Gratitude's Ability in Undoing Effects to a Stressor

Stella Rufeisen

University of California, Santa Barbara

Abstract

Negative emotions are a part of everyday life. Based on the hypothesis embedded in the

Broaden and Build theory that positive emotions can "undo" effects of negative emotions, the

following between-subjects pretest-posttest experiment aims to assess how well gratitude, the

independent variable of interest, can decrease the emotional and cardiovascular effects of a

stressful event. 200 participants will be sampled through random stratified sampling of an

Introduction to Psychology class at UC Santa Barbara. The students selected will be randomly

assigned to one of three conditions for 40 days: gratitude journaling (experimental), food

journaling (comparison control condition), and a no-treatment control. At the end of the 40 days,

all participants will be exposed to a speech preparation stressor activity. The dependent variables

of interest are the change in emotional state, measured through the Positive and Negative Affect

Scale, and cardiovascular response, measured through heart rate and blood pressure, after being

exposed to the speech preparation stressor. This study predicts that the gratitude journaling group

will change less from their cardiovascular and emotional baselines after being exposed to the

stressor activity than the food journaling control group and the no-treatment control group. In

this case, threats to internal and construct validity may arise due to the potential inability of the

gratitude journaling manipulation to elicit gratitude, as well as potential demand characteristics

due to the high face validity of the study's self-report measures. The limited demographic

diversity in student populations is also a potential threat to the studies external validity.

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Negative experiences are inevitable in all human life. In fact, the number of people across the globe reported to have felt five negative experiences in the previous day has increased in the past decade (Gallup Inc., 2019). Considering the increasing permanency of adverse experiences, how do we deal with the negative experiences inherent to human life? The answer could be as simple as using positivity to overrule the negativity.

In the following experiment, gratitude's effect on how participants react to a negative stressor will be studied in an attempt to evaluate its effectiveness in decreasing the consequences of negative experiences inherent to human life. In this study, gratitude is defined as a positive emotion in which a person perceives a personal benefit as a result of a source external from themselves (Garland et al., 2010). This study will focus on stress as a negative emotion, as previous studies have used stress to study the relationship between positive and negative emotions (Tugade & Fredrickson, 2004). Stress will be defined as the emotional and physiological response of a person when faced with a perceived threat that they believe they have insufficient resources to deal with (Feldman, Cohen, Hamrick & Lepore, 2004). The purpose of this study is to evaluate gratitude, operationalized through gratitude journaling, as a potential tool in minimizing the cardiovascular and emotional responses to stress.

Fredrickson's Broaden and Build theory is the primary theoretical foundation for this experiment; it states that positive emotions help broaden one's actions and responses to life, unlike negative emotions, which have been theorized to narrow one's response actions (Fredrickson, 2001). Due to the incompatibility of the two emotion's effects, the "undoing" hypothesis in the theory asserts that positive emotions can "undo" the effects of negative

emotions, and subsequently produce more resilient individuals (Fredrickson, 2001). Increased

resilience when faced with negative emotions, can contribute to an upward spiral: a positive

feedback loop of positive emotions that results in increased emotional wellbeing (Fredrickson,

2001). Garland et. al's theory expands the Broaden and Build theory by stating that positive

upward spirals can change the neurological makeup of one's brain, giving it the power to undo

mental illness related downward spirals, such as depression and anxiety (Garland et al., 2010).

This theory also suspects that physiological responses, such as cardiovascular responses, can be

affected by positive emotions due to their impact on the brain (Garland et al., 2010). For the

purposes of this experiment, I will be testing if gratitude can undo the effects of stress,

subsequently equipping participants with increased emotional resilience that can contribute to an

upward spiral towards wellbeing.

