

# Things Could Have Been Worse: The Counterfactual Nature of Gratitude

Nuala Walsh<sup>1</sup>, Suzanne M. Egan<sup>1</sup>

<sup>1</sup>Department of Psychology, Mary Immaculate College, University of Limerick

Nuala.Walsh@mic.ul.ie, Suzanne.Egan@mic.ul.ie

**Abstract.** Counterfactual thinking, which contrasts a real event with a hypothetical scenario, is a fundamental characteristic of healthy social, emotional and cognitive functioning, and frequently triggers affective reactions. The aim of this research is to investigate what role, if any, different types of counterfactual thinking play in gratitude. Experiment 1 investigates if levels of gratitude are associated with the generation of both upward counterfactuals (things could have been better) and downward counterfactuals (things could have been worse) following the recollection of a negative life event. Results indicate that thoughts of how much worse things could have been and thinking about a how the individual could have done more to produce a better outcome, are both significantly associated with gratitude. In Experiment 2 we further examine this relationship using the same directional elements of counterfactual thinking but using a more detailed conceptualization of gratitude. Similar to Experiment 1, the findings indicate that aspects of counterfactuals relating to thoughts about how things could have been worse, better, or better if someone else had acted differently are significantly associated with gratitude. These findings are discussed in the context of previous research on counterfactual thinking and affect. The implications for the functional theory of counterfactual thought are considered.

**Keywords:** counterfactual thinking, trait gratitude.

## 1 Introduction

Counterfactual thinking is the ability to think hypothetically about how things in the past could have turned out differently. It involves the undoing of both an antecedent and consequent, to imagine an alternative possible world that could have happened but did not (e.g., ‘If Trump had not been elected president, global international relations would be better’) [1]. Counterfactual conditionals have long been researched by philosophers [2, 3], linguists [4] and psychologists [5].

Previous research indicates that counterfactual thinking can fluctuate along various dimensions such as the direction of comparison, structure, and object of reference [6]. For example, upward counterfactual thinking compares reality to a hypothetically better outcome (e.g., ‘If only I had stayed home, the car accident would not have hap-

pened”), while downward counterfactuals compare reality to a hypothetically worse outcome (e.g., “If I had been driving faster I could have been seriously injured or killed in the car accident”). Counterfactuals can refer to actions taken by oneself (self-referent) (e.g., “if only I had taken another route, the crash would not have happened”), actions taken by another individual (other-referent) (e.g., “if only the other driver had not driven so fast, things could have turned out differently”) or by no-one (non-referent) (e.g., “if only the crash had not happened...”).

The aim of the two experiments reported in this paper are to investigate what role, if any, different types of counterfactual thinking (e.g., upwards versus downwards) play in gratitude. To date, the role of counterfactual thinking in gratitude has largely been unexplored and we hypothesize that different types of counterfactual thinking will be significantly associated with gratitude.

### **1.1 Counterfactual Thinking and Gratitude**

Experiencing a negative life event can often result in an individual imagining an alternative outcome of what could have happened but did not. The functional theory of counterfactual thinking [7, 8, 9, 10, 11] proposes that thinking about how things could have turned out differently serves a useful purpose. This approach proposes that counterfactuals may reflect goals and the ways in which these goals can be achieved, thereby providing insights that may aid future improvements [9]. Previous research indicates support for this idea in that counterfactual thinking has been associated with learning from past mistakes [12], and performance improvement [13]. Another important area in which counterfactual thinking also seems to play a role relates to emotions and affective traits.

Numerous emotions are characterised to some extent by their association with particular categories of counterfactuals. The comparing of actual events to a counterfactual alternative has been seen to intensify negative emotions such as envy, regret, shame, guilt, and blame [14,15,16,17,18], and positive emotions such as luck, relief, sympathy, optimism, life satisfaction, and happiness [19, 20, 21, 22, 23, 24]. The propensity for upward counterfactual thinking is often associated with negative affect, whereas the generation of downward counterfactuals has been related to positive affect [25]. The association between counterfactual thinking and affect appears to be bidirectional, as counterfactual thinking can be triggered by affect, and has also been demonstrated to stimulate various emotions [25, 26, 27, 28].

