University of Nevada, Reno

Fight, Flight, or Rethink: Using Cognitive Reappraisal in Response to Anger and Anxiety

A thesis submitted in partial fulfillment
of the requirements for the degree of

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by

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Abstract

Emotion regulation strategies are used as a way of managing one's emotions in response to adverse events. Cognitive Reappraisal is one strategy that has been shown to be a healthy way of controlling emotions, while others have been shown to have negative effects depending on the emotion. The purpose of this study is to explore the effects of cognitive reappraisal on the induction of two high arousal emotions: anger and anxiety. Cognitive reappraisal was used in a within-subject experimental design to test how effective it is at mitigating anger and anxiety. We found that cognitive reappraisal led to the participants feeling happier and calmer during the anxiety-induction task. The anger-induction task, when reappraising, led to participants having higher ratings of anger, anxiety, frustration, and nervousness and low ratings of happiness and calmness.

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Introduction

Emotion Regulation strategies have been important for controlling strong emotions, and people have been unconsciously employing these methods throughout their lives. Some of these strategies, like cognitive reappraisal, have shown to be healthier than others (Cutuli, 2014). Cognitive reappraisal is taking in the situation and then thinking about it in a different or more positive way to help control negative emotions. Another emotion regulation strategy is suppression, which is suppressing the emotion that you do not want either by not making facial expressions associated with that emotion or dampening the feeling of that emotion. It is important to test how well different emotion regulation strategies work with a range of emotions and what kind of long-term effects using these strategies can have on a person's mental health and physical health. Since cognitive reappraisal has been shown to be a healthier way to control emotions, I will be using it in this study to test whether this healthy strategy can be applied to all emotions or if it is better at regulating certain ones. This study focused on the question of which emotion regulation strategy works best with which emotion, the specific research question was: can cognitive reappraisal work better to lower the effects of two high arousal emotions such as anxiety and anger or does it work better on only one of them?

Anger and anxiety are two emotions that have similar physiological affect in causing high arousal. Although these two emotions have similar physiological effects, anxiety and anger are emotions that have different root causes; anxiety stems from fear while anger can stem from displeasure, pain, and annoyance. Since these emotions stem from different situations there will be induced in different ways. I study this by inducing

anxiety through situations that can be caused increase of fear and stress, due to my interest in observing the differences in reappraising these two emotions. By asking participants to give an impromptu to speech, I hoped to induce anxiety within participants. To study anger, I induced anger from annoyance and frustration by having the participants interrupted, mocked and be denied any help during a task where the participant had to complete difficult math problems.

Past studies have shown that anxiety is reduced is reduced in response to an impromptu speech task when suppressing the expression of emotion (Boland, Papa, & Carlo, 2019). In a separate study, suppression has been tested on anger and has been shown to have negative effects (Mauss, Evers, Wilhelm, & Gross, 2006). Since cognitive reappraisal might be a healthier way of controlling emotions, this project provides an opportunity to explore how well it can help control two emotions that are similar in reactivity but different in source and determine whether these emotions, despite their similarity, require different strategies. It is important to do more research on which strategies are working and how well they work. Looking at which strategies work best with certain emotions can help streamline the process for patients to get help with the best strategies for the issues that they are facing. This research helps with further understanding of the difference between emotions and poses new questions for more research on how to control emotions in a healthy way. To address this need, this was an exploratory study to gather more information on the effects of cognitive reappraisal.

Literature Review

This section will go over an analysis of topics relating to the study to give a better understanding of past research that has led up this current one.