Previous research has shown that gratitude is able to increase a variety of well-being

related variables, eliciting upward spiral when operationalized by gratitude journaling (Emmons

& McCullough, 2003; Ducasse et al., 2019; Lai & O' Carroll, 2017). Well-being related variables

such as positive affect (Emmons & McCullough, 2003; Lai & O' Carroll, 2017), optimism

(Ducasse et al., 2019) and even subjective well-being itself (Emmons & McCullough, 2003)

have increased in gratitude journaling groups in comparison to a no-treatment control condition

(Emmons & McCullough, 2003; Lai & O' Carroll, 2017) or a food journaling condition (Ducasse

et al., 2019). A gratitude journaling intervention has also been shown to decrease certain

ill-being related variables, such as negative affect, when compared to a no-treatment control

condition and an emotionally neutral food journaling condition (Ducasse et al., 2019; Emmons &

McCullough, 2003). Thus, previous empirical findings support that gratitude's broadened responses to life are able to induce an upward spiral by increasing well-being related variables and even preventing downward spirals from worsening through decreased experiences of ill-being related variables. Previous research has also supported that the upward spiral is partially caused by an increase of psychological resilience due to the undoing effect of positive emotions on negative emotions. Specifically, a correlational study has found that those exposed to a stressor activity recovered faster in their cardiovascular response if they exhibited higher psychological resilience, which was statistically determined to be mediated by greater feelings of positive emotion (Tugade & Fredrickson, 2004). Thus, the correlation between the reduced response to a stressor and positive emotions has been established, paving the way for more empirical studies on the causal relationship between the two.

The areas of research mentioned above have helped to support Fredrickson's and Garland et al.'s theories. The undoing hypothesis is supported by previous research that shows positive emotions are able to mediate a faster recovery from an emotional and physiological stress response (Tugade & Fredrickson, 2004). The upward spiral theory is reinforced by gratitude's ability to increase well-being related variables, theorized to occur because of the increased psychological resilience that results from positive emotions' ability to undo negative emotions(Fredrickson, 2001). Based on the foundational evidence present in the current field, the purpose of this study is to propel the research a step forward and propose a causal relationship between gratitude and the decreased effects of stress in an attempt to analyze if this upward spiral is in fact partially caused by the positive emotion's power to undo negative emotions.

Operationalization of gratitude through gratitude journaling will follow the protocol developed by Emmons & McCullough (2003), as it has had success in increasing gratitude in comparison to no-treatment control conditions (Emmons & McCullough, 2003; Lai & O' Carroll, 2017) and increasing well-being related variables as mentioned above (Ducasse et al., 2019; Emmons & McCullough, 2003; Lai & O' Carroll, 2017). The operationalization of stress in the speech preparation activity as the negative emotion for this experiment was chosen for its success in inducing a cardiovascular response and increase negative emotional stress in previous studies (Feldman, Cohen, Hamrick & Lepore, 2004; Tugade & Fredrickson, 2004).

In accordance with the Broaden and Build theory's undoing hypothesis, the main hypothesis of this experiment is that gratitude will be able to lessen the effects of stress on emotional state and cardiovascular response. I am predicting that the gratitude journaling group will experience less of a change in cardiovascular response after the speech preparation stressor activity than food journaling and a no-treatment control. Furthermore, it is also predicted that the gratitude journaling group will experience less of a change in negative emotional response after the speech preparation stressor activity than the food journaling and no-treatment control conditions.

Method

Design

In accordance with other studies that focus on the effects of gratitude, I will be conducting a single-factor pretest-posttest between-subjects experimental design. The independent variable in this study will be gratitude, operationalized through gratitude journaling

and a manipulation check, as it has been shown to increase gratitude in comparison to a no-treatment control condition (Emmons & McCullough, 2003; Lai & O'Carroll, 2017). The independent variable will have three levels: gratitude journaling, food journaling, and a no-treatment control condition. A comparison and a true control condition have been chosen to measure the expectancy effects of journaling in order to assess the true effects of gratitude (Lai & O'Carroll, 2017). Food journaling was chosen as the comparison condition because it has less room for participants to practice positive contemplation that could overlap with gratitude (Emmons & McCullough, 2003). The dependent variables will be the physiological and emotional effects of stress on the participants, operationalized through the change in cardiovascular and emotional response of the participants from their pretest baseline (before being exposed to the stressor) to their posttest (after being exposed to the stressor).