One previous study has briefly explored the relationship between counterfactual thinking and gratitude. This research by Teigen [19] explored the relationship between the comparative characteristics of luck and thinking counterfactually, and demonstrated that the association between luck, the experience of envy, and gratitude may be associated with actual events or a simulated alternative. The findings suggest that circumstances in which individuals experienced gratitude were the same as events or states in which individuals also felt luck when anticipating an alternative negative outcome. However, this study did not examine the individual’s concept of gratitude in detail, or the individual’s behavior or attitude towards gratitude in a personal or impersonal scenario.

When classified as a trait, gratitude may be considered as an indebtedness that remains constant across situations, and a ‘generalised tendency to recognise and re-

spond with grateful emotion to the roles of other people's benevolence in the positive experiences and outcomes that one obtains' [29]. To the extent that trait gratitude moderates an individual's capacity for reacting to valuable actions with gratitude, it may lead to distinct emotional experiences. Previous research on gratitude has examined an extensive range of its associations and causalities on psychological functioning, and it has been implicated in improved psychological well-being [30], has been associated with higher levels of self-esteem and positive affect [31], and has been positively correlated with stronger social relationships [32]. McCullough et al. [29] demonstrated that an individual high in dispositional gratitude may experience more gratitude intensity following a positive action or situation than an individual low in dispositional gratitude, and suggest higher levels of trait gratitude are generated by an act of kindness.

In the two experiments that follow we aim to examine the role of counterfactual thinking in gratitude. We hypothesize that counterfactual thinking will be significantly associated with gratitude, as gratitude by its nature often involves a comparison between how things are now and how they could be (e.g., 'if I had not won €100, I would not have been able to pay that bill'). We also hypothesize that downward counterfactual thoughts about how things could have been worse will have a larger impact on gratitude than upward counterfactual thoughts about how things could have been better.

## **2 Experiment 1: Is counterfactual thinking associated with gratitude?**

The primary aim of this experiment is to examine the relationship between counterfactual thinking and gratitude. To test our hypothesis, we examine both upward and downward directional elements of counterfactual thinking together with counterfactual objects of reference such as self-referent, other-referent, and non-referent. Trait gratitude and counterfactual thinking are operationalized through the completion of standardised questionnaires.

### **2.1 Materials and Design**

The present study incorporated a within-participants regression with gratitude as the criterion variable and different types of counterfactual thoughts as the predictor variables. Counterfactual thinking was operationalized through the completion of The Counterfactual Thinking for Negative Events Scale (CTNES; 33), measured on an interval scale of measurement with five subscales. This measure consists of 20 statements regarding the ways in which participants respond to the negative event by rating the frequency with which the thoughts were experienced using a 5-point Likert-style (ranging from 1 = never to 5 = very often). The subscales correspond to different types of counterfactual thoughts based on the direction of the thought and to whom it refers. The subscales include non-referent downward counterfactuals (e.g. "I think about how much worse things could have been"), other-referent upward counterfactuals (e.g. "If only another person or other people would have acted differently, this situation would never have happened"), self-referent upward counterfactuals (e.g. "I

think about how much better things could have been if I had not failed to take action”), non-referent upward counterfactuals (e.g. “I feel sad when I think about how much better things could have been”), and context of the negative event (e.g. “To what extent do you view the negative event as being within your personal control?”). According to Rye et al. [33], the CTNES has good internal consistency, with a Cronbach alpha coefficient across subscales ranging from .75 to .86, and a 2-week test-retest reliability ranging from .73 to .84. In the present study, the Cronbach alpha coefficient was .79 for the overall scale, and ranged between .74 and .78 for each of the subscales.

Gratitude was operationalized through the completion of The Gratitude Questionnaire – Six Item Form (GQ-6; 29). The Gratitude Questionnaire measures overall levels of gratitude, based on four elements of trait gratitude; intensity, frequency, span, and density. This measure consists of 6 items phrased as closed ended statements that measure participant’s responses to each statement using a 7-point Likert-style (ranging from 1 = strongly disagree to 7 = strongly agree). Examples of statements included are: “I have so much in life to be thankful for”, and “I am grateful to a wide variety of people”. McCullough et al. [29] suggest that the GQ-6 has good internal consistency, with a Cronbach alpha coefficient of .82. In the current study, the Cronbach alpha coefficient was .77.

## **2.2 Participants**

Participants were 128 Mary Immaculate College Limerick undergraduate students and members of the general public (50 males, 78 females) aged between 18 and 65 years ( $M = 30.875$ ,  $SD = 13.988$ ). Participation in this study was voluntary and participants were recruited using a convenience sampling method. Each participant was required to sign a consent form prior to the commencement of the study.

