RESOLVING ANGER VIA TWO DIFFERENT EMOTION REGULATION STRATEGIES

By Kayla R. Schuster

Anger is characterized by three appraisal dimensions, harm, responsibility, and choice (Lazarus, 1991) and can be regulated through reappraisal or suppression (Gross, 1998). Previous research has suggested that reappraisal is a successful down-regulating strategy for negative emotions such as anger (Mauss, Cook, Cheng & Gross, 2007), whereas suppression may increase unpleasant emotional experiences and increase further attempts to avoid emotions and stimuli that elicit specific negative emotions (Boden, Westermann, McRae, Kuo, Alvarez, Kulkami, & Bonn-Miller, 2013). However, no study so far has investigated the effect of these two regulation strategies on anger appraisals. The current study sought to investigate differences in cognitive appraisals between anger events that were resolved through reappraisal and suppression emotion regulation techniques. Participants were made angry and then half of them were given an apology letter and the other half received no apology letter. Half of the participants were then asked to regulate their emotions via reappraisal (i.e., to look at the situation from a different perspective), while the other half were asked to suppress their emotions (i.e., to not show what they felt). Analyses indicated that both reappraisal and suppression techniques indeed reduced anger over time. Further analyses revealed that participants who were asked to suppress their emotions after they did not receive an apology letter were significantly angrier than participants in the other three conditions. Cognitive appraisals of anger were not affected by the experimental manipulations. The current study proposes a new methodological approach for measuring anger intensity and anger appraisals, and suggests that the difference in outcomes of the two regulation techniques is more complex than prior research suggested.

RESOLVING ANGER VIA TWO DIFFERENT EMOTION REGULATION STRATEGIES

by

Kayla R. Schuster

A Thesis Submitted
In Partial Fulfillment of the Requirements
For the Degree of

Master of Science in Psychology
Cognitive Affective

at

The University of Wisconsin Oshkosh
Oshkosh WI 54901-8621

May 2014

COMMITTEE APPROVAL

Anca Miron — Advisor

5/20/2014 — Date Approved

Member

5/20/14 — Date Approved

Member

5/20/14 — Date Approved

DEAN OF GRADUATE STUDIES

Susan Cramer

8/7/2014
Date Approved

FORMAT APPROVAL

Mari Hoffman

7/25/14
Date Approved

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

Introduction

Emotions consist of multiple aspects that influence individuals psychologically, socially, and biologically on a daily basis. Given that the social situation frequently dictates our behavior in both public and private situations, we need to regulate our emotions regularly. It is thus essential to understand the underlying mechanisms of emotion regulation strategies that we utilize in order to increase or decrease emotional intensity.

James Gross's model of emotion regulation (1998) has been a standing ground for developing new tests of emotion regulation processes. However, improvements to this model can still be made, both methodologically and conceptually. It is important to understand what is actually happening when the resolution of an emotion occurs, and specifically to this study, to answer the question of what happens when people are made angry and then asked to regulate their anger. The current study sought to investigate differences in self-reported cognitive appraisals based on anger events that were regulated through either an antecedent- or a response-focused emotion regulation.

The current study had two theoretical goals. One of the goals was to track anger intensity levels throughout the study to understand what happens during anger regulation. To note, Gross's prior research has not previously looked at tracking anger while measuring appraisal dimensions of the emotion. By contrast, this study utilizes a novel procedure of investigating anger regulation. Specifically, the current study explored what happened after anger was instigated, reduced (or not) by an apology, and then regulated

via two emotion regulation strategies (reappraisal and suppression). In the current study, anger was first instigated, and then, once it was determined that participants experienced anger, participants were asked to regulate their feelings using one of the two techniques.

A second goal of this study was to understand how anger regulation affects self-perception of anger antecedents. In a conceptual attempt to map the underlying and unique dimensions of anger, Lazarus proposed that anger is characterized by three appraisals, harm, responsibility and choice. Appraisals have been noted to vary in degree of intensity (i.e., harm may be perceived as high or low). These three characteristics of anger were assessed in this study to test whether regulation strategies affected these appraisals differently. In other words, the current study applied Lazarus's appraisal model to Gross's conceptual framework of emotion regulation to better understand process by which the two strategies influence anger intensity.

Reappraisal versus Suppression

Gross (1998) introduced two strategies through which we regulate an emotion: antecedent-focused and response-focused. An underlying idea is that, in the case of anger, an individual is able to cope with the harm that has been caused by another person to one's self. Some emotion regulation strategies work effectively, while others do not. The effectiveness of the strategies is dependent upon what aspects of emotion one focuses on: emotional intensity, outward expressions of emotion (facial expressions), physiological responses, or behavioral responses. When one is angered, antecedent-

focused emotion regulation may decrease emotional intensity, physiological responses, and expressive signs of negative emotions, whereas response-focused may only decrease emotional expression (Gross, 1998).

Antecedent Focused Emotion Regulation Strategies.

Individuals may cope with their emotions in different ways dependent upon their interaction with others, the environment, direction of attention, and the revaluation of the situation (Gross, 1998). One can approach or avoid certain people or situations or modify their own environment to make their emotions more adaptive. An individual could also direct one's attention toward or away from the stimulus of emotion, or revaluate the present situation and the capacity to alter one's emotions.

For example, someone who uses the antecedent approach may reconsider the situation to decrease the emotion. The person may revaluate the situation by assuming there is a logical explanation for an event, instead of immediately feeling anger. This process is called emotion ***reappraisal.*** Reappraisal focuses on identifying emotionally-relevant stimuli in unemotional terms (Gross, 1998). An example of this strategy is focusing and using mitigating circumstances as an explanation for the other's actions. Indeed, prior work suggests that when someone is made aware of mitigating circumstances after a provocation occurs, he or she will experience less emotional arousal and less anger because he or she can attribute the assault (provocation) to the circumstances external to the person (Zillmann & Cantor, 1976). It could be said that the person is reappraising the provocation from a different perspective and, as a result,

decides to not retaliate against the person who insulted them. This prior work (Zilmann & Cantor, 1976) points to the role of the target person's appraisal of the causes of anger as an important determinant of anger instigation and regulation. It is important to note that even though reappraisal is the most-frequently studied regulation technique in the emotion regulation literature, none of the prior studies have measured anger appraisals as an outcome of emotion regulation.

As mentioned previously, reappraisal has been deemed to be an effective technique of reducing negative emotions. For instance, Goldin, McRae, Ramel, and Gross (2008) used film stimuli consisting of neutral non-affective nature scenes and disgust-inducing surgical procedures to test the dynamics and consequences of reappraisal and suppression through MRI imaging. The emotion of disgust was measured after the regulation strategy was instructed. Participants were asked to reappraise (i.e., think objectively to decrease emotional reactivity, "Assume the perspective of a medical professional watching an instructional video or focusing on technical aspects of the film"). Suppression instructions focused on participants' attempts to "keep their face still while viewing films so that someone watching their face would not be able to detect what was being experienced subjectively." Their amygdala and insula activity brain structures involved in emotion processes were recorded and analyzed. Results showed that the technique of reappraisal significantly down-regulated the negative emotional experience, marginally significantly reduced disgust facial behavior, and reduced emotion-related neural signal in the right amygdala and left insula. Nevertheless, a limitation of this study is that emotional experience, expressive behavior, and autonomic responding were not

continuously or repeatedly measures throughout the study. In contrast, measurement of emotional experience across five different temporal points is one novel methodological aspect that was employed in the current thesis study.

Another study concluded that reappraisal is a successful down-regulating strategy for other negative emotions such as anger (Mauss, Cook, Cheng, & Gross, 2007). In this study, females viewed an emotionally neutral five-minute film and at the end of the film rated their current emotional experience to establish a baseline. In the first session, the women were asked to complete a task and communicate with the experimenter over an intercom. Prerecorded insults (anger provocation) were communicated over the intercom to the participant and then the participant was to complete an emotion rating questionnaire based on the anger provocation, which was a Likert scale (0 = *none at all* to 10 = *extremely*), followed by two other tasks that were not related to their present research. After approximately one week had passed, participants were asked to complete the Emotion Regulation Questionnaire (ERQ), where the reappraisal subscale from the ERQ consisted of a 7-item Likert scale (i.e., "I control my emotions by changing the way I think about the situation I'm in."). Based on the ERQ subscale, participants were split into high and low reappraisal groups based on their individual differences in reappraisals. High reappraisers reported less anger, less negative emotion, and more positive emotion during the anger provocation than low reappraisers—suggesting that a chronic tendency to reappraise anger events leads to less anger in response to strong provocation.

This study measured emotions at three different time points; baseline, after anger provocation, and after one-week had passed. One interpretation of the results may be that

during the week that had passed, participants may have thought about the study and reappraised on their own, even more so than when asked to do so in the study. When they were brought back in to fill out another ERQ, their emotions may have been more positive to begin with, compared to their ERQ responses collected immediately after receiving the anger provocation. In addition, other personality variables may be correlated with the high dispositional tendency to reappraise seen in the High Reappraisals, such as empathy, and this potentially overlapping trait could easily explain the findings.

In sum, both studies consistently showed reappraisal could diminish the intensity of anger as well as physiological responding during exposure to anger-provoking stimuli, but the design of the studies contains methodological flaws that render the possibility of alternative explanations for the data.

Response-Focused Emotion Regulation Strategies.

After an emotion *is already experienced*, one strategy used to reduce its intensity is the response-focused emotion regulation strategy. A way to cope with this anger is through ***suppression***. During suppression, the person attempts to deal with the intensity of the emotion, the duration it is felt, and when the feeling will start to lessen. A way to further understand the idea is that in the case of suppression, the person does not immediately deal with the anger, but merely pushes it to the side. Therefore, suppression is trying to control the emotion while the emotion is experienced (Gross, 1998).

