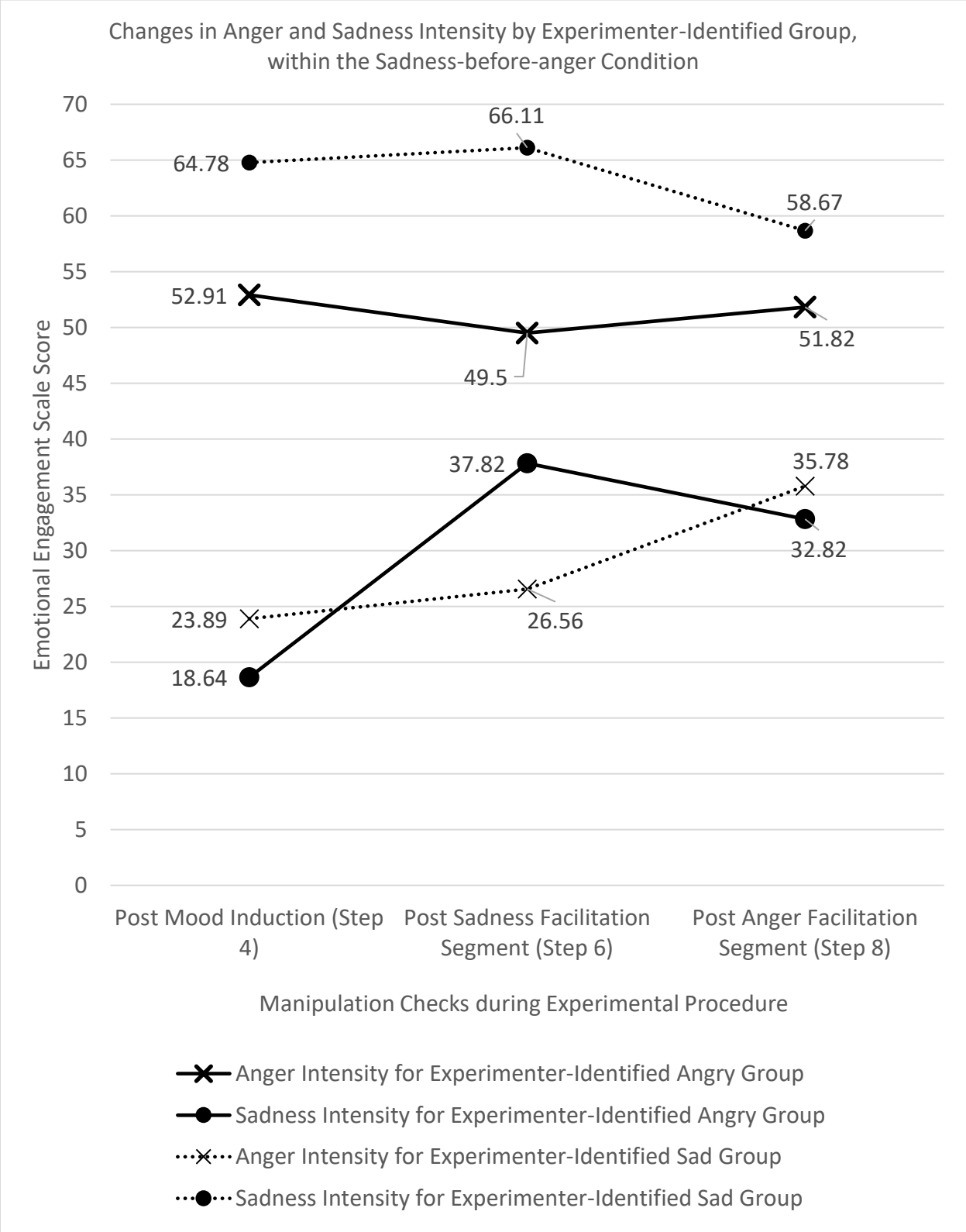
| Step of Experimental Procedure | | Manipulation Check of Second Emotion Facilitation Segment (Step 8) | | | | | | Post-Intervention (Step 9) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EES: Sadness | EES: Fear | EES: Shame | EES: Disgust | EES: Hope | EES: Joy | RS | TRIM | TRIM: Avoid | TRIM: Revenge | UPQ |
| Manipulation Check of Second Emotion Facilitation Segment (Step 8) | EES: Anger | .05 | .22* | .18 | .59*** | -.16 | -.17 | .48*** | .43*** | .31** | .53*** | -.10 |
| | EES: Sadness | - | .26** | .27** | .17 | -.06 | -.36*** | .22* | .07 | .07 | .07 | -.05 |
| | EES: Fear | - | - | .49*** | .17 | -.04 | -.10 | .13 | .18 | .07 | .32** | .11 |
| | EES: Shame | - | - | - | .33** | -.03 | -.10 | .21* | .13 | .06 | .20* | .15 |
| | EES: Disgust | - | - | - | - | -.22* | -.24* | .43*** | .43*** | .34*** | .47*** | -.06 |
| | EES: Hope | - | - | - | - | - | .65*** | -.33** | -.19 | -.20 | -.12 | .26** |
| | EES: Joy | - | - | - | - | - | - | -.36*** | -.10 | -.08 | -.10 | .17 |
| Post-Intervention (Step 9) | RS | - | - | - | - | - | - | - | .44*** | .40*** | .41*** | -.32** |
| | TRIM | - | - | - | - | - | - | - | - | .95*** | .78*** | -.06 |
| | TRIM: Avoid | - | - | - | - | - | - | - | - | - | .55*** | -.04 |
| | TRIM: Revenge | - | - | - | - | - | - | - | - | - | - | -.07 |