## **2.3 Procedure**

Testing took place in a quiet room in the presence of the experimenter. All participants were informed that the purpose of the present study was to investigate the relationship between counterfactual thinking and gratitude. Participants were requested to recall a negative event from their past and to consider the types of thoughts experienced following that event. Participants then proceeded to first complete the 20-item Counterfactual Thinking for Negative Events Scale Questionnaire resulting in the generation of counterfactual thoughts, followed by the Gratitude Questionnaire – Six Item Form. Upon completion of the GQ-6, participants completed a demographic questionnaire detailing their gender and age. Finally, participants were fully debriefed by means of a debriefing sheet issued to each individual. Procedures were approved by the Mary Immaculate College Department of Psychology Research Ethics Committee.

## 2.4 Results and Discussion

Standard multiple regression was conducted to investigate the impact of the different types of counterfactual thinking, as measured by the five CTNES subscales, on gratitude. The regression model found that counterfactual thinking accounted for 11.9% of the variance in gratitude scores as measured by the GQ-6,  $R^2_{adj} = .12$ ,  $F(5,122) = 4.45$ ,  $p < .001$ , partial  $\eta^2 = .15$ . An examination of the  $\beta$  coefficients indicated that not all aspects of counterfactual thinking (as measured using the CTNES) made a significant unique contribution to the regression model. Non-referent downward counterfactuals made the largest unique contribution to the regression model,  $\beta = .32$ ,  $t(122) = 3.57$ ,  $p < .001$ , and self-referent upward counterfactuals was the only other type of counterfactuals to contribute significantly to the model:  $\beta = -.26$ ,  $t(122) = -2.20$ ,  $p = .030$ . Other-referent upward counterfactuals, non-referent upward counterfactuals and the context of negative event were not significant contributors to the regression model (Other-referent upward counterfactuals:  $\beta = -.09$ ,  $t(122) = -1.03$ ,  $p = .308$ ; Non-referent upward counterfactuals:  $\beta = .18$ ,  $t(122) = 1.15$ ,  $p = .254$ ; and Context of negative event:  $\beta = -.15$ ,  $t(122) = -1.51$ ,  $p = .134$ ).

These results provide support for the hypothesis that counterfactual thinking has a role to play in gratitude. Non-referent downward counterfactual thinking is significantly, positively correlated with dispositional gratitude. Thoughts of how much worse things could have been is significantly associated with higher gratitude. Results also indicate a negative correlation between self-referent upward counterfactual thinking and gratitude. Thinking about how the individual could have done more to produce a better outcome is significantly correlated with gratitude, such that lower levels of these types of counterfactual thoughts are associated with higher gratitude scores.

## 3 Experiment 2: Is downward counterfactual thinking associated with gratitude?

The results of Experiment 1 indicated that there is an association between gratitude and counterfactual thinking. However, there has been wide-ranging classifications of gratitude in the research literature [29, 42, 44, 45, 46, 39], and variations in how it should be measured. Recently Morgan, Guilliford and Kristjansson [34] argue that gratitude is complex and there is need for a more extensive gratitude measure than the GQ6 that can sufficiently evaluate the multidimensional elements of gratitude, to investigate its behavioral, cognitive, attitudinal and affective aspects. The Multi-Component Gratitude Measure (MCGM) [34] encompasses these four components. In contrast to the GQ-6 [29] this measure offers a broader representation of gratitude and is presently the only valid and reliable measure that examines the individual's conceptual understanding of gratitude.

The primary aim of Experiment 2 therefore is to examine if the association between downward counterfactual thinking and gratitude would be replicated in another study using a more comprehensive measure of gratitude and to extend the findings Experiment 1. In addition to extending the findings of Experiment 1 using a more detailed measure of gratitude we also aimed to extend the findings by broadening the sample of participants using a larger online sample.

