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Full Title: When Do I Ponder? The Role of Elaboration in Counterfactual Thinking

Short Title: Elaboration & Counterfactual Thinking

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Short Bio:

Anuradha (Anu) Sivaraman is an assistant professor of marketing at the Alfred Lerner College of Business, University of Delaware. Anu holds a bachelor's and master's degree in statistics from Madras Christian College, India. She received her Ph.D. in business administration from the University of Houston in 2004. Anu's research focuses on counterfactual thinking, i.e. thoughts about the option that was not chosen, or the "what if." In particular, her work investigates how this thinking can be used for understanding consumption patterns and changing patterns. Her research has been published in the *Journal of Consumer Research*, *Journal of Consumer Behavior*, *Journal of Consumer Affairs*, and *Advances in Consumer Research*. At the Alfred Lerner College of Business and Economics, she teaches undergraduate and graduate courses Introduction to business and marketing courses. Anu was the recipient of the Department of Business Administration's Outstanding Faculty Award in 2015, the Alfred Lerner College of Business and Economics Outstanding Teacher Award for 2012-2013 and Outstanding Service Award for 2022-2023, and the University of Delaware Faculty Senate Commendation for Service in 2011.

Weixing Ford is an assistant professor of marketing at Texas A&M University –San Antonio. She received her Ph.D. in marketing from the University of Houston. Her primary research interest is judgment and decision-making, especially on how consumers' decision-making process may be influenced by environmental factors. She also applies game theory to study firm competition. Her research has been published in *Economics Letters*, the *Journal of Consumer Behaviour*, *International Review of Economics and Finance*, and the I*nternational Journal of Logistics*. Her recent publication was ranked as the 4th on "SSRN Top 10 Download Paper".

Suresh Sundaram is an assistant professor of marketing at the University of Delaware. He received his Ph.D. in business administration from the University of Houston and a bachelor's in instrumentation engineering from the University of Bangalore, India. Suresh has an active interest in academic research focused largely on the area of the impact of technology on marketing and consumer decision-making. He has been published in leading peer-reviewed marketing journals like the *Journal of Consumer Psychology*, *Journal of the Academy of Marketing Sciences*, and the *Journal of Personal Selling and Sales Management*. His co-authored paper in the Journal of Personal Selling and Sales Management won the journal's Best Paper Award.

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When Do I Ponder? The Role of Elaboration in Counterfactual Thinking

Keywords: Counterfactual Thinking, Elaboration, Goal Priming, Goal Strength, Argument Strength, Goal Framing

When Do I Ponder? Elaboration in Counterfactual Thinking

Abstract

The counterfactual thought such as "If only I had…" has a powerful impact on people's subsequent behavioral intentions. The literature has documented what may happen with counterfactual thinking. But little has been done to investigate *how* counterfactual thinking produces these effects. In this research, three studies provided evidence to show that elaboration rather than priming is the mechanism for counterfactual thinking to have an effect on behavioral intentions; and the factors such as argument strength, outcome severity, and goal valence may interfere with such counterfactual effects. These theoretical contributions to the counterfactual thinking literature offer important managerial implications and help marketers determine optimal persuasion strategies to influence consumers' information processing style.

Key Words: Counterfactual Thinking, Elaboration, Goal Priming, Goal Strength, Argument Strength, Goal Framing

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INTRODUCTION

"If only I had …" is quite a familiar thought for many people in their daily life. Things do not always turn out perfectly for people living in the real world. Therefore, people often ponder about what they could have done differently to obtain different and more desirable outcomes. This is called counterfactual thinking (e.g., Roese & Olson 1993; Roese 1994; Roese & Olson 1995a; 1995b; 1997). Counterfactual thinking is one of the most common and pervasive human cognitive activities (Epstude & Roese 2008). It is also an activity that can generate behavioral benefits for future goal pursuit and actions (Smallman & Roese 2009).

Behavioral consequences of counterfactual thinking (CFT) have been examined in the literature. These have included influences on information processing, motivational state, behavioral regulation, or affective consequences (e.g., Krishnamurthy & Sivaraman 2002; Epstude & Roese 2008). For example, CFT may improve self-regulatory success by providing lessons learned from past mistakes to guide future actions (Epstude & Roese 2008; Roese 1994). Similarly, CFT may increase motivation to achieve a desired end state; for example, counterfactual thinking about a failed exam may increase student preparation for future exams (e.g., Markman & McMullen 2003; Roese, Hur & Pennington 1999). In another study by Ku (2019), counterfactual emotions were found to be amplified when retailers imposed tougher restrictions on consumers, for example, consumers could only get the quantity discount within a limited time. Similarly, counterfactual thinking was also shown to play as a mechanism that enhanced consumers' motivation to elaborate on nutrition information and form product attitude (Aboulnasr & Sivaraman 2010) or to increase consumers' negative electronic word-of-mouth (eWOM) (Tran et al. 2021). In summary, prior literature has extensively explored *what* CFT is and *the consequences of* CFT.