*Note.* * Correlation is significant at the $p < .05$ level. ** Correlation is significant at the $p < .01$ level. *** Correlation is significant at the $p < .001$ level. *ARS:* Anger Rumination Scale Total Score. *BDI-II Total*: Beck Depression Inventory II Total Score. *LOSC*: Levels of Self-Criticism Scale Total Score. *RS*: Unfinished Business Resolution Scale Total Score. *TRIM*: Transgression-Related Interpersonal Motivations Inventory Total Score. *TRIM Avoid*: Transgression-Related Interpersonal Motivations Inventory Avoidance Subscale. *TRIM Revenge*: Transgression-Related Interpersonal Motivations Inventory Revenge Subscale. *EES*: Emotional Engagement Scale. *UPQ*: Useful Processes Questionnaire Total Score.

## Appendix J


Changes in Anger and Sadness Intensity by Experimenter-Identified Group, within the Anger-before-sadness Condition
Emotional Engagement Scale Score
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
70.34
64.62
69.38
61.6
62.73
49.07
47.73
37.66
27.87
28.9
32.13
26
Post Mood Induction (Step 4)
Post Anger Facilitation Segment (Step 6)
Post Sadness Facilitation Segment (Step 8)
Manipulation Checks during Experimental Procedure
Anger Intensity for Experimenter-Identified Angry Group
Sadness Intensity for Experimenter-Identified Angry Group
Anger Intensity for Experimenter-Identified Sad Group
Sadness Intensity for Experimenter-Identified Sad Group

## Appendix K


Changes in Anger and Sadness Intensity by Experimenter-Identified Group, within the Sadness-before-anger Condition
Emotional Engagement Scale Score
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
64.78
66.11
58.67
52.91
49.5
51.82
37.82
35.78
32.82
23.89
26.56
18.64
Post Mood Induction (Step 4)
Post Sadness Facilitation Segment (Step 6)
Post Anger Facilitation Segment (Step 8)
Manipulation Checks during Experimental Procedure
Anger Intensity for Experimenter-Identified Angry Group
Sadness Intensity for Experimenter-Identified Angry Group
Anger Intensity for Experimenter-Identified Sad Group
Sadness Intensity for Experimenter-Identified Sad Group

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