Theory of Emotion Regulation

Being able to regulate emotions in a healthy and effective way is an important ability for daily life. Emotion regulation is critically involved in psychological health (Aldao, Nolen-Hoekasema, & Schweizer, 2010). Every day people are confronted with stimuli that affect their emotional state, and being able to control emotions in a way that is appropriate to the situation, and studying the effects of different ways to control emotions is what James Gross is known for. The model that Gross developed in the understanding of emotion describes how individuals can control the severity of their emotional response. Gross (1998) posited that people can change to their emotional response before the event takes place, as they are is anticipating the event to take place (this is called antecedent-focused emotion regulation), or that they can try to change their response after the event has already transpired (this is response-focused emotion regulation). He later developed and expanded on this model to take into account people's choices in employing an emotion regulation strategy and how they use emotion regulation when faced with a stressful situation. This is to say that, when faced with a situation, people will experience certain emotions and will require a method to regulate their emotional response. Depending on what type of strategy the subjects use, emotion regulation can have an effect on how they process the event and, subsequently, how subjects react. This can affect how subjects will regulate their emotion to the event

(Gross 2007) whether positive or negative. Gross's models and theories have led this study to employ the adaptive strategy like cognitive reappraisal.

Cognitive Reappraisal

There are many emotion regulation strategies, but only some are considered to be adaptive like cognitive reappraisal. This type of strategy is defined as "cognitive change that serves to neutralize the negative emotional impact or amplify the positive emotional aspects of a future event or outcome. It is an antecedent-focused strategy because it occurs before distress is fully experienced" (Dennis 2007). Cognitive reappraisal has been studied to determine how well it can change the experience of a stressful situation. One study points out that it may be adaptive when the stressors are perceived to be uncontrollable and only the person can be regulated (Troy, Shallcross, & Mauss, 2013).

Gross and colleagues have tested cognitive reappraisal and has found that when participants are asked to reappraise as they watched a film clip, they reported less negative emotion. When applied outside of the lab, cognitive reappraisal has been shown to have positive effects on peoples lives. For people with depression in high-stress situations, there was a decrease in symptoms of depression (Troy, Willhelm, Shallcross, & Mauss, 2010). Other studies have tested whether there are positive outcomes to using reappraisal on patients with chronic illnesses like Multiple Sclerosis and HIV. Both studies concluded that, when patients used reappraisal, there was a "buffering effect on the relationship between stress and negative outcomes, including depression" (Pakenham, 2005, p.27) and the subjects consistently had better outcomes (Moskowitz, Hult,

Bussolari, & Acree, 2009). It is for this reason that I used cognitive reappraisal to evaluate two high-arousal, negative emotions.

Anger

Anger is a key emotion that arises in response to an event that could be perceived as uncomfortable or unfair, which can lead to frustration and annoyance. Anger has been defined as

> A negative, phenomenological (or internal) feeling state associated with specific cognitive and perceptual distortions and deficiencies (e.g., misappraisals, errors, and attributions of blame, injustice, preventability and/or intentionality), subject labeling, physiological changes, and action tendencies to engage in socially constructed and reinforced organized behavioral scripts (Kassinove & Sukhodolsky, 1995).

Anger is a high-arousal emotion, which induces stimulation to the mind and body. Anger is internal, but people can manifest outward expressions of that feeling. When experiencing that emotion, the person could feel the need to behave in ways that are associated with feeling (e.g., yelling, leaving, making rude comments, sulking, etc.).

There have been many studies to understand anger and what triggers the response. In one study, researchers focused on violent anger and, in triggering this emotion and reaction, it was found that insulting or, disregarding one's opinions or beliefs can have that effect (Sell, 2011). Other studies have found that the severity of insults (Harmon-Jones & Sigelman, 2001) has a great effect on inducing anger. Another study confirms that insults have been used as a reliable trigger of anger in aggression research for forty years (Geen, 1998). In this study, insults and lack of assistance in a stressful situation will

be the method used for inducing anger. Emotion regulation strategies have been

employed to mitigate the effects of anger in order to feel in control over the situation and

it has been shown that positive reappraisal (Park & Sumi, 2011) and emotion regulation

(Mauss, Evers, Wilhelm, & Gross, 2006) can help.