### 3.1 Materials and Design

Similar to Experiment 1 this experiment used a within-participants regression design involving The Counterfactual Thinking for Negative Events Scale (CTNES; 33), used in Experiment 1, and The Multi-Component Gratitude Measure (MCGM; 34) which contains four subscales. The four subscales include gratitude affect (e.g. “*There are so many people that I feel grateful towards*”), attitude (e.g. “*Gratitude should be reserved for when someone does not want anything in return*”), behavior (e.g. “*I express thanks to those who help me*”) and concept (e.g. “*A colleague nominates you for an award at work. If you win, you will receive recognition of your hard work and a voucher. You **are** grateful to this person for their help*”). According to Morgan et al. [34], the MCGM has good internal consistency, with a Cronbach alpha coefficient across subscales ranging from .74 to .92. In the present study, the Cronbach alpha coefficient was .85 for the overall scale and ranged between .84 and .87 for each of the subscales.

### 3.2 Participants

A sample of 440 individuals, (235 males, 205 females) took part in this study. They were aged between 18 and 74 with the majority of participants aged between “25 to 34” ( $n = 226$ , 51.36%), and the remaining participants aged, “18 to 24” ( $n = 63$ , 14.32%), “35 to 44” ( $n = 77$ , 17.5%), “55 to 64” ( $n = 20$ , 4.55%), and “65 to 74” ( $n = 14$ , 3.18%). Participants were recruited online through Amazon’s Mechanical Turk (MTurk) crowdsourcing platform [35], and each participant was paid 0.50 US dollars for taking part in the study. Participants were recruited from English speaking countries resulting in the sample of listed nationalities being: American (47.7%), Indian (45.5%), European (3.3%), and Other (3.6%; Nationalities outside of the U.S., India and Europe).

### 3.3 Procedure

Participants were recruited online through the Amazon Mechanical Turk crowdsourcing platform [35]. SurveyMonkey online software [36] was then used through an embedded link on MTurk to present the materials and collect all the participant’s responses. All participants were informed that the purpose of the present study was to investigate the relationship between counterfactual thinking and gratitude and that the study would take approximately 20 to 25 minutes to complete.<sup>1</sup> Preceding data collection, an informed consent form was issued to all participants, in which participants were asked to read carefully and indicate their consent to participate before taking part in the study.

Participants were then requested to take a moment to recall a negative event from their past and to consider the types of thoughts experienced following that event. Participants then proceeded to first complete the 20 item Counterfactual Thinking for

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<sup>1</sup> In addition to completing measures of counterfactual thinking and gratitude, participants also completed measures related to other personality variables such as life satisfaction, happiness, positive and negative affect, and blame which are not reported in this paper.

Negative Events Scale Questionnaire resulting in the generation of counterfactual thoughts and measurement of the levels and frequency of these thoughts. This was then followed by the Multi-Component Gratitude Measure. Finally, participants were fully debriefed by means of a debriefing sheet. The research was approved by the Mary Immaculate College Research Ethics Committee (MIREC).

### 3.4 Results and Discussion

Similar to Experiment 1, standard multiple regression was conducted to explore the impact of the different types of counterfactual thoughts on gratitude. The regression model accounted for 8.9% of the variance in gratitude,  $R^2 = .089$ ,  $F(5,434) = .847$ ,  $p < .001$ , partial  $\eta^2 = .098$ . An examination of the  $\beta$  coefficients indicated that not all aspects of counterfactual thinking (as measured using the CTNES) made a significant unique contribution to the regression model. Non-referent downward counterfactuals made the largest unique contribution to the model:  $\beta = .264$ ,  $t(434) = -2.533$ ,  $p < .001$ . Other-referent upward counterfactuals, non-referent upward counterfactuals, and the context of the negative event were all significant contributors to the regression model also; (other-referent upward counterfactuals:  $\beta = -.149$ ,  $t(434) = -2.764$ ,  $p = .006$ ; non-referent upward counterfactuals:  $\beta = .129$ ,  $t(434) = 2.144$ ,  $p = .03$ ; context of the negative event:  $\beta = -.168$ ,  $t(434) = -2.55$ ,  $p < .01$ ). Self-referent upward counterfactuals were not found to be a significant contributor to the model,  $\beta = -.062$ ,  $t(434) = -.91$ ,  $p = .363$ .

These results indicate that four of the five counterfactual predictor variables significantly contribute to the regression model. Non-referent downward and non-referent upward counterfactual thoughts were found to be significantly positively correlated with dispositional gratitude. Thinking about how a past negative event could have been worse/better is significantly associated with a more grateful disposition. Results also indicate a statistically significant negative correlation between other-referent upward counterfactuals and context of the negative event, and trait gratitude. Thinking about a negative event from the past in terms of how another person could have done more to produce a better outcome, and the context of the event, is significantly correlated with gratitude. Self-referent upward counterfactuals were not significantly associated with levels of gratitude.

