



FlashReport

General attainability beliefs moderate the motivational effects of counterfactual thinking

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ARTICLE INFO

Article history:

Received 3 January 2012

Received in revised form 24 April 2012

Available online 2 May 2012

Keywords:

Counterfactual

Motivation

Self-regulation

Implicit theories

ABSTRACT

Previous research has demonstrated that upward counterfactuals generated in response to less than optimal outcomes on repeatable tasks are more motivating than are downward counterfactuals. In the present work, however, it was hypothesized that upward counterfactuals should only be motivating to the extent that one believes that improvement is generally attainable. By contrast, it was hypothesized that upward counterfactuals should actually diminish motivation and downward counterfactuals should enhance motivation to the extent that one believes that improvement is generally unattainable. In support of these hypotheses, the results of two studies indicated that incremental theorists (who believe that intelligence-related abilities are malleable) displayed greater motivation and enhanced performance in response to upward as compared to downward counterfactuals, whereas entity theorists (who believe that intelligence-related abilities are fixed) displayed greater motivation and enhanced performance in response to downward as compared to upward counterfactuals.

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Introduction

When people receive performance feedback, the manner in which they evaluate whether the feedback reflects that they are doing well often involves the use of comparison processes. One such comparison process – counterfactual thinking – involves the mental simulation of standard information. These counterfactual standards sometimes reflect imagined better realities (*upward* counterfactuals) and sometimes reflect imagined worse realities (*downward* counterfactuals) (e.g., Markman, Gavanski, Sherman, & McMullen, 1993; Roese, 1994).

In performance domains, it is often concluded that upward counterfactuals are more motivating than downward counterfactuals. Upward counterfactuals have been shown to elicit intentions to perform success-facilitating behaviors, enhance task persistence, and improve performance to a greater extent than downward counterfactuals (e.g., Markman, McMullen, & Elizaga, 2008). A critical assumption underlying these findings is that upward counterfactuals serve to initiate behavioral regulation, whereas downward counterfactuals primarily function to improve affect (e.g., Epstude & Roese, 2008; Markman & McMullen, 2003; Summerville & Roese, 2008). Specifically, diminished outcome satisfaction typically elicited by upward counterfactuals is thought to signal that a goal has not been attained and thereby enhances improvement motivation, whereas enhanced outcome satisfaction typically elicited by downward counterfactuals is thought to signal that a goal has been attained and thereby diminishes improvement motivation (e.g., Zeelenberg, 1999).

Attainability

Epstude and Roese (2008) suggested that the “master moderator” of the upward counterfactual-motivation-performance link might be opportunity perceptions. According to them, the preparative function of upward counterfactuals can best be capitalized upon when opportunities for future action exist, whereas when such opportunities are unavailable the affective function of downward counterfactuals is beneficial. We argue, however, that to maximize the preparative benefits of counterfactual thinking, individuals need to not only perceive that they have a future improvement *opportunity*, but also that improvement, itself, is *attainable* (Lockwood & Kunda, 1997). Building upon research demonstrating that upward counterfactuals increase felt preparation among individuals with high, but not low, self-efficacy (e.g., Nasco & Marsh, 1999; Sanna, 1997), we predict that if one has an opportunity to improve upon the past and believes that improvement is possible, then upward counterfactuals should serve a preparative function. However, if one has an opportunity to address a similar problem again, yet does not believe that improvement is possible, the derogated outcome evaluations elicited by upward counterfactuals should result in diminished rather than enhanced motivation. Moreover, we propose that when general attainability beliefs are low, downward counterfactuals should lead to greater task motivation than upward counterfactuals. Because considering how worse possible outcomes could have occurred typically allows individuals to evaluate their outcomes more positively, downward counterfactuals should inspire greater effort than should upward counterfactuals (e.g., Fredrickson, 1998).

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Implicit theories of intelligence

Individuals differ in their lay theories about the malleability of traits. Among the best documented are beliefs about the possibility of improving upon intelligence and related abilities (see Dweck, 2000). Some individuals endorse an *incremental* theory of intelligence, believing that intelligence is malleable, whereas others endorse an *entity* theory of intelligence, believing it to be fixed.

Implicit theories of intelligence influence a variety of reactions to negative performance. For instance, incremental theorists attribute poor performance to lack of effort, whereas entity theorists attribute poor performance to lack of ability (e.g., Butler, 2000). Additionally, incremental theorists commonly display relatively adaptive reactions to negative feedback, viewing it as an opportunity for mastery, whereas entity theorists are often threatened and discouraged by it (Zhao, Dweck, & Mueller, 1998). Finally, incremental theorists are more willing than entity theorists to engage in remedial action following poor performance (Hong, Chiu, Dweck, Lin, & Wan, 1999).