However, how counterfactual thinking produces the aforementioned effects have not been fully explored. Questions regarding *how* CFT works are important in fully understanding its impact. The literature on goal pursuit indicates that goal regulation is usually an effortful elaboration process (e.g., Petty & Wegener 1999). As counterfactual thinking usually occurs after failed goal pursuit, present research proposes that elaboration may be the underlying mechanism for CFT

In summary, the present research aims to investigate how counterfactual thinking works to influence people's behavioral intentions: specifically, 1) whether elaboration is the underlying process for the counterfactual effects; and 2) what factors (such as argument strength, outcome severity, goal valence) may interfere with such counterfactual effects.

The remainder of the article is organized as follows: first, a conceptual background is provided regarding priming versus elaboration, argument strength, outcome severity, and goal framing. Four hypotheses are developed accordingly. Then, three studies provide empirical evidence for the hypotheses. Finally, we conclude and offer managerial implications in the general discussion section.

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CONCEPTUAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Priming or Elaboration

Some literature suggests that CFT is mostly goal-oriented (Epstude & Roese 2008; Smallman & Roese 2009), "specifying a link between a controllable antecedent and a desired end state" (Roese, Hur & Pennington 1999, p.1111). As CFT usually originates from an unsatisfying outcome or end state, goals and behavioral intentions remain activated because the goal was not achieved (Goschke & Kuhl 1993). By integrating the goal cognition literature, Epstude and Roese (2008) proposed that the impact of counterfactuals on behavioral intentions may be conceptualized in terms of goal priming. Semantic priming involves the activation of information in memory by another piece of information with similar semantic meaning (Higgins 1996). Similarly, CFT provides a context for semantic contrast between unmet goals and alternative antecedents. Laboratory studies of CFT have employed semantic goal priming to investigate the mechanism of CFT (Smallman & Roese 2009) and found that, under a sequential priming paradigm, CFT facilitated the response times for behavioral intention judgments (Smallman & Roese 2009). From these findings, one may postulate that CFT employs simple semantic priming. However, Smallman and Roese (2009) employed a "content-neutral" CFT, in which counterfactuals influence behavior in domains (e.g., health behavior) that are independent of the counterfactual context (e.g., academics) (Roese, Hur & Pennington 1999; Smallman & Roese 2009). Real-life CFT episodes involve comparison in the same domain. For example, CFT about a computer mishap

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caused by lightning may subsequently influence information processing and behavioral intentions regarding an opportunity to purchase a surge protector (Krishnamurthy & Sivaraman 2002).

Vast literature on goal pursuit and goal cognition indicates that the goal regulation process is usually an effortful elaboration process instead of an automatic heuristic process (e.g., Petty & Wegener 1999). People often think about how their behaviors can lead to the desired outcome. Given that CFT usually occurs after an action fails to achieve a goal (Epstude & Roese 2011), the question arises regarding whether elaboration is the mechanism of CFT. Smallman and Roese (2009) introduced the idea that the underlying mechanism for CFT may be “functional relation”, instead of goal priming, because a functional relation in memory reflects a more specific, goal-oriented process. The present research draws on goal cognition literature, especially the Elaboration Likelihood Model (ELM, e.g., Petty & Wegener 1999) to make a case that “elaboration” (rather than priming) may be the mechanism by which CFT impacts subsequent behavioral intentions.

Argument Strength with Novel Stimuli

To test whether elaboration or priming is the underlying mechanism for CFT effects, we need a context, through which elaboration and priming will induce different outcome patterns. The literature suggests a context for such a purpose: argument strength discriminability, that is, the difference in the persuasiveness between inferior and superior argument; and a superior argument tends to persuade better than an inferior argument (Krishnamurthy & Sivaraman 2002). According to ELM (Petty & Wegener 1999), during the elaboration process, the level of argument strength should influence behavioral intentions more acutely when message scrutiny is high (i.e., argument strength discriminability). Accordingly, if the mechanism for CFT effects is indeed an elaboration process, argument strength discriminability will be observed under CFT. Metaphorically, CFT can function like a magnifying glass, increasing people's tendency to discriminate between inferior and superior arguments.

However, according to Petty and Wegener (1999), other factors such as novel stimuli (versus familiar stimuli) may also induce elaboration due to the increased motivation to process unfamiliar information. Therefore, under novel stimuli, argument strength discriminability may be observed regardless of CFT. In contrast, under familiar stimuli, argument strength discriminability may be observed only with CFT.

On the other hand, if the underlying mechanism for CFT is priming, the consequences of priming are contingent only on the salience of an alternative (better) outcome. Hence, regardless of whether the stimuli are novel or familiar, the salience of a better outcome remains the same. As a result, the processing of arguments should not be affected by argument familiarity. Therefore, under priming, there will be no differential pattern of argument strength discriminability whether under CFT or not. This leads to hypothesis 1:

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H1: With familiar stimuli, greater argument strength discriminability will be observed only under CFT; however, with novel stimuli, similar argument strength discriminability will be observed whether under CFT or not.