Gross and John (2003) conducted an experiment to test the effectiveness of reappraisal versus suppression in reducing emotional intensity by comparing the Emotion Regulation Questionnaire (ERQ) to self-reports of emotional experience and also to self and peer-reports of emotional expression. Participants were undergraduates who received the ERQ asking questions that were specifically targeted towards the two emotion regulation strategies; i.e., "I control my emotions *by changing the way I think* about the situation I'm in" (reappraisal) and "I control my emotions *by not expressing them*" (expressive suppression). In addition to the general-emotion items, the reappraisal and suppression scales included at least one item asking about regulating negative emotions (illustrated for the participants by giving *sadness* and *anger* as examples) and one item asking about regulating positive emotions (i.e., *joy* and *amusement*). Questions started with "when I want to feel…" (reappraisal) or "when I am feeling…" (suppression) to avoid any potential confounds by mentioning any positive or negative consequences for affect, social functioning, or well-being. Participants also completed the Positive and Negative Affect Schedule (PANAS), which asked them how much they experienced six positive emotional states (i.e. joy, love) and six negative states (i.e. sadness, anger). In the self and peer-reports, participants indicated the extent to which they generally expressed their emotions and the extent to which the emotions were expressed during interactions with others. The expressions of emotions were based on the six positive and negative emotions as described above.

Results showed that suppression did in fact reduce participants' positive emotions as reported in the PANAS questionnaire. The Analyses also suggested that by using

suppression as a technique to regulate emotion intensity, participants experienced more negative emotions and less positive ones (results were based on the review by both self-report and peer-reports). One of the findings also suggested that participants in the suppression condition would not express negative emotions to themselves or to their peers, but did feel the negative emotional intensity. All these findings indicate that suppression, as a habitual orientation toward hiding one's emotions, is not an effective emotion-regulation strategy.

Boden et al. (2013) conducted a study to examine the association between cognitive reappraisal and expressive suppression, on one hand, and PTSD, on the other hand, among military veterans. Although this study focused on Post Traumatic Stress Disorder (PTSD), the negative emotions experienced during PTSD can be related to anger. Participants were admitted to a residential rehabilitation center for an average of 83 days where they were administered the measurement material at one week after intake and one week prior to discharge. They were asked to complete the Emotion Regulation Questionnaire (ERQ) to assess their differences in emotion regulation techniques (such as reappraisal and suppression) at intake and discharge, as well as the PTSD Checklist – Military Version (PCL-M) to assess the severity of their symptoms according to the DSM-IV.

The ERQ was used to assess the individual differences in expressive suppression (i.e., I keep my emotions to myself) and cognitive reappraisal (i.e., When I want to feel

less negative emotion I change the way I'm thinking about the situation). The PCL-M assessed the symptoms of participants based on a 5-point Likert scale.

At both intake and discharge, expressive suppression was associated more with higher symptom severity of PTSD, whereas lower symptom severity was associated with cognitive reappraisal. When comparing which regulation strategy was more commonly used from intake to discharge, a decrease in the use of expressive suppression and increase in cognitive reappraisal was observed. The authors concluded that a significant decrease in suppression and an increase in reappraisal reduced PTSD symptom severity overall. Expressive suppression is suggested to be common at intake, but as patients reduce their use of expressive suppression during treatment, researchers have concluded that the initial use of suppression may be more closely linked to the original explicit encounters with trauma-related stimuli. Based on these results, the authors suggest that the change in emotion regulation strategies co-occur with change in PTSD symptom severity (with no indication of causal direction).

One interpretation of these results could suggest that when treating PTSD in a clinical manner, it is not recommended to completely disengage someone in expressive suppression. It may be difficult to reduce the use of expressive suppression and other avoidant coping/regulation strategies, since these strategies may be familiar and require less physical and mental resources (Boden et al., 2013). However, on a social context level, expressive suppression may not be the first recommendation of therapists,

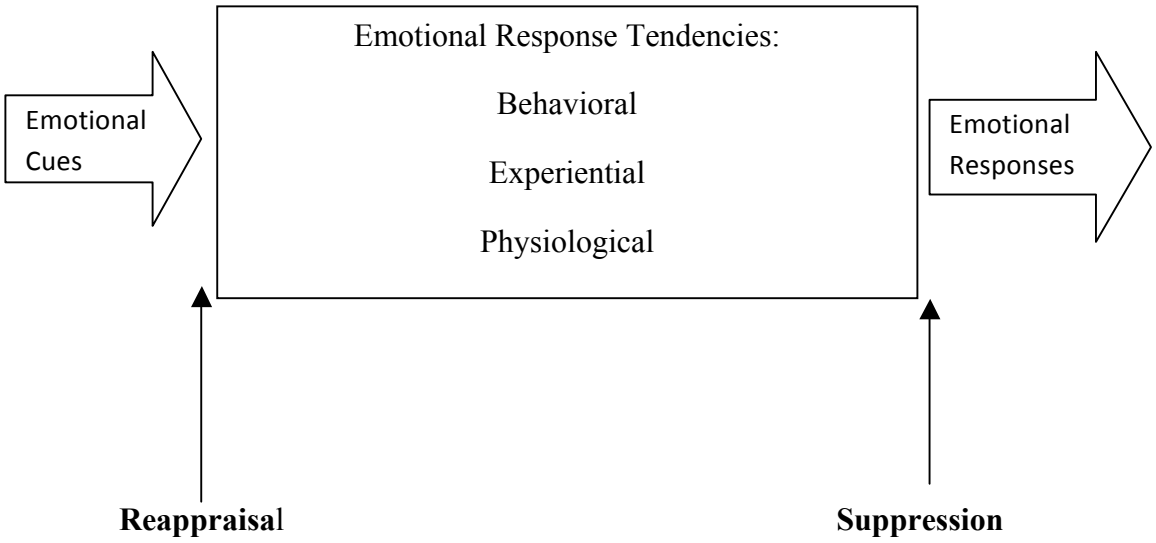
compared to other strategies (i.e., mindfulness, reappraisal techniques, anger management).

In sum, when comparing the regulation strategies of reappraisal versus suppression, previous studies have suggested that reappraisal may be more effective in decreasing negative emotions, such as anger, where as suppression may in some cases lead to increased negative emotions and enhanced physiological responding. However, these studies differ in the methodological designs used, which makes it difficult to draw conclusions about the effectiveness of these two strategies. In addition, there is a fundamental flaw in the testing of suppression and reappraisal effects in this prior work on emotion regulation. The current study addresses this important confound; the *time* when participants are asked to engage in reappraisal versus suppression differs between the two regulation conditions, and can account for the differences in outcomes found between the two techniques. It is possible that in the reappraisal condition, participants do not even get to experience anger due to their attempts to change the appraisals of anger. This may explain why these participants experience less intense experienced emotion and lesser physiological arousal, when these outcomes are measured at the end of the study. In contrast, in the suppression condition, participants are first expected to feel anger and then are asked to suppress it.

Indeed, according to Gross's model, reappraisal is used at the beginning of the regulation process. It is described as a strategy of reducing the emotion before the emotion has fully developed. In contrast, suppression is considered a regulation strategy

that is utilized after the emotion has already been fully experienced (see Figure 1). In the current study, the timing of reappraisal and suppression is kept constant and introduced at Time 2 (suppression) of Gross's model.

Figure 1. Gross' Emotion Regulation Model



The next studies discussed have similarities to the current study in the sense that they included multiple time measurements and attempts to control for timing; however, both have confounding variables and demand characteristics that suggest limitations to the studies. In the first study, Ray, Wilhelm, and Gross (2008) focused on rumination and reappraisal while measuring anger at several points throughout the study. Participants initially rated their positive and negative emotions to give a baseline rating. Next, they identified an unresolved event for two minutes, from the preceding two weeks in which

they became very angry with another person. The participants then rated how unresolved the anger event was along with the amount of anger felt, including other positive and negative emotions.

Participants then were told to "rest quietly" for two minutes and at the end of this period, participants rated their current emotions. Participants were then randomly assigned to either a rumination or a reappraisal condition. Instructions for rumination recall included, "think about the event from your own perspective, and turn it over and over in your mind." Instructions for reappraisal recall directed participants to "think about the event from a different perspective from the one you used earlier." Anger and other emotion ratings were then reported. The final step in the procedure was for participants to 'rest quietly' and then complete an anger rating with other positive and negative emotions as well.

Results indicated that reappraisal was more effective in decreasing anger compared to rumination. By ruminating on the event, participants maintained, and as a result, experienced anger throughout the duration of the procedure. Anger was reported at similar levels during free recall (when participants were told to think of an angering event) and instructed recall (rumination condition instructions).

The current study utilizes very similar measures such as self-reported positive and negative emotions, as Ray et al., (2008); however, two very distinctive aspects are important to note. First, Ray et al. study focused on the emotion regulation techniques of reappraisal and rumination, instead of reappraisal and suppression. Second, anger was

instigated by the recall of an event that specifically made the participant angry and had recently occurred (2-week time period). The event was of importance to the participant, but could have varied drastically in importance among participants. In other words, the instigation of anger was not kept constant, as was the case in the current study.