Anxiety

Anxiety has been examined in many psychological studies to understand how it

affects other disorders, such as PTSD and depression. Alone, anxiety is an emotion that

can stem from fear of the unknown or thought of impending danger that is not directly

identified (Lazarus 1991). Others have defined it as "a future oriented mood state

associated with preparation for possible, upcoming negative events" (Barlow 2002).

There are many known reactions when faced with an anxiety-inducing situations. As

explained by Beck and Emery (2005), the response induced by speaking in front of a

crowd would be demobilization, or stage fright. This type of response is due to

"vulnerability mode" when put in potentially danger or a stressful situation (Beck &

Emery, 2005). Other responses include increased heart rate, increased sweating and

rapid/irregular breathing (Kalat & Shiota, 2007). Inducing anxiety has been at the heart of

many studies in order to gain an understanding of what its effects are, and many

researches have been able to successfully induce it through stress-related events like

exposing participants to stressful films (Elsesser, Sartory, & Tackenberg, 2004) and

impromptu speeches (Boland, Papa, & Carlo, 2019). Applying emotion regulation

strategies to anxiety has also been found to be useful when trying to accomplish tasks

(John-Henderson, Rheinschmidt, Mendoza-Denton, 2015). The current study used

impromtu speeches and asked participants to engage in specific emotion regulation

strategies to gain a better understand of how emotion regulation can affect the effect of anxiety on performance.

Methodology

This is an exploratory study to gather more information on the effects of cognitive reappraisal. The focus of this study was examining whether cognitive reappraisal works better to lower the effects of two high-arousal emotions, anxiety and anger, from tasks that induce those emotions, or if cognitive reappraisal works better on only one of those emotions. Participants were undergraduate students were recruited from the University of Nevada, Reno. To have been eligible for the study, students needed to speak English, be over the age 18, and give verbal consent. 44 students were recruited through a short, in-class presentation in an undergraduate psychology class made with instructor permission. Participants were also recruited through SONA, the online participant recruitment site for the UNR psychology department. All students were given class credit for their participation. All participants performed the same tasks. The equipment used for this study consists of a program, Qualtrics, which was programmed to present instructions for tasks as well as record information provided by the participants. To analyze the data collected from the experiment, Statistical Package for the Social Science (SPSS) was used.

Participants were randomly assigned to one of two possible groups through a coin toss before the participants arrived. Heads signified placement in Group 1 and tails signified placement in Group 2. Group 1 participants ran through the experiment with the first task inducing anger and the second task inducing anxiety. Group 2 participants ran through the experiment with the first task inducing anxiety and the second task inducing anger. Separating participants into two different groups ensured that the results will not be skewed by order effects in which participants' responses are influenced by the order in

which experimental tasks are presented to them. After participants arrived and were assigned to their groups, the experimenter sat down with them to go over the consent information.

Participants who verbally consented were then seated in a chair in front of a computer where the tasks and videos for the experiment were presented to them. They started by watching a neutral video clip before each induction task. Both neutral videos used in this study are taken from nature documentaries and have been operationalized to confirm that they have calming effects. Once the neutral video was over, they were asked to answer six question about their emotions. On a Likert-style scale from 0-10, they were asked to rate the degree to which they felt a certain emotion, zero meaning that they felt that emotion is very little or not at all and ten being a very high level of emotion. The six emotions are calm, angry, happy, anxious, frustrated, and nervous. They were asked these six questions after every task and video segment.

Once they answered all the questions, they were asked to apply an emotion regulation strategy to the next task. The instructional text told them that one of three possible emotion regulation strategies would be randomly generated on the next screen: reappraisal, emotional suppression or acceptance. This study focused only on reappraisal that was the only option that appeared on the next screen. The other two options were presented so that participants would think that they were assigned reappraisal by chance and did not carry on what they know from the first task to the second task. While they might have gotten better at reappraising, they were not asked to build on what they already knew how to do, they did not expect to get reappraisal twice in a row out of the

three options. The instructions on how to apply reappraisal explained how to think about/re-frame the situation in a more positive way.