If elaboration is indeed the underlying process for CFT effects, when elaboration occurs may depend on situational factors. The present research explores two possible situational factors such as outcome severity and goal framing. This helps shed light on the question of when people ponder over the "What if?".

Outcome Severity

A goal is defined as a specific state which, when attained, is instrumental in reaching the desired end state (Bettman 1979). Assessing the discrepancy between current states and goals is done continually, as people make progress toward achieving their goal states (Carver & Scheier 1982). Moreover, goals are thought to regulate motivational state and guide plans of action because they activate procedural knowledge that helps people assess their progress (Bagozzi 1992). A larger discrepancy between the current state and the goal tends to exert higher motivation and higher behavioral intention. In particular, outcome severity can be one variable that assesses such discrepancy in goal pursuit: severe consequences indicate a larger discrepancy and result in higher motivation and behavioral intention compared to moderate consequences.

Similarly, CFT always involves a more desired goal that was not achieved. This indicates a larger discrepancy between the current state and the end goal, which will result in greater goal strength and higher behavioral intention. These are the same behavioral consequences as those of severe outcomes.

When CFT and outcome severity work together, the differential effects pattern of goal framing on behavioral intention should be attenuated by CFT. In other words, without CFT, a severe outcome will increase goal strength and behavioral intention compared to a moderate outcome; however, CFT will increase goal strength and behavioral intention even for moderate outcome so that the difference in goal strength and behavioral intention between severe outcome versus moderate outcome will be smaller under CFT compared to such difference without CFT. This leads to hypothesis 2 (goal strength) and hypothesis 3 (behavioral intention) below.

H2: Engaging in CFT will increase the strength of the injured goal. This effect will be more pronounced when the consequence of the injury (i.e., outcome severity) is moderate compared to when it is severe.

H3: Behavioral intention toward products that address the injured goals will be higher in the CFT condition than in the control condition. This effect will be more pronounced for the injury that results in moderate consequences than when it results in severe consequences.

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Goal Framing

The literature on framing effects indicates that people's behavioral intentions can be influenced by varying the description of the relationship between behavior and goal attainment (Tversky & Kahneman, 1991). Specifically, negative goal frames (do not engage in the behavior and fail to attain goals) usually lead to higher motivation and therefore higher behavioral intention than positive goal frames (engage in behavior and attain goals) (Krishnamurthy, Carter & Blair 2001).

Separately, if CFT also works to increase goal strength and behavioral intention (as proposed in H2 and H3), this would have the same behavioral consequences as those of negative goal framing. When CFT and goal framing work together, the differential effects pattern of goal framing on behavioral intention should be attenuated by CFT. In other words, without CFT, negative goal framing will increase behavioral intention compared to positive goal framing; however, CFT will increase behavioral intention even for positive goal framing so that the difference in behavioral intention between negative goal and positive goal will be smaller under CFT compared to such difference without CFT. This leads to hypothesis 4.

H4: Negative goal framing will lead to higher behavioral intention towards products than positive goal framing. However, this effect will be attenuated when exposure to the framed information is preceded by CFT.

Three experiments were conducted to test these hypotheses. The purpose of Study 1 is to test hypothesis 1 in a consumer decision-making context, and examine whether elaboration or priming is the underlying process for CFT effects. Study 2 tests hypotheses 2 and 3 on outcome severity as a possible moderating factor for CFT effects. Finally, study 3 tests hypothesis 4, which suggests that goal framing may also moderate CFT effects.

STUDY 1

Subjects, Design, and Procedure

The design, stimuli, and procedure of Study 1 were identical to that of Krishnamurthy and Sivaraman (2002) (study 2) except for the novelty of the product in the advertisement. A wireless surge protector, considered novel and not widely available in the market, was used in the current study. Study 2 in Krishnamurthy and Sivaraman (2002) used a regular surge protector, which was well-known and widely available in the market. Ninety undergraduate students participated in the study. A 2 (Counterfactual Thinking: CFT vs. Control) × 2 (Argument Strength: Strong vs. Weak) between-subject factorial design was employed. All subjects in the study were first exposed to a hypothetical consumption episode (see details of Study 2 in Krishnamurthy & Sivaraman 2002). This episode described how a college student bought a computer for school work

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at the beginning of a semester, unfortunately, three weeks later, this new computer was rendered worthless due to a power surge caused by a lightning strike.

The manipulation of CFT and argument content was achieved in two stages. Following exposure to the above episode, in the first stage, participants were randomly assigned to either the CFT or control condition. Subsequently, those in the CFT condition were provided the instruction (given below); participants in the control condition did not perform any task. The participants were not informed of the impending second stage. Their responses were taken away, marking the end of stage 1.

The argument strength manipulation was achieved in the second stage by exposing participants to an ad with either strong (superior) or weak (inferior) arguments. Ad involvement was collected as a measure for elaboration. In the end, participants were debriefed and thanked for their participation.