One other particular study focused on the emotion regulation strategies of reappraisal and suppression, but also looked at acceptance of anger during a frustrating task. Szasz, Szentagotai, and Hoffman (2011) had participants complete a baseline measure of their emotions. Next, all participants were asked to think of an unresolved situation that occurred in the past two weeks, in which they experienced anger towards another person. This step in the produced was considered to be the induction of anger stage. Participants were then asked to rate their anger experience on a 5-point Likert scale, using the Profile of Affective Distress (PAD), indicating their positive and negative emotions, as well as how much the situation was unresolved. Instructions were then given to either reappraise, suppress, or accept the anger felt through the unresolved event. Instructions varied between the regulation strategies as follows: Reappraisal ("Try to tell yourself that it would be preferable that the others are nice and/or fair to you, but if they are not, it does not mean that you or they are worthless human beings."), Acceptance ("Instead of trying to control your anger please try to accept and experience your anger fully and not try to control or change it in any way."), and Suppression ("Try not to think of the situation that makes you angry, mad or irritated. Please try as much as you can not to think about the situation, don't think about how you feel or what had happened, and try to suppress your emotions and not feel them."). After participants received the

instructions, they were asked to complete the Mirror-Tracing Persistence Task (MTPT) as a behavioral indication of frustration tolerance and the PAD to measure their positive and negative emotions.

Results indicated that all three regulation strategies decreased anger experienced over a period of time. Post-hoc analyses revealed that the suppression group reported more anger than those in the reappraisal group, while the reappraisal group reported less anger than the acceptance group. However, there was no significant difference between the suppression and acceptance groups. Regarding the frustration task (MTPT), there was a significant difference between those that reappraised versus those that suppressed their anger. The reappraisal group lasted longer with the frustrating task than those in the suppression and acceptance groups. Again however, there was no significant difference between the suppression and acceptance groups when it came to the frustrating task. This finding could suggest that looking at the situation from a different perspective (i.e., reappraisal) is the most effective technique.

This study's results support previous literature concluding that reappraisal is more effective than suppression in regards to regulating anger. In addition, reappraisal was also found to be more effective in down-regulating anger than acceptance. One characteristic that makes the current study distinguishable from Szasz et al. (2011), is the measurement of anger at several points throughout the study. Szasz and his colleagues asked participants to report their positive and negative emotions regarding their anger experience at three different times (post induction, post intervention, and post frustration

task). Another important aspect is the specific instructions given to suppress their anger experience. Szasz et al. (2011) asked participants to try not to 'think' about the situation or about how they feel, and to try to not feel the emotions. These instructions align with the instructions given to participants that are expected to engage in behavioral suppression. Previous literature has noted a difference between expressive and behavioral suppression. Considering the variance between the two, asking a participant to not think about the anger may lead to different processes and outcomes than being told to not show what you feel.

Suppression in the Clinical Field.

Campbell-Sills, Barlow, Brown, and Hofmann (2006) conducted a study examining individuals who had anxiety and mood disorders. They focused on the techniques of suppression and acceptance. Participants (those with anxiety and mood disorder medical history and a control condition) were asked to watch an emotion-provoking film clip and were not given any instructions as to how they should react. Next, participants were told they would watch a 4.5 minute film clip and were randomly assigned to listen to a set of instructions prior to the film: suppression instructions (i.e., "It is possible to experience emotions at lower levels if you really concentrate on controlling them") or acceptance instructions (i.e., "Allow yourself to accept your emotions without trying to get rid of them"). During the anticipation period of 2 minutes while they waited to watch the film, they completed the PANAS. After watching the film, they rated their emotions on the PANAS scale and then told to sit quietly for another 2

minutes (the recovery period). At the end of this period, they completed the PANAS for a final measurement of their emotions, as well as rated their success in applying the instructions. Participants' heart rate, respiratory sinus arrhythmia, and skin conductance level were also measured.

Results indicated that the acceptance group had a greater decrease in negative affect from the exposure of the film to the recovery period than did the suppression group. The physiological measures indicated that those who were instructed to suppression had increased heart rate during the film, followed by a decrease during the recovery period; whereas those who were told to accept their emotions experienced a decrease in heart rate during the film and an increase during the recovery period. There were no significant differences between groups for measurements of respiratory sinus arrhythmia or skin conductance levels.

Although this study specifically found suppression to be ineffective in alleviating anxiety for those who may by 'default' use suppression on a daily basis, the authors suggest that more research on emotion regulation, using clinical samples, is needed, particularly, when targeting affective responses experienced in anxiety and mood disorders.

Other studies conducted with the clinical samples have compared suppression to other regulation techniques. Najmi, Riemann, and Wegner (2009) looked at suppression and two alternative mental-control techniques, focused distraction and acceptance, in participants who had obsessive-compulsive disorder (OCD). Participants were asked to

think about their most unwanted intrusive thought (UIT), while given a set of detailed directions indicating what UIT's consisted of. After participants identified their UIT, they were asked to write about it for 2 minutes and then told to complete a 5-minute monitoring task, where they could think about anything they wanted to, but record any instance in which they thought about the UIT. Participants were then asked to complete the Yale-Brown obsessive-compulsive scale (Y-BOCS). This procedure was conducted four more times, with 3 days separating each session. The only difference between the four sessions was the set of instructions given immediately before the monitoring task. Dependent upon which group the participants were in (suppression, focused-distraction, acceptance, or creating associates), they received specific instructions telling them how to control or think about their emotions.

Results showed that suppression of intrusive thoughts did not lead to a rebound, but did lead to an increase in distress. Anxiety was not alleviated in the suppression group, and the authors suggest this may be a reason why individuals with OCD habitually engage in suppression. In other words, greater anxiety may be common in OCD individuals who do suppress; however, there are no greater thought intrusions. Distractions was shown to provide temporary relief of UITs, but this finding leaves unanswered questions regarding the long-term effect(s) of anxiety and whether all forms of distraction are more effective than suppression.

Studies both clinically and socially experimental have suggested that suppression could be an ineffective emotion regulation strategy. It is important to note that all studies

that suggest this also state that more research needs to be conducted, particularly with participants who have specific disorders or illnesses. Although the current study does not focus on a specific clinical sample, it is by no means excludes the idea of effectively using suppression as a treatment for a specific therapy session for clinical patients.

Appraisal Dimensions: Harm, Responsibility, Choice

Studies that have investigated the differences between reappraisal and suppression have not yet tested the role of Lazarus' appraisal dimensions in emotion regulation. As pointed out, reappraisal involves a change in the appraisals of anger. However, no prior study has measured these reappraisals systematically. To address this limitation, the current study focused on the quantitative differences in anger appraisals as a function of the regulation technique used.

Theoretically, when anger is exerted outwardly, it is considered blame. We place blame onto others because we intrinsically hold accountable those who had control over their actions (Lazarus, 1991). According to Lazarus (1991), outward expressive anger is characterized by three appraisal dimensions: harm, responsibility, and choice (e.g., How much harm was created? Was that person responsible for creating the harm? Did that person have another choice of action, or could they have prevented it?). The next sections describe the conceptual definitions of each appraisal dimension.

Harm.

Harm is conceptualized as an important antecedent component of anger. One must feel as though the harm caused by another person is directed toward them, and not by just the circumstances the aggressor may be in. When we feel that harm is directed towards oneself, anger may be the expressed and experienced emotion, particularly when goals intended to be achieved are obstructed. For example, a store clerk who makes us wait in the check-out line, because he or she is hard pressed by other customers or tasks, does not intentionally mean to harm someone. If anything, he or she is not purposefully acting in a hostile or inconsiderate manner. In this situation, as the customer, you understand and the emotion experienced may only be irritation or you may experience no anger due to the blocking of the intended goal. However, if the clerk was on the phone having a conversation with a friend regarding his or her plans for the night, as the customer, you may feel as though the clerk is intentionally ignoring you and wasting your time. The clerk's actions may cause you to experience anger. Therefore, perception of the extent of harm is based on the level of threat felt upon one's self or wellbeing (Lazarus, 1991).

Responsibility.

Holding someone accountable for his or her actions is considered to be putting blame on that person. In other words, when harm is blamed on another person, a likely result is outwardly directed anger. When we hold that person accountable, we also believe that he or she could have acted differently as the other is perceived as having control over his or her actions. This is to say that the person whom we hold responsible

for causing the harm, acted in a way that was not considering of our sensibilities (Lazarus, 1991). People may increase their arousal state by brooding over his or her mistreatment, reiterating cognitions related to the upsetting experience, and justifying his or her own anger by blaming the aggressor (Zillmann & Cantor, 1976).

Choice.

Choice is an antecedent of anger that may sometimes be harder to identify than harm or responsibility. When we consider the dimension of choice, we need to think of whether the person who inflicted the harm had another choice of action, and whether they could have prevented the harm from occurring. If the person assumes that the other person had a choice as to whether or not he or she should act upon it, then the person will experience anger. For example, a person may have directed harm toward another person because that is the type of person he or she is. In this case, the harmed person may attribute the choice of action to the other's personality as opposed to the situation.

Other researchers have suggested that anger is produced by a perceived deliberate and controllable misdeed (Averill, 1983; Weiner, 1985). These authors then conclude that "anger is an attribution of blame." It is important to note that the current study focused on experienced anger that was ostensibly created by another person who had ostensibly given the participants negative and insulting feedback. When instigating anger, we made sure that it was clear to the participants that another individual caused harm to them, the other was accountable for his or her actions, and the other person could have behaved differently. In the current study, participants were then given instructions as to how they

should try to resolve their anger—via one of the two regulation strategies suggested by Gross. Based on whether these strategies successfully reduced anger, further actions, such as retaliation, may have been felt by the participants as necessary.