The experimenter then walked in and read them the instructions for the mathematical task to Group 1. The participants had to complete two trials where they were asked to count backward from a high number in steps of 13 for the first trial and 8 for the second trial. Participants were only allowed to say the answers out loud while counting backwards. The experimenter sat in the room with them timing them through the trails. While each participant was trying to complete the tasks, the experimenter had a script that have times listed with phrases to say to the participant in order to distract, interrupt, and anger them. These phrases were rude comments about their performance, comparisons to other participants, and distractions. This induced anger and frustration, however it is expected that the participant would be trying to apply reappraisal to the situation.

Once the experimenter interrupted them during the last trial, the participant was told to continue following the instructions on the screen. They were first asked, "Please rate the degree to which you thought about the situation in a different way" rated on a scale of zero (not at all) to ten (very much). They then moved on to the same six questions about their emotions. The participants were then asked not to apply what they did in the first task to future tasks and the screen moved on to the second neutral video that gave them time to decompress after the previous task.

Continuing with the example for Group 1, the participant was then given the same instructions on the selection process for one of the three emotional regulation strategies. Again, they were assigned reappraisal and went through the reappraisal instructions

again. For the next portion of the study, though, they were introduced to anxiety-induction task. For this task, they were asked to give a two-minute speech. They were told that this speech is for an interview for a position on campus and that a faculty member from UNR was interested in viewing how students behave when being interviewed. The participant was told that the experts were watching through a camera set up in the room and that they were scrutinizing every move that the student made. They had one minute to prepare the speech and, when the time was over, the experimenter came in to the room and turned on the camera that would record them and and then left. The participant then clicked through the next instructional screens until they came across the screen that instructed them to start. During the whole speech time the participant was be asked to apply reappraisal strategies to the situation to manage their emotional arousal. Once the task was complete they were asked the same seven questions from the last task (reappraisal and emotions checklist). Once the participant finished answering the last questions, the study came to an end and the experimenter entered the room and went over a debriefing statement and an explanation of the study. The experiment followed the same format for Group 2, only the order of the two tasks was reversed.

Results

Only 43 of the students' data was used due to one participant dropping out of the study. The average age of the students was 21 (*SD*= 4.906). There were 34 females and 9 males. Due to an error when formatting the Qualtrics survey, the data gathered from the first induction task for both groups was not available to be analyzed therefore Group 2 was comprised of the Anger induction task and Group 1 was comprised of the Anxiety induction task. Both groups included the responses for all emotions (anger, anxiety, happiness, frustration, calm and nervousness) for their corresponding tasks and these were used to compared between both groups instead of the original plan analyze using the within-subject design. To analyze the data, the program SPSS was used to perform an independent samples t-test.

Looking at the difference between the means for Anger, we found that Group 2 had marginally significantly more anger than Group 1 $t(41) = -1.956$, $p =.057$. Anger M_1 was 1.77 and M_2 was 3.33. When looking at difference between the means for Anxiety, Group 2 did not have significantly more anxiety than Group 1 $t(41) = -.848$, $p =.402$. Anxiety M_1 was 5.64 and M_2 was 6.48. In this case, both groups reported high levels of anxiety at the end of the task

The means for Happiness showed that Group 1 had significantly more happiness than Group 2 $t(41) = 3.189$, $p = .003$. Happiness M_1 was 4.32 and M_2 was 1.71. Looking at the differences between the means for Frustration, Group 2 had significantly more frustration that Group 1 $t(41) = -2.366$, $p = .023$. Frustration M_1 was 3.73 and M_2 was 6.19. The means for Calm values showed that Group 1 had significantly more calmness than Group 2 $t(41) = 3.184$, $p = .003$. Calm M_1 was 4.23 and M_2 was 1.52. Lastly, the

differences between the means for Nervousness showed that there was a trend for Group

2 having more nervousness that Group 1 $t(41) = -1.449$, $p = .155$, but it was not

statistically significant. The Nervousness M_1 was 4.91 and M_2 was 6.38.