Independent Variables

Counterfactual Thinking. Participants in the CFT condition received the following instruction:

> *"We would like you to do what is called "if-only" thinking. In this kind of thinking, you look back at an experience and try to think of how the outcome could have been different. For example, if you get stuck on the freeway and go late for an interview, you may think "If only I had used the side roads, I could have been on time." We would like you to generate such "if-only" thoughts for*

the computer experience you just saw. To help you, we have provided four sentences beginning with "if-only" and blanks for you to fill in. Fill in as many blanks as possible. Please read the sentences completely before and after filling in the blanks to ensure that it reads well as an "if-only" thought."

As in Study 1, the participants in the control condition did not engage in any task. After approximately ten minutes, all participants proceeded to the second phase in which argument strength was manipulated.

Argument Strength. The argument strength manipulation was achieved by varying the detail associated with the functional aspects of the surge protector. The message in strong argument condition provided the following information derived from websites on surge protection:

- Has six outlets for use with various components.
  - This means you can simultaneously protect up to 6 systems such as computer systems, modems, phone/cable lines, and satellite systems.
- Protects against a wide range of A/C power surges.
  - This is possible because our SignalProtect circuitry employs thermal fusing and maximum energy dissipation
- 99% Reliability
  - This is possible because our construction uses highly reliable 24K gold connectors.
- $20,0000 connected equipment protection warranty.

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- If connected equipment and/or the surge protector are damaged, they will be replaced or repaired at no cost to you.

The secondary bullet information was excluded in the weak arguments condition. The argument strength manipulation was the same as the one used in Krishnamurthy and Sivaraman (2002, Study 2).

Dependent Variables

Ad Evaluations. Opinion toward the ad was assessed using four nine-point semantic differential items (The advertisement I just saw was: Bad/Good; Non-Likeable/Likeable; Unpleasant/Pleasant; Not Enjoyable/Enjoyable). The average of these items was employed as an indicator of ad evaluation (α = 0.89).

Brand Evaluations. Brand evaluation was assessed using three nine-point semantic differential items (My opinion of Pro Surge 470 is: Bad/Good; Unfavorable/Favorable; and Negative/Positive). The average of these items was employed as an indicator of brand evaluation (α = 0.96).

Ad Involvement. Subjects also rated their involvement with the ad using five items from Zaichkowsky's (1994) scale (appealing/unappealing; fascinating/mundane; worthless/valuable; involving/uninvolving, and not needed/needed), which was one of the proxy measures for elaboration in the literature (Zaichkowsky 1994). The items after reverse coding were averaged to form a composite measure (α = 0.82). These were assessed following the ad and brand evaluations.

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Results

The means for dependent variables and the mediator are consolidated in Table 1.

Ad Evaluations. There was a marginally significant effect of CFT, $F(1, 86) = 3.63$, $p < .07$, with CFT resulting in more favorable ad evaluations compared to control (5.80 vs. 4.98). This effect was qualified by a marginally significant interaction between argument strength and CFT, $F(1, 86) = 2.81$, $p < .10$. When arguments were weak, engaging in CFT significantly increased ad evaluations compared to the control condition (5.89 vs. 4.36, $F(1, 86) = 2.34$, $p < .03$). When arguments were strong, engaging in CFT did not affect the ad evaluations compared to the control condition (5.71 vs. 5.61, $F(1, 86) < 1$, NS).

Brand Evaluations. There was a highly significant effect of argument strength, $F(1, 86) = 8.64$, $p < .01$, with strong arguments resulting in higher brand evaluations compared to weak arguments (7.10 vs. 5.81). There also was a significant interaction between argument strength and CFT, $F(1, 86) = 5.70$, $p < .02$. Increasing the argument strength significantly enhanced brand evaluations in the control conditions, 4.99 versus 7.32, $F(1, 86) = 4.30$, $p < .01$, but had no effect on brand evaluations in the CFT conditions, 6.64 versus 6.88, $F(1, 86) < 1$, NS.

Involvement in Ad Processing. An ANOVA was conducted to test whether the main effect of CFT on involvement was significant, and whether this was moderated by argument strength. Results of the analysis showed a marginally significant main effect of CFT on involvement, $F(1, 85) = 3.30$, $p < 0.08$ with CFT resulting in higher involvement

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than the control condition (5.73 vs. 5.10). However, this effect was not moderated by argument strength, $F(1, 85) = 1.40$, NS.

Insert Table 1 here

Involvement in Ad Processing (*Elaboration*) *as mediator*. Involvement in ad processing was used as the mediator to measure the extent of elaboration. Correlation analysis was used to test for evidence that the mediator, involvement, has discriminant validity from the dependent and independent variables. The correlations of the variables are presented in Table 2. Variance inflation factor (VIF) diagnostics showed no multicollinearity issues (VIFs < 2.00). To test the mediation hypotheses, we used PROCESS Model 4 from Hayes (2013). The model is presented in Figures 1A and 1B.