Anger Motivates Retaliation

Previous theorizing suggests that anger can motivate retaliation (Zillmann & Cantor, 1976) or restoration of justice through forgiveness **(**Wenzel & Okimoto, 2009). When people experience an emotion, such as anger, an obstacle to experiencing anger could directly influence the motivation to achieve the goal or function of that emotion (i.e., retaliation). In fact, if this obstacle causes difficulty for the person experiencing the emotion, the extent to which retaliation is desired may decrease or increase depending on the magnitude of the obstacle (Brehm, 1999). In the absence of a known obstacle to experiencing the emotion (e.g., the person does not know how difficult it is to retaliate against the person who frustrated him/her), the intensity of anger and the feeling to retaliate will be determined by the importance of the insult (Miron, Brummett, Ruggles, & Brehm, 2008).

Participants were randomly assigned to four conditions: reappraisal/apology, suppression/apology, reappraisal/no apology and suppression/no apology. Participants were told that later in the study they would be given an opportunity to ostensibly communicate with another participant through feedback messages. The other hypothetical participant gave the real participant negative, insulting, feedback and then either

apologized or not for the negative feedback. Then half of the participants were asked to think back to the feedback they received and either suppress or reappraise their feelings. Before the regulation strategy manipulation, participants were also told that they would have an opportunity to evaluate the other participant through a peer evaluation. This was done to make participants aware of the fact that they could do something about their anger (i.e., retaliate against the person who gave them an insulting evaluation) (Miron et al., 2008).

Current Study and Hypotheses

Individuals were asked to write about an issue that was of importance to them and then complete a mood questionnaire. The mood questionnaire was distributed five times during the study to assess the participant's mood (anger) as they encountered each critical step in the experiment. The critical steps included: after the participant wrote about an important issue (Baseline), after Feedback Message 1 (Negative feedback), after Feedback Message 2 (Apology or No apology letter), after the participant was asked to use one of the regulation strategies (Reappraisal or Suppression), and after three minutes of the previous mood questionnaire (Delay).

It was predicted that participants' emotional state would change to anger as the study progressed and would remain high in the Suppression/No apology condition at the end of the study. Anger in that condition should be higher than anger in the other three conditions at time 4 and time 5. Indeed, participants in the other three conditions should

show lower anger intensity at the end of the study, suggesting that participants receiving an apology letter in the suppression condition or reappraising the insult (with or without an apology) should show decreased anger intensity (see Table 1).

Table 1.

Predictions for Anger Intensity at the End of the Study as a Function of Letter and Regulation

	Anger Intensity Measured Time Points				
	Baseline Time 1	Anger Instigated Time 2	Letter Time 3	Regulation Time 4	Delay Time 5
Reappraisal / Apology	Low	High	Low	Low	Low
Suppression / Apology	Low	High	Low	Low	High
Reappraisal / No Apology	Low	High	High	Low	Low
Suppression / No Apology	Low	High	High	High	High

Predictions regarding the dimensions of anger, as listed in Table 2, were derived from the model of external versus internal attributions (Eberly, Holley, Johnson, & Mitchell, 2011). First, as seen in Table 2, *harm* will be rated high by the participants in all conditions, but in different degrees due to participants making different attributions about the insulter's motives. Second, participants in the reappraisal conditions were predicted to attribute to a greater extent the choice of the other's participant's actions to the situation compared to those in the suppression conditions. Third, participants in the

reappraisal conditions should rate the insulter's perceived *responsibility* and *choice* lower than those in the suppression conditions. This is due to the ability of the participants in the reappraisal conditions to reevaluate why the other person gave such negative feedback and as a result attribute the other's choice of actions to the situation.

Given that previous studies have shown that the emotion regulation technique of suppression is not effective, the prediction for the no apology/suppression condition is high harm, responsibility, and choice, respectively. This hypothesis is based on prior findings suggesting that people who are not informed of mitigating circumstances excusing the aggressors' actions had a more aggressive response toward the anger-provoking agent (Zillmann & Cantor, 1976), compared to people who were aware of mitigating circumstances. In the suppression with apology condition, the apology was expected to lower the perception of harm, responsibility, and choice, but not to the same extent as in the reappraisal with apology condition.

Table 2.

Predictions for the Appraisal Dimensions of Anger at the End of the Study as a Function of Letter and Regulation

	Strategy of Resolving Anger			
Dimension of Anger	Reappraisal with Apology	Suppression with Apology	Reappraisal No Apology	Suppression No Apology
Harm	Low	Moderate	Moderate	High
Responsibility	Very Low	Moderate	Low	High
Choice	Very Low	Moderate	Low	High

It is important to also compare the mood ratings assessed at different times to track participants' anger intensity levels throughout the study. To test five additional hypotheses, the following comparisons were made between conditions: Mood 1 vs. Mood 2, Mood 2 vs. Mood 3, Mood 3 vs. Mood 4, and Mood 3 vs. Mood 5. Mood 1 was compared to Mood 2 to determine if anger was instigated after participants received the insulting feedback. To determine the effectiveness of the apology letter, Mood 2 was compared to Mood 3, since the apology (or no apology letter) was given between these two mood questionnaires. Mood 3 was compared to Mood 4 to investigate the effectiveness of the emotion regulation techniques. Finally, Mood 3 was compared to Mood 5 to understand if there was an effect of the delay. It is predicted that after a delay (Mood 5), participants who received no apology letter and told to suppress their emotions

would show no reduction in anger. However, a decrease in anger after a delay was expected for those in the Reappraisal/No apology condition. Participants in the Suppression/No Apology condition were predicted to experience the same high level of anger even after the delay, compared to the Reappraisal/No apology participants.

METHOD

Participants

Participants were 85 undergraduate students enrolled in psychology courses at the University of Wisconsin Oshkosh, who received course credit in exchange for their participation. The participants varied in age from 18 and older. They were recruited through using the psychology research pool website, SONA Systems. Participants were randomly assigned to one of four conditions (apology with reappraisal, apology with suppression, no apology with reappraisal, and no apology with suppression) using randomization in blocks of eight.

Procedure

Participants were tested individually. To convince the participants that there was another participant in the study, they met the researcher in a different area, down the hall from the research study room, where they passed by a door with the label "Participant B." Participants were then directed to a room with a desk and two chairs. On the desk in front of them, they saw two copies of the consent form. Participants were then asked to read and sign the consent form, if they would like to participate.

After signing the consent form, students read the introduction, stating that the purpose of the current study was to investigate the different types of communication

styles and how individuals' moods might have an effect on the quality of the communication. Participants were informed that there was another participant in the study with whom they will communicate via written messages. In reality, no other person was participating in the same study session with them and all the communications received from the "other" participant was prepared ahead of time, based on condition assignment of the participant.

Participants were informed that there are ostensibly three main communication styles that this study examined: face-to-face, written, and audio over the phone. Participants were told that they had been randomly assigned to the **written communication style**, which involves two different roles: the sender and the receiver. They were also told that they had been randomly assigned to the **receiver role**, where they would get feedback from the sender. Participants were to note that this study was looking at whether an exchange of one, two, or three feedback message(s) in fact constituted an effective communication style. Regarding the feedback, all participants were assigned to receive **two feedback messages** ostensibly from the other believed person. It was also made clear to the participant that they would not meet the other participant. They were also told that their name and information would not be shared with anyone and would be kept confidential. Participants were then given a large manila envelope which contained the instructions to begin. They were then instructed to open the envelope and begin the study as soon as the researcher left the room.

Anger Instigation

To instigate anger, participants were asked to write about an issue that was meaningful to them, with as many details as possible and were told they would receive feedback from the other participant on their essay. In all conditions, the prewritten feedback was negative and insulting. After they finished writing about the event, they would be told that while they were writing the essay, the other participant filled out the mood questionnaire and now the person was going to evaluate their essay. He or she was then asked to fill out the mood questionnaire. This questionnaire will be used to compute the first anger index (AngerIndex1).

Feedback Messages

The participant was told that the Sender evaluated their essay and wrote some feedback for the participant to read. After they read the feedback (an insulting evaluation of their essay – the instigation of anger), they completed the mood questionnaire which was designed to assess his or her anger (among other emotional responses). This questionnaire was used to compute the second anger index (AngerIndex2).

The second feedback message was either be an apology letter or a letter informing the participant that the Sender was randomly assigned to only send one feedback message. Apologies were used in this study based on the conception that they can alter the perceptions of the causes behind the negative feedback originally received from the

aggressor, which in this case was the Sender. After the participant reads the second feedback message, they completed another mood questionnaire. This questionnaire was used to compute the third anger index (AngerIndex3).

Anger Resolving Strategy

Because this study focused on Gross' emotion regulation strategies to reduce anger, participants were asked at this point to either reappraise or suppress the Feedback Messages they received from the Sender. They were told that in anticipation of the peer evaluation they would complete about the Sender, they needed to revisit the Feedback.

In the **reappraisal condition**, participants were asked to think back to the Feedback they received and "try to see it from a different perspective, other than the one you used when you first read it. In the **suppression condition**, participants were asked to think back to the Feedback they received, but "now try to put it in the back of your mind and do not show what you feel." Participants were told to take five minutes to do so and then complete the questionnaire. This mood questionnaire was used to compute the fourth anger index (AngerIndex4). After the regulation instructions, participants sat through a three minute delay and were not given any instructions at this point. Proceeding after the delay, participants completed the final mood questionnaire. This mood questionnaire was used to compute the fifth anger index (AngerIndex5). The peer evaluation was then given to all participants.

Dependent Measures

The final questionnaire participants received – the evaluation of the insulter – assessed anger and the primary dependent measures, which focused on anger appraisals such as harm, responsibility and choice. These appraisal dimensions are based on Lazarus' (1991) appraisal method, which outlines the process by which individuals evaluate the significance of what is happening to their well-being.

Harm.