Discussion

The purpose of this study was to see how well reappraisal can modify the emotional experience and/or if it can make any difference to their experiences of two different emotions. To measure reappraisal and its effects, Group 1 who completed the anxiety induction task was compared against Group 2, who completed the anger induction one because we wanted to know if there was a difference in how well reappraisal works when facing a situation that induces these two specific emotions. From the data that were gathered, it was shown that Group 2 experienced higher levels of anger and anxiety. Although this finding was not statistically significant, it was interesting to find that the anger-induction task was not easily reappraised to lower participants' anger. The anger induction task not only made participants angry, but they also rated themselves as having high levels of anxiety. Even though this finding was only marginally statistically significant, it is interesting to not the interplay of these two emotions.

What was significant was that the participants also responded with high levels of frustration for Group 2 than Group 1 while Group 1 had higher levels of happiness and calmness. What this study tried to examine is how the effects of anger and anxiety can be lowered with reappraisal and looking at the results leads us to think that anxiety was able to be reappraised better. This is possibly due to how anxiety and anger induction is different. Since anxiety is a future oriented emotion it is possible that using reappraisal to think about the upcoming event in a more positive way could lead to better outcomes (like feeling more happiness, calmness) after the situation has passed. It is possible to apply reappraisal to the situation that is causing anxiety before the situation has even occurred making them more prepared for it. Although as shown in this study they may

still feel just as anxious, it is still better for helping the participants overall feel better about the situation. This is not the same for anger, since in this study was it induced by insulting the person and led to not feeling high levels of positive emotions and instead higher levels of frustration. In the moment of being insulted the participant would have to reappraise the situation as it is happening, but it could be harder to find something positive out of a situation where you are being insulted, belittled and are feeling like the treatment that you are receiving is unjustified. It might be easier to find something positive in an anxiety inducing situation, like taking it as a learning experience, thinking it might not be as bad as you are making it out to be. For anger, it is as bad as you are experiencing it and in that moment it could feel like you do not have a chance to find a positive thing to hold on to while it is happening, leading to worst outcomes.

The other reasons that could have led to these outcomes could be that the anger-induction task was considerably more frustrating than the anxiety-induction task, making it harder to reappraise the situation. What could have led to this was that, while the participants had to perform a task out loud, the setting was different for each task. Group 1 had to perform in front of a camera with the experimenter out of the room and they were given one minute to prepare their speech. Thus, they had time to employ the reappraisal strategy before having to actually give the speech and they were reminded to use reappraisal. Group 2 had to perform in front of the experimenter and did not have any time to prepare. Since the experimenter was trying to make them angry, she had a script of phrases and sentences to say to the participant to raise their anger levels. For example, she would question the validity of their answers, asking "are you *sure* that is the correct number?" She would also compare their performance to other participants: "you should

speed up, other participants were *way faster* than this." Direct confrontation could have an impact on increasing the difficulty for the participants to reappraise the situation or find positive aspects of the task to work with even though they were given a reminder to use their assigned reappraisal strategy during the task.

This is important because this study is investigating whether the type of emotion can affect how well reappraisal works. Taking a closer look at anger and what it does to the person experiencing it, this study shows that it heightens all the negative emotions (anger, anxiety, nervousness, frustration) and lowers all of the good ones (happiness and calmness) even after being prompted to try to think in a more positive way. These findings, raises the question of whether the nature of the situation that has induced that emotion also has an affect of on the usage of reappraisal.