Insert Table 2 here

Insert Figures 1A and 1B here

The results of the mediation analysis using PROCESS Model 4 are consolidated in Tables 2a and 2b. Results of the test show that elaboration measured via ad involvement mediates the relationship between CFT and Ad evaluations ($A_1 \times B_1 = 0.54$; $SE = 0.25$; 95% $CI = [0.6, 1.03]$. The mediation is complete as the direct effect of CFT on ad evaluations (and brand evaluations) becomes non-significant once ad involvement is added as a mediator. Ad involvement also mediates the relationship between CFT and brand evaluations ($A_2 \times B_2 = 0.38$; $SE = 0.21$; 95% $CI = [0.03, 0.83]$. The mediation analysis results demonstrate the role of elaboration, assessed as ad involvement, is the source of the effects observed in Krishnamurthy and Sivaraman (2002).

Insert Tables 2A and 2B here

Discussion

Two aspects of Study 1 are noteworthy. First, it speaks to the process of CFT and implicates elaboration rather than priming as a source of the effects observed in Krishnamurthy and Sivaraman (2002). H1 was supported.

Second, study 1 contributes a boundary condition to the CFT literature. Krishnamurthy and Sivaraman (2002) did not address the question of whether CFT will *always* increase the critical processing of arguments. The results of this study demonstrate that novel stimuli mitigated the extent to which CFT produced argument strength discriminability compared to familiar stimuli.

STUDY 2

Subjects, Design, and Procedure

One hundred and sixty-eight undergraduate students participated in the study. A 2 (Outcome Severity: Moderate Outcome vs. Severe Outcome) × 2 (Counterfactual Thinking: CFT vs. Control) between-subject factorial design was employed in this study. All participants in the study were first exposed to a hypothetical consumption episode. This episode described a consumption experience with flu medication in which a person chooses between two medications and the side effects of the medication affects his performance at a subsequent interview. The episode is described below.

> *Imagine that Joe, a graduating senior, has a job interview coming up in a few days…Like others in this situation, he is eager to do his best, having been on the job market for a while without much success…As luck would have it, Joe gets a little sick with flu-like symptoms…Anxious to avoid that coming in the way of his job interview, he goes to the pharmacy to see what he can get…In the pharmacy, he sees two medications, as follows: a) Brand A: Promises <u>lower side effects</u> compared to the average brand. b) Brand B: Promises <u>better relief</u> compared to the average brand. Joe picks up Brand B, the one that promises better relief, and takes it immediately. Sure enough, he gets good relief. But then, just before the interview, he experiences some side effects, especially stomach cramps. This causes him to not do so very well in his interview. He finds out that he scored only 35 points out of 50, which was <u>average</u>. Thus, although he was not eliminated in the first round, he goes to the second round as a <u>weak candidate</u> because the points from the first round are added to the points from the second round when determining how good the candidate is.*

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The severity of the outcome was manipulated as a part of the scenario at two different levels – moderate and severe. Following exposure to the above episode, participants in the two groups were randomly assigned to either the CFT or control condition. Then, they responded to the dependent variable about what Joe should do in the future if he had the same set of choices. They were also asked to provide a listing of the thoughts induced by this information. Afterward, participants were debriefed and thanked for their participation.

Independent Variables

Counterfactual Thinking. Participants in the CFT condition received the following instruction: "When people have experiences that don't turn out the way they like, they sometimes think about how things might have turned out better if only something had been different, or they had done something differently. Imagine that you are in Joe's shoes. Can you think of "if-only" thoughts for Joe's experience? Please write your responses by completing the following if-only thoughts." Subjects in the control condition received the following instruction: "Tell us what you thought of Joe's experience in the space given below."

Outcome Severity. The outcome of the interview was stated as being "far below average" or "average" based on Joe's score in the first round of the interview. The score was 20 out of 50 points in the "far below average" (severe) condition and 35 out of 50 points in the "average" (moderate) condition. The outcomes were further emphasized by

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stating that Joe was "eliminated after the first round" and "went to the second round as a weak candidate" respectively.

Outcome Severity Manipulation Check: The following item was used as a measure of outcome severity: "Overall, how would you rate Joe's interview performance? Not at all good (1)/Somewhat good (7)."

Dependent Variables

Goal Strength. Goal strength was measured through attribute importance scores. The level of importance assigned to each attribute of flu medication was measured using a constant sum scale. The instruction was as follows: "Suppose you are in Joe's position, and you had to distribute 100 points among the following aspects of medications, how would you distribute them so that the more important aspects get more points? a) How effective the medicine is, b) What its side effects are, and c) Other aspects (please specify)." An examination of the points for other aspects of the medicine revealed that in almost all cases, the respondents were in fact mentioning side-effects. Therefore, the last two categories collapsed and considered the total to represent the importance of side effects. The number of points given for avoiding side effects was taken as a measure of the strength of the goal to avoid side effects.

Behavioral Intention. Notice that in the consumption experience, the decision-maker had the option of choosing between a low-side effects medication and a high-effectiveness medication and chose the latter. To test whether CFT increased behavioral

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intentions about the decision option that served the elevated goal (of lower side effects), study 2 examined what the decision-maker should do if he were faced with the same pair of choices as before. Hypothesis 3 was tested by specifying a categorical model predicting choice as a function of CFT and outcome severity.