Some of the peer evaluation questions were specifically directed towards assessing perceived harm done by the Sender. Questions were based on 7-point scales and included: "How positive or negative was the feedback you received from the other participant?" (-3 = *extremely negative* or 3 = *extremely positive*), and "How good or bad did you feel after receiving feedback from the other participant?" (-3 = *extremely bad* or 3 = *extremely good*).

Responsibility.

The peer evaluation questionnaire also included questions that measured perceived responsibility of the other participant (the Sender). Questions were based on a 7-point Likert scale (1 = *not at all* or 7 = *very*) and are as follows: "To what extent do you hold the other participant accountable for how the feedback influenced you?", "How competent do you think the other participant was in evaluating your essay?", "How objective do you think the other participant was in rating your essay?", and "How fair do you think the other participant was in rating your essay?"

Choice.

Examples of 7-point Likert scale questions (1 = *not at all* or 7 = *extremely*) that assessed the perceived Sender's choice in the peer evaluation questionnaire were "To what extent do you think the feedback on your essay was due to the current situation of your peer reviewer (i.e. having a good or bad day, etc)?" and "To what extent do you think the feedback was based on the peer reviewer's personality and their typical way of interacting with others?"

Manipulation Checks.

Participants were asked to answer several manipulation check questions. They were asked which type of communication style they participated in (i.e. face-to-face, written, or vocally over the phone) and whether they were the sender or receiver role in the study. Another question they were asked was how many feedback messages they received throughout the study. Baseline anger ratings and anger ratings at time 2 (after the insult) will be compared to assess the effectiveness of the insult in instigating anger. Finally, the ratings of anger before and after the apology manipulation will be compared in the Apology and No apology conditions, to check whether anger was indeed reduced by the apology letter. In addition, a between-subjects comparison between Apology and No apology conditions at time 3 (after apology was given) will be conducted for the same purpose.

RESULTS

Preliminary Analyses. In order to run one-way between-subject ANOVAs and a priori contrasts, the data were re-coded. The Reappraisal/Apology was coded as 1, the Suppression/Apology as 2, the Reappraisal/No Apology as 3, and Suppression/No Apology as 4.

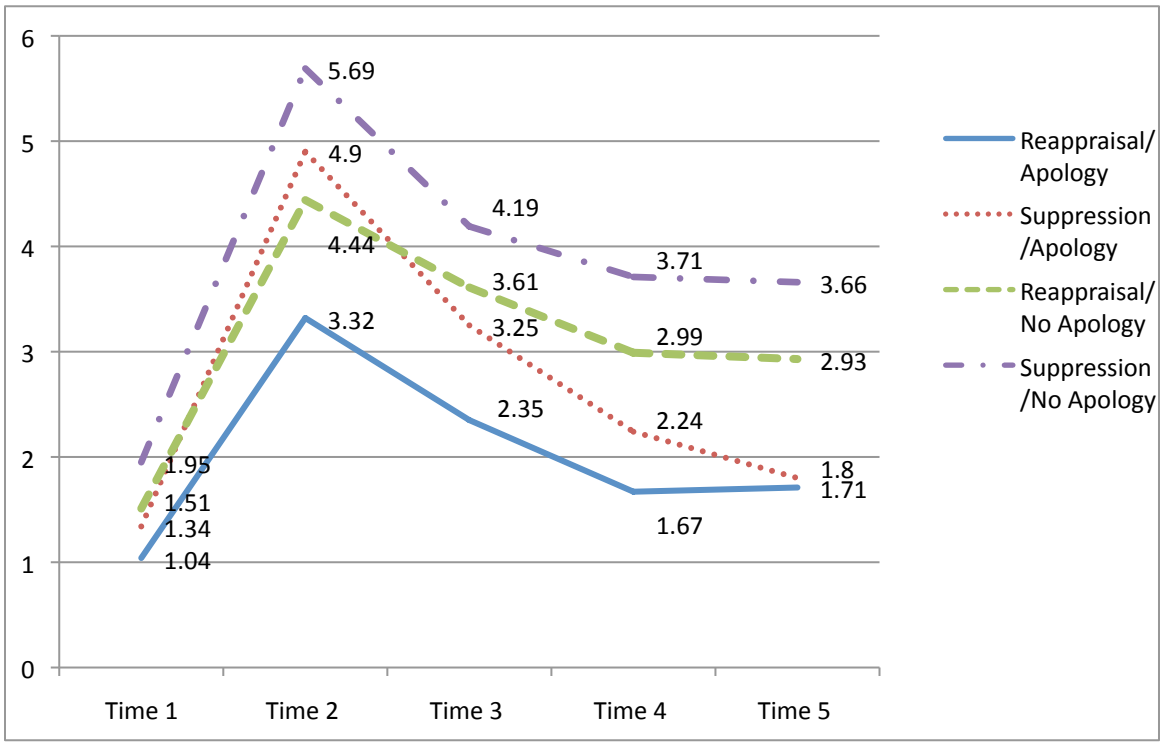
Anger indices were created for each of the five temporal measurements of mood. Since a participant's mood was measured at five different times, five Anger Indices were created. The Anger Index was made up of the following emotions adjectives: angry, irritated, bad mood, bothered, annoyed, frustrated and outraged. Each of the fiver anger indices (as assessed at each of the five times) had very good Cronbach's Alpha, indicating good internal consistency (see Table 3 for alpha levels). The tracking of anger intensity levels at each of these five indices can be seen in Figure 2.

Table 3.

Summary of Alpha Values for Anger Indices

	Cronbach's Alpha
Anger Index 1 (baseline)	.90
Anger Index 2 (after negative feedback)	.96
Anger Index 3 (after apology/no apology letter)	.97
Anger Index 4 (after emotion regulation)	.97
Anger Index 5 (after delay)	.97

Figure 2. Tracking of Anger Intensity Levels Across Time



Note. Time 1 represents when anger was measured through a mood questionnaire after writing about the important issue. Time 2 was measured after the negative, insulting feedback was given. Time 3 was measured after the letter of apology or no apology was given. Time 4 was measured after the emotion regulation instructions were given (reappraisal or suppression). Time 5 was measured after the three-minute delay.

Manipulation Checks. All participants correctly selected the written communication as the type of communication they had with the "other" participant. In regards to which role the participant played, 65 out of 85 participants amongst all conditions correctly selected the Receiver role, $\chi^2(1) = .14$, $p = .71$. This accumulates for 76% of participants selecting the correct role. Thirty-seven out of 42 participants that received the No Apology letter indicated that they had received one feedback messages

from the hypothetical other participant, $\chi^2(1) = 1.5$, $p = .22$. This manipulation check indicates that the apology manipulation was effective given that the participants who received No Apology letter were given a separate piece of paper (instead of a second message from the other participant), indicating that the other participant had only been assigned to one feedback message. Forty-three out of 43 participants in the Apology condition correctly indicated that they received two feedback messages (the insulting first message and the apologetic second message).

Instigation of Anger. To instigate anger, participants received negative, insulting feedback from the "other" participant. A priori contrasts were conducted to determine whether there were no differences in anger before the instigation of anger (see Table 4 for means and standard deviations). One-way analysis of variance (ANOVA) determined that indeed there was no significant difference on the Anger Index 1, $F(3, 80) = 1.00$, $p = .40$, as a function of Apology and Regulation manipulations. It is also important to note that, as expected, there was a significant increase from Anger Index 1 ($M = 1.46$, $SD = 1.71$) to Anger Index 2 ($M = 4.59$, $SD = 3.38$). This suggests that participants became angrier after receiving the insulting feedback (see Figure 3).

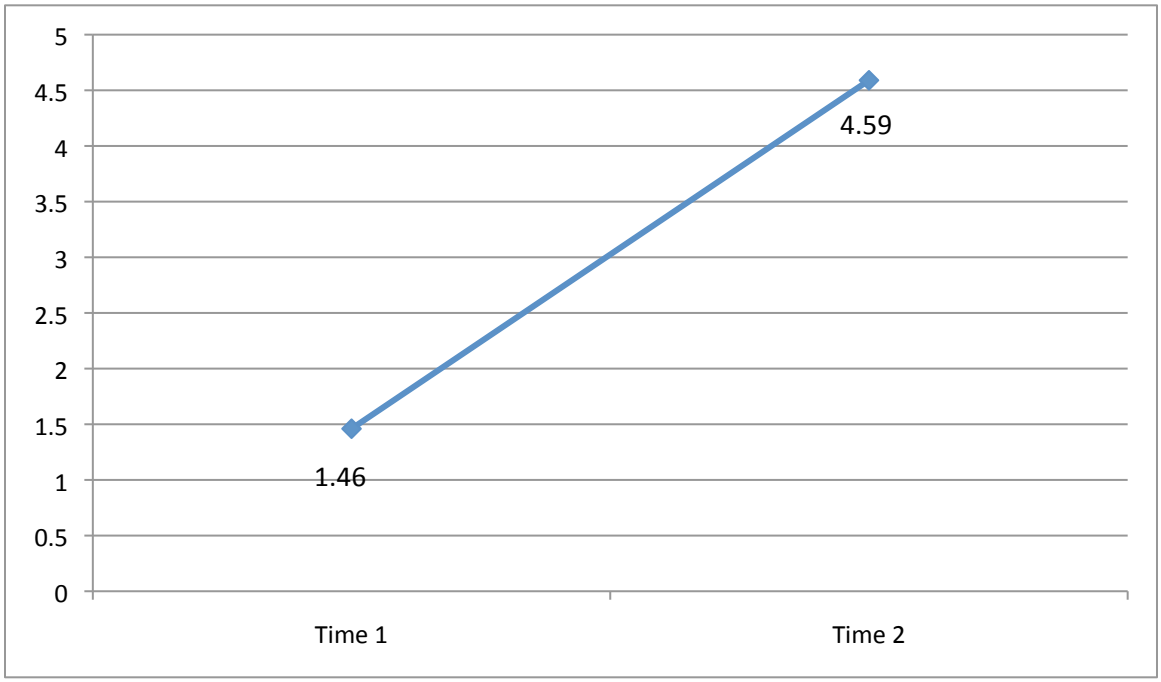
Table 4.