On the other hand, Group 1 had higher ratings of both happiness and levels of calmness. This group had to give a speech in the form of an interview for a position on campus in order to induce anxiety. Although they did have relatively lower anxiety levels compared to Group 2, this difference was not as great for other emotions that the two groups had experienced, and the data show that the participants had higher levels of calmness and happiness. This could be due to having more time to prepare their speech while thinking about using their assigned reappraisal strategy along with another reminder to apply that strategy right before they began their speech. This task was also less confrontational as the experimenter was not present during the speech or prompting them with any questions or comments. Due to the participants being able to reappraise the situation and pull something positive from the task, they rated themselves as being happier and calmer even though they were still anxious. These data could mean that, even

though both anger and anxiety cause high arousal, it is more difficult to think in a positive way while in an anger-inducing situation that deals with direct confrontation and thus, leads to higher levels of anxiety, frustration, and lower levels of calmness and happiness. Even so, trying to induce anxiety reappraisal helped to lower anxiety levels slightly and to create higher levels of calm and happiness leading us to conclude that it is possible that reappraisal leads to better outcomes for anxiety-inducing situations than anger-inducing situations.

Limitations

Throughout the process of completing this study there were some limitations that came to light. One limitation could be that, as stated above, having someone present in one task and not in the other could have played a role in how well participants used reappraisal during the induction task. Since the experimenter was present during the Group 2 anger induction task and not during the Group 1 anxiety induction task, that could have made it easier for the participants in Group 1 to reappraise the situation without having the experimenter present recording the interview and prompting them with questions and comments.

What also could have affected the participants' ability to reappraise is that Group 1 had more time to prepare than did Group 2. Before Group 1 had to give their speech they were given one minute to prepare while Group 2 was not given any notice about what the task was going to be or any time to prepare for it. As stated above, having preparation time could have affected how well Group 1 reappraised, making it so that participants had time to apply the strategy before they started the task. However, this might only have had a minor affect on the results as both Group 1 and 2 were instructed

to reappraise for a task they performed before the final one which was used for our data. Referring back to the methodology section, both groups had experienced the other tasks as Group 1 had to reappraise for the anger-induction task first and then again later for the anxiety-induction task and Group 2 had to reappraise for the anxiety-induction task and then again later for the anger-induction task. These two groups had experience reappraising prior to their final task, therefore it is unclear how much of an effect having extra time to prepare could have had on Group 1's scores.

Lastly, the purpose of this study is to see how reappraisal can mitigate the effects of two stressful situations, one inducing anger and the other anxiety, and then compare the ratings to see which emotion and situation reappraisal worked the best in. In the original plan, the study was a within-subjects design since each group went through both induction tasks but in a reversed order to account for order effects, but the data was analyzed as a between-subject design. The reason why the data was not analyzed according to the original plan was because the surveys were set up incorrectly in Qualtrics. The set of seven questions were set up as a block that could be reused in different sections of the study. By setting up the study using the block tool, the responses to the questions were not saved to their own section but instead overriding the first set of responses from the first task they had to perform. Due to the structuring error half the data that was supposed to be collected did not exist and therefore the original plan of data analysis could not be done.

Future Research

The results that came out of this study has raised more questions about anger and anxiety inducing situations. Specifically, how much direct confrontation can affect the

ability to be able to reappraise the situation. If I were to do this study again I would design Qualtrics surveys capable of supporting a within-subject design, to have further understanding on how two different situations can affect the same person. Along with this change I would also want to test whether confrontation has a role in the reappraisal process. For example, it would be interesting to not only test emotions with reappraisal, but also try different settings for the induction of these emotions. Testing different settings and types of confrontation could be the next step to understanding reappraisal as an emotion regulation strategy and how it fares against other strategies as well. Lastly, I would like to test how much of an effect having preparation time has on using reappraisal and task performance by running a study where one group has time to prepare after being given instructions to reappraise and the other group not given that option. There are many questions that remain unanswered, especially with regard to anger, and I would like to understand why anger induction would cause a heightened response with regard to other emotions and what the implications are for humans; who, in every day life, are placed in stressful situations that induce a variety of emotions as we continue our exploration to find healthier methods to manage the effects of these emotions.

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