Results

The means for dependent variables are consolidated in Table 3. The data for the continuous measures were analyzed through a 2 × 2 between-subject ANOVA, with outcome severity and CFT as two predictors. The data for the choice measure was analyzed using PROC CATMOD in SAS that allows specification and interpretation of ANOVA-like effects for categorical dependent variables.

Outcome Severity Manipulation Check: Consistent with the manipulation, a highly significant effect of outcome severity on the manipulation check item was observed, $F(1,161) = 84.20$, $p < .01$. As expected, those in the severe outcome condition rated Joe's interview performance lower than those in the moderate outcome conditions (2.81 vs. 4.11). No other effects achieved significance.

Goal Strength. Study 2 results show a significant interaction between CFT and outcome severity on goal strength for side effects, as indicated by the points awarded to side effects $F(1,161) = 4.64$, $p < .05$. The hypothesis was that CFT would elevate goal strength more in the moderate outcome condition relative to the severe outcome condition, and this is indeed what occurred in study 2. In the moderate outcome condition, CFT did elevate goal strength as expected, though only marginally, 39.15

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versus 45.58, $p < .10$. In the severe outcome condition, there was no difference in the CFT versus control condition, 46.89 versus 41.77, NS. H2 received support.

Behavioral Intention. These results indicated a marginally significant main effect for outcome severity, $\chi^2 = 3.41$, $p < .07$, indicating that decision makers were marginally more likely to choose the low-side effect option in the severe outcome condition compared to the moderate outcome condition, 80% versus 68%. This validates the basic assumption that the more extreme outcome would cause an increase in the baseline goal strength and result in intentions consistent with such an increase. More importantly, study 2 results show a significant interaction between CFT and outcome severity, as hypothesized $\chi^2 = 7.15$, $p < .01$. In the moderate outcome condition, 55% in the control condition and 79% of those in the CFT condition choose the low-side effect option, $\chi^2 = 5.25$, $p < .05$. In the severe outcome condition, the comparable numbers were 88% versus 73%, $\chi^2 = 2.65$, $p < .10$, indicating that CFT did not increase the likelihood of choosing the low side effect option. Thus, H3 received support.

Insert Table 3 here

Discussion

The results in Study 2 show that outcome severity may moderate the CFT effects. Severe outcome usually increases goal strength and behavioral intentions because of the larger discrepancy between the severe outcome (compared to the moderate outcome) and the desired end goal. However, CFT will result in an increase in goal strength and behavioral intention even for the moderate outcome.

STUDY 3

Subjects, Design, and Procedure

Seventy-seven undergraduate students participated in the study. A 2 (Goal Frame Valence: Positive vs. Negative) × 2 (Counterfactual Thinking: CFT vs. Control) between-subject factorial design was employed in this study. All participants in the study were first exposed to a hypothetical consumption episode. This episode was identical to that of the moderate outcome severity condition of study 2.

The manipulation of CFT was achieved in a manner like that of study 2. All participants then received the following information regarding a new flu medication.

> *A major pharmaceutical company is introducing a flu medication…This flu medication is said to be non-habit forming and is now available over the counter at all neighborhood pharmacies… It also provides quick and complete relief from all flu symptoms and has the lowest degree of side effects compared to all the other medications on the market…It is safe for adults and children 12 or*

older…The advertisement also gives a website you could visit for new information.

The goal framing manipulation followed the new product information. Participants were randomly assigned to either positive frame or negative frame conditions. Participants then responded to measures pertaining to the dependent variables, a series of questions about how Joe should respond to a new medication. Participants were also asked to provide a listing of the thoughts induced by the new product information. Finally, they were debriefed and thanked for their participation.

Independent Variables

Counterfactual Thinking. The manipulation of CFT was identical to study 2.

Frame Valence. The framing manipulation was achieved as follows. Participants in the negative goal framing condition received the following instruction: "Reading all the above information, Joe thinks to himself, "By not checking this website, I give up the possibility of finding a medication that gives complete relief from flu symptoms." Participants in the positive goal framing condition received the following instruction: "Reading all the above information, Joe thinks to himself, "By checking this website, I get the possibility of finding a medication that gives complete relief from flu symptoms." These instructions fit the description of goal frames because they link an action to an outcome (Levin, Schneider, & Gaeth 1998). The difference in valence was achieved by emphasizing what the decision maker stands to gain versus lose.

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Dependent Variables

Behavioral Intentions. Behavioral intentions were assessed using a set of four measures that focused on what Joe's response should be if a new drug promising lower side effects were on the market. The first two items measured the likelihood of collecting more information about the new drug. The last two items measured the likelihood of considering the medication for one's self or friends. The four items are as follows: "If you were in Joe's shoes, how likely are you to visit the website for information about the new medication?"; "If you were in Joe's shoes, how likely are you to get more information about the new medication?"; "If you were in Joe's shoes, will you be likely to consider the new medication the next time you have flu-like symptoms?; "If you were in Joe's shoes, how likely are you to suggest the new medication to a friend suffering from flu-like symptoms?". The average of these items was employed as an indicator of behavioral intentions ($\alpha = 0.81$).