Summary of Means and Standard Deviations for Time Measurements of Anger

	Reappraisal/ Apology	Suppression/ Apology	Reappraisal/ No Apology	Suppression/ No Apology
Baseline	1.04 *(1.46)*	1.34 *(1.61)*	1.51 *(1.63)*	1.95 *(2.12)*
Feedback	3.32 *(2.89)*$_a$	4.90 *(3.21)*$_a$	4.44 *(2.91)*$_a$	5.69 *(2.99)*$_a$
Letter	2.35 *(2.50)*	3.25 *(2.91)*	3.61 *(2.96)*	4.19 *(3.01)*
Regulation	1.67 *(2.37)*$_a$	2.24 *(2.40)*$_{abc}$	2.99 *(3.03)*$_{ab}$	3.71 *(2.67)*$_c$
Delay	1.71 *(2.67)*$_{ac}$	1.80 *(2.32)*$_{ac}$	2.93 *(3.10)*$_a$	3.66 *(2.52)*$_b$
	n = 21	n = 22	n = 21	n = 21

Note. AngerIndex 1 was measured as a mood baseline. AngerIndex 2 was measured after the negative feedback. AngerIndex 3 was measured after the apology/no apology letter. AngerIndex 4 was measured after emotion regulation. AngerIndex 5 was measured after the delay. Numbers in parentheses reflect standard deviations. Means sharing a common subscript are not significant at $p < .05$, according to rows.

Figure 3. Anger Intensity Level at Time 1 versus Time 2

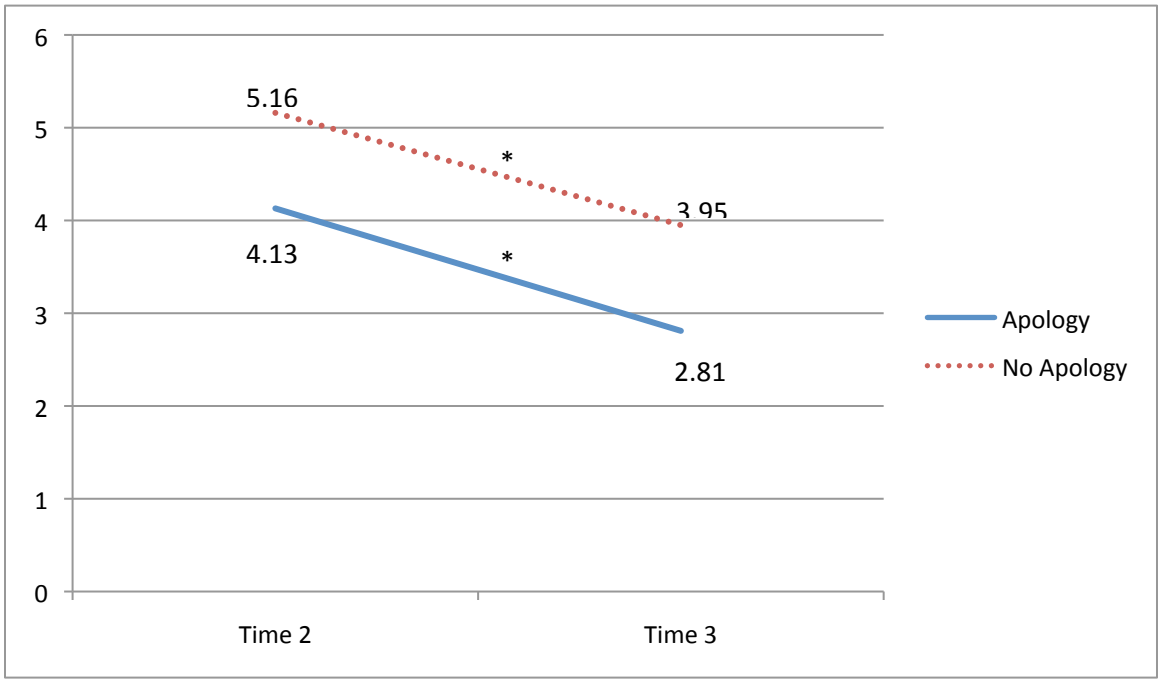


Note. Means are different than those seen in Table 4, due to not all participants answering all mood questionnaires.

Effect of Apology. To establish the effectiveness of the apology letter to reduce anger, participants were randomly given either an apology letter or no apology letter at time 3 (Anger Index 3). It was predicted that at time 3, participants who received the apology letter should feel less angry than those who did not receive an apology letter. An ANOVA revealed a marginally significant main effect of the apology letter, $F(1, 73) = 3.00$, $p = .09$. Participants in the Apology condition ($M = 2.81$, $SD = 2.72$) tended to report less anger than the participants in the No Apology condition ($M = 3.95$, $SD = 2.95$). Paired t-tests were conducted comparing apology to no apology conditions with regards to the levels of reported anger at time 2 and 3 (see Figure 4). In the Apology

condition, there was a significant decrease in Anger Index 3 ($M = 2.81$, $SD = 2.72$) compared to Anger Index 2 ($M = 4.13$, $SD = 3.13$), $t(42) = 4.60$, $p < .001$. However, in the no apology condition, there was also a significant decrease in Anger Index 3 ($M = 3.95$, $SD = 2.95$) compared to Anger Index 2 ($M = 5.16$, $SD = 3.06$), $t(33) = 5.30$, $p < .001$.

Figure 4. Anger Intensity Level at Time 2 versus Time 3

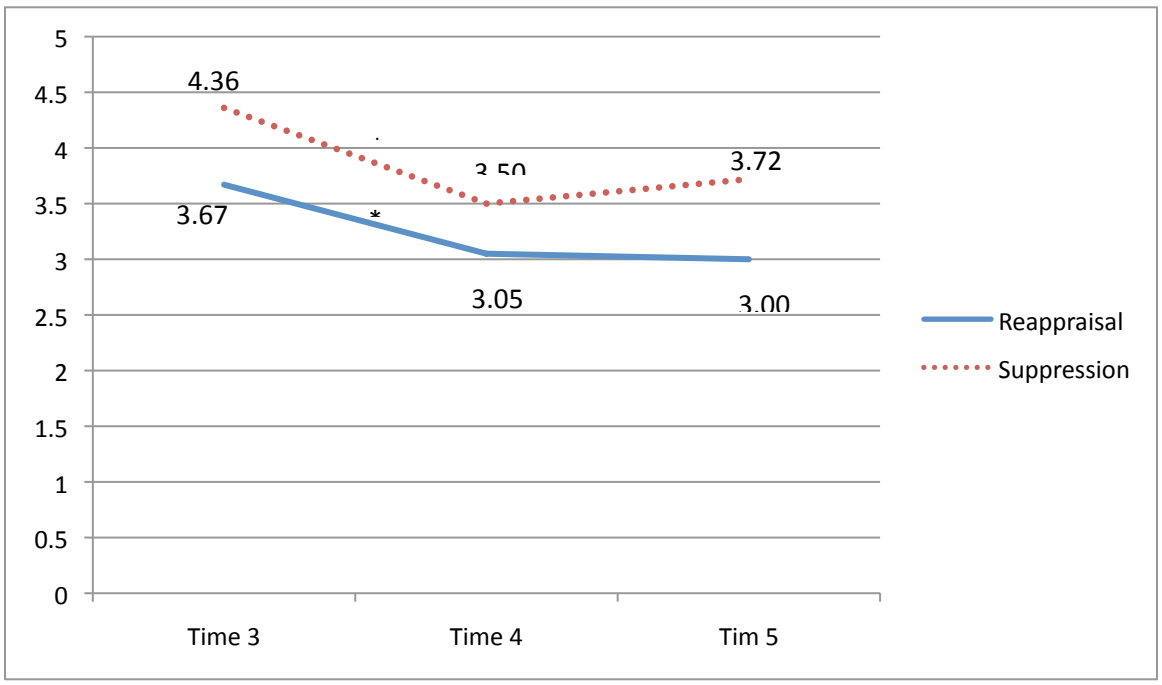


Note. Means are different than those in seen Table 4, due to not all participants answering all mood questionnaires. * represents significant $p < .001$.

Effect of Emotion Regulation Strategy. Participants were asked to engage in an emotion regulation strategy, and they were asked to either reappraise or suppress their

feelings. Anger was measured after this regulation exercise at time 4 (Anger Index 4). Paired t-tests were conducted to investigate the differential effectiveness of the two emotion regulation techniques in reducing Anger at time 4 compared to Time 3, regardless of the apology manipulation. In the reappraisal condition, there was a significant decrease in Anger Index 4 ($M = 2.27$, $SD = 2.75$) compared to Anger Index 3 ($M = 2.92$, $SD = 2.75$), $t(36) = 4.24$, $p < .001$. There was also a significant decrease in Anger Index 4 ($M = 2.80$, $SD = 2.59$) compared to Anger Index 3 ($M = 3.77$, $SD = 3.00$), $t(37) = 4.12$, $p < .001$, when participants engaged in emotion suppression (see Figure 5). Because it is important to understand how emotion regulation plays a role when an apology or no apology letter is given, a priori contrasts were conducted to test several specific hypotheses.