Incremental and entity theorists also respond differently to comparison information. Lockwood and Kunda (1997) demonstrated that exposure to an academic superstar enhanced self-evaluations for incremental theorists, presumably because they believed that similar success was attainable for themselves, but diminished self-evaluations for entity theorists, presumably because they believed that such success was unattainable (see also Blanton & Stapel, 2008). Furthermore, Nussbaum and Dweck (2008) found that incremental theorists were more likely to seek upward social comparisons than were entity theorists, thereby allowing the former to recover self-esteem, while entity theorists recovered self-esteem through exposure to downward social comparisons.

The present research

Our goal is to highlight the important moderating role of general attainability beliefs in the motivational consequences of upward and downward counterfactuals. In light of incremental and entity theorists' differing beliefs regarding the malleability of intelligence, we propose that incremental and entity theorists respond differently to upward and downward counterfactuals. Because incremental theorists perceive that performance improvement is attainable, and upward counterfactuals highlight a need for improvement, thoughts of how performance could have been better should translate into self-improvement motivation. Thus, upward counterfactuals generated about poor performance outcomes should be more motivating for incremental theorists than downward counterfactuals.

However, because entity theorists believe that their intelligence-related abilities are fixed, upward counterfactuals should not be motivating. In light of past research indicating that entity theorists tend to withdraw effort following poor performance outcomes (e.g., Plaks & Stecher, 2007), we hypothesize that upward counterfactuals should encourage less willingness to engage in remedial action than should downward counterfactuals. Moreover, for entity theorists, downward counterfactuals should be better suited than upward counterfactuals to encourage a willingness to expend greater effort following a negative outcome.

Two studies were conducted to test these hypotheses. Participants either imagined (Study 1) or received (Study 2) negative feedback on a test of verbal intelligence and subsequently imagined or received negative feedback on a task related to verbal intelligence. Participants then generated either upward or downward counterfactuals about their performance before they either rated their motivation to engage in remedial action (Study 1) or performed a second task (Study 2).

Study 1

Method

Participants

Seventy-nine¹ undergraduate students participated in exchange for partial course credit.

Procedure

The study was described as an investigation of the implications of using one's imagination. In order to establish a common baseline, all participants first imagined that they had received a score of 56% on a test of verbal intelligence, a score that ostensibly indicates "poor verbal intelligence," and then rated their reaction to this feedback (i.e., *disappointed*, *relaxed*, *tense*, and *discouraged*) on scales ranging from 1 ("not at all") to 9 ("extremely").

Participants then imagined performing another task diagnostic of their verbal intelligence. This task was described as comprising two separate trials with an option of completing a tutorial in between. Participants imagined that they had received a score of 59% on the first trial (once again indicating "poor performance"). Next, participants assigned to the *upward* condition were asked to "imagine how your performance on the first task could have been better," whereas participants assigned to the *downward* condition were asked to "imagine how your performance on the first task could have been worse." Participants then once again rated their reaction to the performance feedback, and indicated how motivated they felt about the task after receiving feedback (1 = "not at all"; 9 = "extremely").

Next, participants rated how useful they believed a tutorial would be for helping them prepare for a second trial (1 = "very little"; 9 = "a lot"), after which they completed Dweck's (2000) Theories of Intelligence Scale.

Results and discussion

All analyses were conducted using participants' mean intelligence theory scores as a continuous variable ($M = 3.91$, $SD = 1.10$). Counterfactual direction (1 = "upward"; 2 = "downward"), mean intelligence theory scores, and their interaction were regressed on participants' self-reported motivation for the second trial. As depicted in Fig. 1, the predicted Direction X Theory interaction emerged, $\beta = -1.271$, $p = .004$, and further tests revealed that the slopes for both incremental and entity theorists were significantly different from zero [incremental: $\beta = -1.42$, $t(76) = -2.16$, $p = .03$; entity: $\beta = 1.38$, $t(76) = 2.10$, $p = .04$]. As predicted, entity theorists reported greater motivation after generating downward (vs. upward) counterfactuals, whereas the reverse was true of incremental theorists. Further, upward counterfactuals were more motivating for incremental than entity theorists, whereas the reverse was true for downward counterfactuals [upward: $\beta = 0.65$, $t(76) = 1.98$, $p = .05$; downward: $\beta = -.62$, $t(76) = -2.27$, $p = .03$].

A parallel analysis predicting perceived tutorial usefulness also revealed a significant Direction X Theory interaction, $\beta = -1.272$, $p = .003$ (see Fig. 2), and tests once again revealed that the slopes for both incremental and entity theorists were significantly different from zero [incremental: $\beta = -1.13$, $t(76) = -2.06$, $p = .04$; entity: $\beta = 1.29$, $t(76) = 2.37$, $p = .02$]. As predicted, entity theorists expected the tutorial to be more useful after generating downward (vs. upward) counterfactuals, whereas the reverse was true for

¹ Because our participant population contained only 25% entity theorists and we did not preselect participants, we were forced to collect data until we obtained our *a priori* goal of 20 participants per cell. The final sample included 238 participants, of which we included the first 20 in each cell of the design. Additional analyses performed on a new group of 40 incremental theorists that were randomly sampled from the full sample displayed an identical data pattern.

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