Exploratory factor analysis was conducted on the four items. The items loaded on two factors. The first factor consisted of the first two items that measured the likelihood of collecting more information about the new medication. This factor was labeled as the "likelihood of collecting more information." The second factor comprised of the last two items measuring the likelihood of considering the medication for oneself or friends. This factor was labeled as "likelihood of considering the new medication."

Results

The means for dependent variables are consolidated in Table 4. The data for the continuous measures were analyzed through a 2 × 2 between-subject ANOVA, with CFT and frame valence as the two predictors.

Behavioral Intentions - Likelihood of collecting more information: There were no significant main effects or interaction effects of frame valence and CFT on this set of behavioral intention measures. Under the control condition, the mean rating of the subjects in the negative framing condition was higher compared to those in the positive framing condition (5.11 vs. 5.03). However, under CFT condition, such enhanced behavioral consequences of negative framing disappeared. Instead, the mean rating of the subjects in the negative framing condition became lower than that of the positive framing condition (4.42 vs. 4.76). This behavioral pattern was directionally (although not significantly) consistent with H4.

Behavioral Intentions - Likelihood of considering the new medication: H4 posited that the likelihood of considering new medication should have been higher under negative goal framing compared to positive goal framing and this effect should have been attenuated when preceded by CFT. This pattern was indeed observed in Study 3. There was a marginally significant interaction between frame valence and CFT on the likelihood of considering the new medication ($F(1,72) = 3.36$, $p < .08$), and the results were directionally consistent with H4. In the control condition, the mean rating of the subjects in the negative goal framing condition was higher compared to that in the positive goal framing condition (5.78 vs. 5.26). Again, such enhanced behavioral

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consequences of negative framing disappeared in the CFT condition: the mean rating of the subjects in the negative framing condition became lower than that of the positive framing condition (5.22 vs. 5.83). These results provided evidence for supporting hypothesis 4.

Insert Table 4 here

Discussion

The results in Study 3 show that goal frame valence may also interfere with the capability of CFT to impact behavioral intentions. Negative goal framing usually increases behavioral intentions because people are usually motivated more by loss compared to gains (Tversky & Kahneman 1991). However, when CFT is induced, the elaboration from CFT would reduce such goal-framing effects.

GENERAL DISCUSSIONS

While ample literature has investigated *what* may happen with counterfactual thinking, little has been done to address *how* CFT produces these effects. The present

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research aims to contribute to the literature by examining the underlying process for CFT effects and some possible moderating factors.

The literature pointed to two directions for possible avenues why CFT produces the documented effects: semantic goal priming or goal-oriented elaboration. Most evidence supported the goal priming thesis in a laboratory setting (Roese, Hur & Pennington 1999; McMullen & Markman 2000; Smallman & Roese 2009). Yet, little or no empirical evidence existed to support the elaboration process other than speculation or hints in recent literature (Smallman and Roese 2009; Epstude and Roese 2011). The present research employed an empirical approach that is more inducible for elaboration in order to rule out priming and prove goal-related elaboration as the process for *some* CFT effects organically occurred in daily life as opposed to laboratory manipulation (aka priming). It is important to note that the present research does not intend to reject or disprove priming as a possible process for counterfactual effects, instead, this research aims to show that besides priming, elaboration can also be a possible process for CFT, especially when priming manipulation is not employed.

Study 1 successfully demonstrated that elaboration was indeed the process of how CFT produced its effects. Specifically, under normal circumstances (e.g. familiar information), CFT will induce greater persuasiveness from strong argument compared to weak argument due to increased elaboration; however, novel information will increase elaboration on its own, which muffles the aforementioned argument strength discriminability from CFT otherwise. Such differential behavioral pattern was not expected to be observed if priming was the underlying process. Therefore, the present

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research proved that elaboration, not priming, can be the process for some counterfactual effects to occur.

Study 2 and study 3 show that outcome severity and goal frame valence can moderate the CFT effects. CFT produced greater behavioral intentions when the outcome was moderate or when goal framing was positive, because, without CFT, decision-makers may not bother to elaborate on their decisions when they are not faced with really bad consequences (severe outcome or negative framing). However, such bad consequences induced great elaboration on their own, whether decision-makers engage in CFT or not. Therefore, a prominent effect of CFT was not observed in the bad consequences conditions as expected.

The present research not only provides theoretical contributions to the CFT literature but offers important managerial implications. Marketers need to be cautious while using counterfactual thinking in their promotion or marketing messages. For example, when marketers try to sell a product that consumers are familiar with, it will be a good strategy to motivate consumers to engage in CFT about the dire consequences if they had not purchased this product (like the power surge protector in study 1). However, if the product is novel to consumers, CFT is no longer necessary in order to motivate consumers to think “hard”. Furthermore, CFT would be a more effective marketing tool for promoting products or services that come with moderate or positive decision consequences such as electronic devices or cruise vacations instead of something with severe or negative consequences such as medical treatments or auto insurance. Similarly, the marketing messages can be designed to bring more salience to

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the injured (sub)goals, through the magnifying glass of CFT, and therefore motivate consumers to purchase. In summary, marketers will have a greater understanding of whether using counterfactual persuasion messages may impact consumers' behavioral intentions when they are aware of elaboration as the underlying process for counterfactual effects.