Figure 5. Anger Intensity Level at Time 3 versus Time 4 versus Time 5 in No Apology Condition



Note. Means are different than those seen in Table 4, due to not all participants answering all mood questionnaires. * represents significant $p < .001$. Time 3 was measured after the Apology/No Apology letter was given. Time 4 was measured after participants were told to regulate their emotions through Reappraisal or Suppression. Time 5 was measured after the three minute delay.

One hypothesis of this study focused on the Suppression/No Apology condition. It was predicted that anger in this condition would be higher than the other three conditions. To test this hypothesis, the following planned contrast was tested (-1 -1 -1 3) based on Anger Index 4. Results indicated the Suppression/No Apology condition was significantly different than the other three conditions, $t(79) = 2.10$, $p = .04$ (see means and standard deviations in Table 4). Another planned contrast was conducted (0 0 -1 1)

to determine whether at Time 4 (AngerIndex4) the participants in the Reappraisal/No Apology condition (M = 2.99, SD = 3.03) had a lower level of anger than the participants in the Suppression/No Apology condition (M = 3.71, SD = 2.67). Results indicated that anger was higher in the Suppression/No Apology condition than the Reappraisal/No Apology condition, $t(79) = 8.15$, $p < .001$. Paired t-tests further suggested a significant decrease in anger in Reappraisal/No Apology participants, $t(15) = 2.38$, $p = .03$, when comparing Anger Index 3 (M = 3.67, SD = 2.96) to Anger Index 4 (M = 3.05, SD = 3.08). Similarly, Suppression/No Apology participants reported decreased anger at time 4 compared to time 3, $t(16) = 2.21$, $p = .04$, comparing Anger Index 3 (M = 4.36, SD = 3.02) to Anger Index 4 (M = 3.50, SD = 2.71) (see Figure 6).

Effect of Delay. To determine whether a delay affected participants' intensity of anger, anger was measured again at time 5 as a final indication of mood. Several planned contrasts were tested based on different hypotheses pertaining to time 5 (Anger Index 5).

After delay (at time 5), participants in the Suppression/No Apology condition were expected to experience stronger anger than participants in the other three conditions. The following planned contrast (-1 -1 -1 3) suggested that anger was indeed higher in the Suppression/No Apology condition than in the other three conditions, $t(80) = 2.34$, $p = .02$. To determine the difference in effectiveness of the regulation strategies in the No Apology condition, a planned contrast was performed (0 0 -1 1) to test the prediction of a greater anger level at Time 5 in the Suppression/No Apology condition (M = 3.66, SD = 2.52) compared to the Reappraisal/No Apology condition (M = 2.93, SD = 3.10). Results

indicated no significant differences between these two conditions based on anger at time 5 (Anger Index 5), $t(80) = .93$, $p = .36$.

A paired t-test comparing Anger Index 3 ($M = 3.32$, $SD = 2.88$) to Anger Index 5 ($M = 2.48$, $SD = 2.60$) indicated a significant decrease in anger across all conditions, $t(75) = 4.03$, $p < .001$. When specifically looking at the Reappraisal/No Apology participants, a paired t-test comparing Anger Index 3 ($M = 3.67$, $SD = 2.96$) to Anger Index 5 ($M = 3.00$, $SD = 3.02$) indicated a marginally significant decrease in anger in the Reappraisal/No Apology condition participants, $t(15) = 1.77$, $p = .10$. In the Suppression/No Apology participants, another paired t-test comparing Anger Index 3 ($M = 4.19$, $SD = 2.96$) to Anger Index 5 ($M = 3.72$, $SD = 2.48$) revealed no differences in anger decrease, $t(17) = .76$, $p = .46$ (see Figure 6).

Harm. Participants completed a Peer Evaluation Questionnaire at the end of the study, after anger was measured at time 5 (Anger Index 5). Within the questionnaire, some questions specifically measured the appraising dimension of harm (i.e., the extent to which participants perceived threat to their wellbeing). A prior contrast was also conducted to see if harm was perceived greater by the participants in the Suppression/No Apology condition compared to participants in the other conditions (-1 -1 -1 3). Results indicated no significant differences amongst conditions, $t(79) = .44$, $p = .66$ (see Table 5 for means and standard deviations). No other effects were significant, all Fs < 1.

Table 5.

Summary of Means and Standard Deviations For Harm, Responsibility, and Choice

	Reappraisal/ Apology	Suppression/ Apology	Reappraisal/ No Apology	Suppression/ No Apology
Harm	-1.79 *(.87)*	-1.90 *(.90)*	-1.95 *(.88)*	-1.90 *(.85)*
Responsibility	4.33 *(2.11)*	4.73 *(2.00)*	4.00 *(2.17)*	4.57 *(2.07)*
Choice on Personality	4.71 *(2.00)*	4.95 *(1.62)*	5.52 *(1.36)*	5.57 *(1.75)*
Choice on Situation	3.62 *(1.56)*	4.36 *(1.53)*	4.19 *(1.54)*	4.19 *(1.99)*

Note. Harm Index questions: "How positive or negative was the feedback you received from the other participant?" and "How good or bad did you feel after receiving feedback from the other participant?" were based on a Likert scale (-3 = *extremely bad* to 3 = *extremely good*). Responsibility Index question: "To what extent do you hold the other participant accountable for how the feedback influenced you?" was based on a Likert scale (1 = *not at all* to 7 = *very accountable*). Choice on Personality Index question: "To what extent do you think the feedback was based on the peer reviewer's personality and their typical way of interacting with others?" was based on a Likert scale (1 = *not at all* to 7 = *very accountable*). Choice on Situation Index question: "To what extent do you think the feedback on your essay was due to the current situation of your peer reviewer (i.e. having a good or bad day, etc)?" was based on a Likert scale (1 = *not at all* to 7 = *very accountable*). Numbers in parentheses reflect standard deviations.

Responsibility. In the Peer Evaluation Questionnaire, specific questions asked participants to rate the extent to which they felt the other hypothetical participant should be held accountable for their actions (see Table 5 for means and standard deviations). A priori contrast was conducted to see if responsibility was perceived greater by participants in the Suppression/No Apology condition compared to participants in the other condition (-1 -1 -1 3). Results showed no significant differences, $t(81) = .42$, $p = .68$. No other effects were significant, all Fs < 1 (See Table 5 for means and standard deviations).

Choice. The final variable measured in the Peer Evaluation Questionnaire regarded the extent to which participants thought the hypothetical participant had a choice whether or not to inflict harm. Two separate questions measured perception that the other participant's personality is responsible for his/her behavior (internal attribution of choice) and perception that the situation they were in was causing his/her behavior (external attribution of choice) (see Table 5 for means and standard deviations). Two a prior contrasts were also conducted to see if choice was perceived to be greater by participants in the Suppression/No Apology condition compared to participants in the other conditions (-1 -1 -1 3). Results revealed no significant difference in internal or external attributions of choice, $t(81) = 1.19$, $p = .24$ and $t(81) = .32$, $p = .75$, respectively. The only significant effect was of apology on internal attributions, $F(3, 81) = 3.75$, $p = .05$, suggesting that participants in the no apology condition were more likely to blame the other's personality for their choice of actions. None of the other effects were significant, all Fs < 1.

DISCUSSION

Prior research has shown that negative emotions can be regulated through reappraisal and suppression strategies (Gross, 1998). The research reviewed in the introduction section of this thesis has also indicated significant differences between reappraisal and suppression techniques when regulating anger. For instance, Gross and John (2003) found that participants who self-reported using suppression reported more negative emotions and less positive ones than participants who reported using reappraisal. In the next sections, we will discuss how our current findings fit (or not) with the results of prior regulation studies.

Anger Measurement

One goal of the current study was to track anger intensity levels throughout the study in order to understand the process of anger resolution. This study showed that both regulation techniques reduced anger, regardless of the letter (apology or no apology) participants received. But a more pertinent condition is the no apology condition, where participants still experienced anger at Time 3. In this condition, reappraisal reduced anger more so than suppression. These results support the hypotheses of this study (see Table 1). It is important to note that the strategy of suppression did reduce anger for the No Apology participants from Time 3 to time 4. However anger experienced at Time 5 by

these participants was no longer significantly lower than anger at Time 3, potentially suggesting at with a longer delay, suppression may lead to anger maintenance or intensification. In contrast, reappraisal reduced anger from Time 3 to Time 4 for participants in the No Apology condition. In addition, anger at Time 5 remained lower from anger at Time 3, although this difference was only marginally significant ($p = .10$), potentially due to loss of data across mood ratings.

One of the major hypotheses of this study focused on contrasting the anger reports of the participants in the Suppression/No Apology condition to the anger reports of the participants in the other three conditions. Since participants in this specific condition did not receive an apology letter after the insulting feedback, their anger level was expected to remain the same compared to the anger they experienced during the instigation and higher than the anger reported by the participants in the apology condition. Indeed, after these participants were specifically instructed to suppress their emotions and "do not show what you feel," their anger remained the same. This finding is in accord with the previous findings and supports our hypothesis.

In addition, this study controls for the timing of the two regulation processes. In the previous studies on anger regulation, the time of implementation of these two regulation strategies was a confounding variable, since reappraisal is supposed to occur before the anger instigation, while suppression is theorized to occur after anger has been instigated and potentially expressed. Indeed, what we found was that reappraisal decreased anger from Time 3 to Time 4 (and remained low at Time 5), whereas the

suppression effects were abrupt and occurred only at Time 4 (but were no longer different at time 5 compared to time 3) (See Figure 6). These findings suggest that emotion regulation researchers should consider assessing emotion-regulation outcomes immediately after regulation **and** after a considerable delay.