## 4 General Discussion

The aim of this study was to investigate if there was an association between counterfactual thinking and gratitude and to explore if particular types of counterfactual thoughts were important in gratitude. Experiments 1 and 2 both provided support for the hypothesis that counterfactual thinking is involved in gratitude, as evidenced with two distinct measures of gratitude. In Experiment 1 counterfactual thinking accounted for 11.9% of the variance in gratitude scores, as measured with the GQ-6, and in Experiment 2 it accounted for 8.9% of the variance in gratitude scores, as measured with the Multi-Component Gratitude Measure. This finding is consistent with previous research which demonstrates that counterfactual thinking plays a role in positive affect. Previous studies have demonstrated a significant association between downward

counterfactual thinking and outcome satisfaction [23], relief [21], optimism [22], and luck [19, 20]. Sweeney and Vohs's [21] findings indicated that near-miss relief was significantly associated with the generation of downward counterfactuals.

In addition to finding an association between counterfactual thinking and gratitude, we also found that downward counterfactual thoughts about how things could have been worse made a larger contribution to the regression model than upward counterfactual thoughts in Experiment 1 and this pattern was found in Experiment 2 also. Thoughts of how much worse things could have been is significantly associated with a more grateful disposition. This finding is consistent with previous literature. For example, Barnett and Martinez [22] found an association between non-referent downward counterfactuals and optimism. The consideration of negative events from the past in terms of how things could have been worse, resulted in a significant positive correlation between dispositional optimism and higher levels of optimistic speculation regarding events or situations in the future.

Results from both Experiments 1 and 2 also indicate an association between upward counterfactual thinking and gratitude. Thinking about a negative event from the past in terms of how the individual themselves (Experiment 1) or someone else (Experiment 2) could have done something differently to produce a better outcome is significantly negatively correlated with gratitude, with lower levels of these types of counterfactual thoughts associated with higher levels of gratitude. However, further investigation of the role of upward counterfactual thinking in gratitude is warranted given that different aspects of upward counterfactual thinking made significant contributions to the regression models in the two experiments. It may be that the inconsistency in findings across the two experiments in relation to upward counterfactual thinking in the present study is due to the different measures of gratitude used, or it may be that the impact of upward counterfactual thinking in gratitude is more variable than the impact of downward counterfactual thinking.

Markman & McMullen [44] suggest that although the application of upward counterfactuals may be related to negative affect when there is a possibility of change to future events, upward counterfactual thinking has also indicated positive affect. They suggest that if the content of an upward counterfactual is reflective and the focus is on a better outcome, it is accompanied by positive affect. Conversely, negative affect occurs when the upward counterfactual's content is evaluative. This preparative function of counterfactuals assists individuals to interpret past actions and thus avoid similar negative outcomes in the future by directing the shift from the present state to a future alternative [7].

When interpreting the results from the present research, certain limitations should be considered. Gratitude can feasibly occur as an affective trait or state [40, 41, 42, 43]. The present research primarily focused on gratitude as an affective trait and did not examine the influence of counterfactual thinking on state gratitude (momentary feelings of gratitude individuals may experience after a particular event). Future studies might also investigate if there is a relationship between state and trait gratitude and their relationship to thinking counterfactually. Also, the possible bidirectional nature of the relationship between counterfactual thinking and gratitude has not been considered in the present research and should be explored further to examine the nature of the direction of influence.

The present research may offer further insight into future research on the beneficial effects of using a counterfactual simulation intervention in the treatment of depressive disorders given the association between gratitude and symptoms of depression [37, 38]. Previous research indicates that individuals who experience episodes of anxiety and depression often deliberate over failures or past negative events by generating counterfactuals that serve to exacerbate the symptoms [39]. A better understanding between the process of thinking counterfactually and trait gratitude may offer further insights into current positive psychological interventions in the treatment of depressive symptoms.

In conclusion, the findings of the two experiments suggest that counterfactual thinking has a role to play in gratitude, in particular, counterfactual thoughts about how things could have turned out worse. These studies are the first to investigate the association between how different types of counterfactual thoughts are involved in gratitude and highlights the need for more research to investigate this relationship. This examination of gratitude as an affective disposition may offer further insights into the functions and outcomes of thinking counterfactually.

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