Participants

The participants for this study will be recruited from an introductory psychology class at UC Santa Barbara at the beginning of the academic quarter. Although introduction to psychology students are a less generalizable population, the attrition rates when recruiting students in classes is lower than the university at large (Emmons & McCullough, 2003; Lai & O' Carroll, 2017). In addition, to ensure selective attrition is minimized, students will be offered extra credit points for their level of completion of the study's activities: an essay for the same amount of extra credit points will be offered as an alternative to combat potential coercion. Participants will be sampled from the introduction to psychology classes using stratified random sampling to strengthen external validity. Once participants are selected, they will each be notified on their academic

online portal (Gauchospace). I will use 200 participants in my study to account for participants that will insufficiently complete gratitude journaling; previous studies that have conducted gratitude journaling have used upwards of 100 participants, most likely due to the attrition caused by gratitude journaling's lengthy time commitment (Ducasse et al., 2019; Emmons & McCullough, 2003; Lai & O' Carroll, 2017). As all people deal with positive and negative emotional experiences, there is no specific demographic that will be focused on for the purposes of this experiment. As per previous research: all races, ethnicity, genders, and ages 18+ will be included if randomly selected (Emmons & McCullough, 2003; Lai & O' Carroll, 2017).

Measures

The emotional effects of stress will be operationalized by the PANAS scale. The Positive and Negative Affect Scale will be used to measure the emotional state of participants, focusing on the "in the present moment" time frame (Watson, Clark, & Tellegen, 1988). Participants will be asked to rate how much they feel from 1(not at all/very slightly) to 5 (extremely) for 20 different mood descriptors such as "irritable" or "excited". Researchers determined different correlation patterns with additional mood descriptors which showed the convergent, content, and discriminant validity of the PANAS scale (Watson, Clark, & Tellegen, 1988). This measure also showed strong internal consistency reliability, and moderate test-retest reliability, which increases with longer time frames (Watson, Clark, & Tellegen, 1988). The physiological effects of stress will be operationalized by cardiovascular response. In order to offer a more objective measurement of the participants emotional state, the cardiovascular responses of the participants will be measured by recording the average heart rate and systolic and diastolic blood pressure of

the participants before and after the stressor occurs. I have chosen these cardiovascular

characteristics as they have been successfully used in previous experiments while conducting this

speech preparation stressor activity (Feldman, Cohen, Hamrick & Lepore, 2004; Tugade &

Fredrickson, 2004). In accordance with previous methods used while executing this stressor, I

will also inform participants to refrain from substances that might affect their cardiovascular

baseline, such as food, caffeine, tobacco products, alcohol, medication, and vigorous exercise, at

least three hours before participating in the experiment (Feldman, Cohen, Hamrick & Lepore,

2004). The post-test measure of the PANAS scale and cardiovascular response will serve as the

manipulation check for the speech preparation stressor as well. The Gratitude Resentment and

Appreciation Scale (GRAT), developed by Watkins, Woodward, Stone, & Kolts (2003), will be

given to participants as a manipulation check to see if gratitude journaling was successful in

eliciting gratitude. This measurement will ask participants to rate their agreement from

1(strongly disagree) to 9 (strongly agree) to 44 gratitude related statements, such as "I think it's

important to appreciate each day that you are alive." The measurement shows high internal

consistency, factorial validity, and criterion validity when measuring behaviors such as positive

affect and satisfaction with life (Watkins, Woodward, Stone, & Kolts, 2003).