Cognitive Appraisal Dimensions

A second goal of this study was to understand how anger regulation affects individuals' perceptions of appraisal dimensions. Lazarus (1991) has suggested that anger is characterized by three appraisal dimensions: harm, responsibility and choice. Harm is an intentional, perceived threat directed towards one's self based on another person's actions, regardless of the circumstances the aggressor may be in. This study did not find a difference in perceived harm amongst conditions (see Table 5). It could be suggested that all participants did feel as though harm was intentional and present; however, no reduction in harm occurred over the duration of the study. One possibility is that when harm is initiated (insulting feedback), the threat remains present even when an apology is received. The apology does not reduce the perception of severity of harm because it might have justified the harm as opposed to minimizing it.

When an individual holds another person accountable for their actions, they may feel that person is responsible for creating the harm. This study showed no significant differences in perceived responsibility as a function of the manipulations. Individuals could attribute the other's choice of actions to the situation in which the other person is in

(external attribution) or to their personality (internal attribution). This study suggested that an apology did affect the attribution of choice; people who did not receive an apology letter blamed the other person's personality for their choice of action more than people who received an apology. However, type of regulation strategy did not influence these appraisals, alone or in conjunction with the apology manipulation.

One theory that could possibly explain the lack of experimental effects on the appraisal dimensions is the Frustration-Aggression Hypothesis (Berkowitz, 1989). According to this theory, frustrations (defined as goal-blocking events) can create aggressive inclinations even when they are not arbitrary or aimed at a subject personally. In addition, frustrations can lead to open aggression as well as hostile ideas and judgments of other persons (Berkowitz, 1987). In the current study, *all* participants experienced a thwarted goal: the goal of obtaining a polite and considerate feedback to their communication. In addition, participants in the no apology conditions may be expected an apology, which they did not receive. The results of this study seem to suggest that anger regulation is independent of a cognitive appraisal process, a finding that is consistent with Berkowitz's theory outlined above. In addition, participants who received an apology letter may no longer hold the other person accountable for their initial actions. In other words, the apology letter might have suggested to the participant that the other person was taking responsibility for the insult. Indeed, this explanation fits with the finding that only participants in the apology condition perceived the other person as responsible for the harm done but also with Berkowitz's theory, if we assume that

participants in the no apology condition may have had the goal of receiving an apology thwarted, in addition to the thwarted expectation of a polite conversation.

However, it is possible that people may not have a clear insight into the causes of their anger. For instance, they may have a hard time estimating how much harm was created. From the moment the emotion is instigated, there may not be enough processing time to understand why the harm was inflicted or if the harm was perceived as retribution. For example, if the person who inflicted the harm was reciprocating the actions of the other person, one may not accurately infer that they had once inflicted harm themselves. Therefore when you hold someone accountable for their actions, you may be unsure if it is due to retribution, the situation the other is in, or if that is the type of person the other is. It could be that people use all sort of heuristics to estimate how much harm, responsibility and choice should be placed on the person who intended to harm, and the estimates are not necessarily accurate. Moreover, given that the appraisals were measured at the end of the study, it is possible that those measures could not capture the appraisal dimensions accurately (given that these appraisals may have been made by the person at the beginning of the process and not after a delay).

Limitations

The present study did not address the technique of suppression in the context of the clinical field. Individuals with anxiety and mood disorders reported similar negative affect in response to an anger-eliciting film, when instructed to use the emotion

regulation technique of suppression or acceptance (Campbell-Sills et al., 2006). In therapy sessions, patients may be encouraged to use suppression as an initial strategy in order to start the acceptance process and to move forward from the event. Those with obsessive-compulsive disorder (OCD) may engage in the use of suppression due to the technique not leading to a rebound, even though it may not alleviate anxiety (Najmi et al., 2009). Given that some patients with OCD do not adapt well to change, the use of suppression may be encouraged at the beginning and then a different regulation technique may be slowly introduced. In fact, a major difference in social psychology's versus clinical psychology's treatments of various emotion regulation strategies is the conceptualization of how suppression should or should not be used.

As suggested above, one limitation to this study is the timing of measurement of appraisals. If cognitive appraisals were measured immediately after the anger instigation, those measures may have been a more accurate indication of how much harm was felt and whether in fact participants held the other hypothetical participant responsible for the feedback. Another limitation to this study is the lack of mundane realism of this study. The logistics of this study involved making the participants believe they were participating in a written communication with another participant, as compared to face-to-face or a vocal conversation over the phone. Perhaps because there was no face-to-face conversation, which may be more common in real-life situations, the study did not portray the insulting feedback to be as hostile or upsetting, compared to daily altercations that may occur. While the anger patterns do not support this idea, the lack of predicted differences in the anger appraisal dimensions lends this explanation some support.

Future Directions and Implications

This study adds to the previous literature by proposing a novel methodology for studying emotion regulation. In prior studies, researchers have first instigated an emotion, then instructed participants to engage in emotion regulation, and emotion intensity or physiological arousal was measured immediately after that. In this study, anger was measured after each of the five steps of the procedure: before anger was instigated (mood baseline Time 1), after anger was instigated (Time 2), after an apology or no apology letter was given (Time 3), after emotion regulation (Time 4), and after a delay (Time 5). The design used in this study can be used by emotion researchers interested in emotion regulation processes. Future research can be directed towards the measurements of appraisal dimensions. This study measured appraisals at the end of the study, unlike anger intensity levels, which were measured at five intervals. To track the perception of appraisals more accurately, one could measure each dimension across the five data points.

Anger regulation occurs multiple times throughout the day and across different life domains (relationships, school work, or the workforce). In addition to the importance of anger regulation during everyday life, regulating anger efficiently and effectively can have therapeutic and clinical implications. Diverse clinical interventions are used for regulating negative emotions, but without a more rigorous methodology used, it is unclear which techniques are truly effective.

Although this study showed that reappraisal worked even if no apology was given, it also showed that an apology did make a difference when suppression was used. This study also showed that participants who received an apology letter and regulated their emotions by reappraisal had the lowest level of anger of all participants. We are hopeful that future work will use this methological design in other psychological domains (i.e., mental health, biological, etc.), to test the effect of various emotion regulation strategies on psychological, physiological, and behavioral dimensions of emotion.

Endnote

1. A factor analysis of the responsibility items suggested that these items did not load on the same factor. Therefore, only the item with the highest face validity ("To what extent do you hold the other participant accountable for how the feedback influenced you?") was retained. When analyses were conducted with each individual item, no significant differences as a function of the manipulations were found.

REFERENCES

Averill, J. R. (1983). Studies on anger and aggression: Implications for theories of emotion. *American Psychologist, 38*, 1145-1160.

Berkowitz, L. (1987). Frustrations, appraisals, and aversively stimulated aggression. *Aggressive Behavior, 14,* 3-11.

Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin, 106,* 59-73.

Boden, M., Westermann, S., McRae, K., Kuo, J., Alvarez, J., Kulkami, M. R., & Bonn-Miller, M.O. (2013). Emotion regulation and posttraumatic stress disorder: A prospective investigation. *Journal of Social and Clinical Psychology, 32,* 296-314.

Brehm, J. W. (1999). The intensity of emotion. *Personality and Social Psychology Review*, *3*, 2-22.

Campbell-Sills, L., Barlow, D. H., Brown, T. A., & Hofmann, S. G. (2006). Effects of emotional suppression and acceptance in ndividuals with anxiety and mood disorders. *Behaviour Research and Therapy, 44,* 1251-1263.

Eberly, M. B., Holley, E. C., Johnson, M. D., & Mitchell, T. R. (2011). Beyond internal and external: A dyadic theory of relational attributions. *The Academy of Management Review, 36*, 731-753.

Goldin, P. R., McRae, K., Ramel, W., & Gross, J. J. (2008). The neural bases of emotion regulation: Reappraisal and suppression of negative emotion. *Biological Psychiatry*, *63*, 577-586.

Gross, J. J. (1998). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology, 74,* 224-237.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, *85*, 348-362.

Lazarus, R. S. (1991). *Emotion and adaption.* New York: Oxford University Press.

Mauss, I. B., Cook, C. L., Cheng, J. Y., & Gross, J. J. (2007). Individual differences in cognitive reappraisal: Experiential and physiological responses to an anger provocation. *International Journal of Psychophysiology*, *66*, 116-124.

Miron, A. M., Brummett, B., Ruggles, B., & Brehm, J. W. (2008). Deterring anger and anger-motivated behaviors. *Basic and Applied Social Psychology, 30,* 326-338.

Najmi, S., Riemann, B. C., & Wegner, D. M. (2009). Managing unwanted intrusive thoughts in obsessive-compulsive disorder: Relative effectiveness of suppression, focused distraction, and acceptance. *Behaviour Research and Therapy, 47,* 494-503.

Ray, R. D., Wilhelm, F. H., & Gross, J. J. (2008). All in the mind's eye? Anger rumination and reappraisal. *Journal of Personality and Social Psychology, 94*, 133-145.

Szasz, P., Szentagotai, A., & Hoffman, S. (2011). The effect of emotion regulation strategies on anger. *Behavior Research and Therapy, 49*, 114-119.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*, 548-573.

Wenzel, M. & Okimoto, T. G. (2009). How acts of forgiveness restore a sense of justice: Addressing status/power and value concerns raised by transgressions. *European Journal of Social Psychology, 40,* 401-417.

Zillmann, D., & Cantor, J. R. (1976). Effect of timing of information about mitigating circumstances on emotional responses to provocation and retaliatory behavior. *Journal of Experimental Social Psychology*, *12*, 38-55.