Procedure

In the following procedure, gratitude will be operationalized through gratitude journaling

and the subsequent manipulation check. All participants chosen through random stratified

sampling will be emailed the study's informed consent and asked to choose from a list of future

available dates to come into the lab for the stressor activity. After indicating their consent to be in

the study, participants will be randomly assigned to one level of the independent variable: gratitude journaling, food journaling, and a no treatment control. The gratitude and food journaling condition will be given their journaling prompts as well as instructed to complete and turn in their journaling daily for 40 days, as gratitude journaling has been shown to be more effective if practiced for more than 2 weeks (Emmons & McCullough, 2003; Lai & O' Carroll, 2017). Participants will be requested to submit their journal entries in an online form emailed to them daily in order to keep track of how consistently they completed their journaling, which will also serve as a daily reminder to complete the journaling activity. The gratitude condition will receive instructions to reflect at the end of their day on the five things they are grateful for occuring, using the prompt created by Emmons & McCullough (2003). The food condition will be asked to keep a food diary where they must record what they ate for breakfast, based off of the control condition developed by Ducasse et al. (2019). After the 40 day journaling period, all participants will come into the lab on their indicated preferred date. On the week of their laboratory appearance, they will be told to refrain from substances that might affect their cardiovascular baseline as indicated above in an email. Once participants arrive, research assistants will ask them to place an occluding cuff on whichever arm they use the least, following the procedure conducted by Feldman, Cohen, Hamrick & Lepore (2004). This will allow for measurements of their cardiovascular state: heart rate, diastolic blood pressure, and systolic blood pressure. Research assistants will then read the instructions for the PANAS and the GRAT and instruct participants to complete them as honestly as possible. In order to minimize order effects, across-subjects full counterbalancing will be conducted; participants will be randomly

assigned to an order of the two self report measurements. Cardiovascular responses will always be measured last to allow participants to adjust to a lab setting (Feldman, Cohen, Hamrick & Lepore, 2004;Tugade & Fredrickson, 2004). Reading off a script in order to minimize demand characteristics, research assistants will then inform participants that they will have 5 minutes to prepare a speech weighing the pros and cons on the ethicality of animals being used for food and research, and give participants a list with arguments for both the pros and cons to develop their own argument (Feldman, Cohen, Hamrick & Lepore, 2004). The participants will be told that their speech performance will be videotaped and watched by a group of judges who will rate them on both performance style and content (Feldman, Cohen, Hamrick & Lepore, 2004). Research assistants will bring out a video camera, place it directly in front of the participants, and then leave the room in order to increase the pressure felt by participants (Feldman, Cohen, Hamrick & Lepore, 2004; Tugade & Fredrickson, 2004). After 5 minutes have passed, the research assistant will measure all of the participants' cardiovascular responses first, as it is a more fleeting response than emotional state, and then the PANAS scale will be given: both will assess the degree of impact the stressor had on the participant. The research assistant will then inform the participant that they will not be presenting a speech, as the speech preparation task has been shown to elicit stress on its own (Feldman, Cohen, Hamrick & Lepore, 2004; Tugade & Fredrickson, 2004). Participants will then be debriefed on the purpose of the study and asked if they need any additional emotional support.

Threats to Validity

Although gratitude journaling has been shown to increase gratitude, its effectiveness varies, posing a potential threat to the study's overall internal and construct validity (Wood, Froh, & Geraghty, 2010); if the gratitude manipulation does not work in increasing gratitude, this will weaken the causal claims of the study that construct of *gratitude* has as an effect on how people deal with a stressor. In order to minimize this risk, the frequency and time of gratitude journaling will be increased in comparison to previous studies, as increased journaling has been shown to increase feelings of gratitude (Emmons & McCullough, 2003). To measure the expectancy effect of journaling, an emotionally neutral comparison control (food journaling) and a no-treatment control condition have been implemented in accordance with suggestions by Wood, Froh, & Geraghty (2010). High levels of expectancy effects would weaken the causal claims made with gratitude journaling. Although participants will be randomly selected using stratified random sampling, threats to external validity still remain due to the specific pool randomly selected from: university students in an introductory psychology class. Students tend to be from a specific demographic of a population that influences how they respond to the study. Thus, the results of this study may not generalize well to populations that are not in this western and educated demographic. Lastly, the high face validity in the PANAS and GRAT scale may increase the demand characteristics of the study. Although physiological measures of emotions were put in place to minimize this threat, participants may try to insincerely act in accordance or in opposition to the purposes of the study, in turn influencing the construct validity of the self-report measures as well as the internal validity of the study overall.

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