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TABLE 1

CONSOLIDATED MEANS FROM STUDY 1

	Counterfactual Thinking		Control	
Dependent Measure	**Weak arguments**	**Strong arguments**	**Weak arguments**	**Strong arguments**
Ad Evaluations	5.89	5.71	4.36	5.61
	(1.68)	(1.97)	(1.85)	(2.05)
Brand Evaluations	6.64	6.88	4.99	7.32
	(1.40)	(2.03)	(2.13)	(1.87)
Involvement	5.67	5.79	4.62	5.57
	(0.45)	(0.31)	(0.29)	(0.32)

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TABLE 2

CORRELATION MATRIX (STUDY 1)

	Ad Evaluations	Brand Evaluations	Involvement in Ad Processing
Ad Evaluations	1	0.56^{**}	0.63^{**}
Brand Evaluations		1	0.42^{**}
Involvement in Ad Processing			1

$^{**}p < 0.01$; $^{*}p < 0.05$

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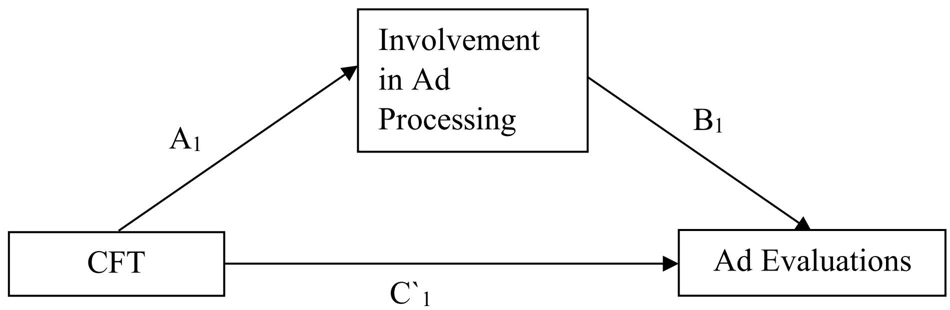
FIGURE 1A

MEDIATION MODEL: AD EVALUATIONS



Indirect effect: A_1 x B_1 = 0.54, Boot SE = 0.25, 95% Boot CI = [0.6, 1.03]

TABLE 2A

MEDIATION ANALYSIS RESULTS FOR AD EVALUATIONS FROM STUDY 1

	β	**SE**	**95% of CI (LL; UL)**
A_1	0.71**	0.34	0.35; 1.39
B_1	0.75***	0.10	0.55; 0.96
C'_1	0.27	0.42	-.018; 1.64

LL (UL): Lower (Upper) 95% level of confidence interval

*Bootstrap sample size = 5000. *** $p < 0.01$; ** $p < 0.05$; *$p < 0.10$*

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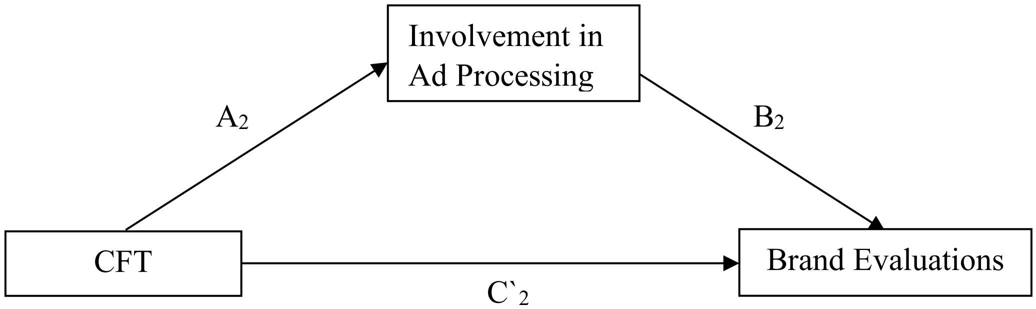
FIGURE 1B

MEDIATION MODEL: BRAND EVALUATIONS



Indirect effect: A_2 x B_2 = 0.38 , Boot SE = 0.21, 95% Boot CI = [0.03, 0.83]

TABLE 2B

MEDIATION ANALYSIS RESULTS FOR BRAND EVALUATIONS FROM STUDY 1

	β	**SE**	**95% of CI (LL; UL)**
A_2	0.71**	0.34	0.35; 1.39
B_2	0.53***	0.13	0.27; 0.79
C'_2	0.34	0.43	-0.50; 1.19

LL (UL): Lower (Upper) 95% level of confidence interval

*Bootstrap sample size = 5000. *** p < 0.01; ** p < 0.05; *p < 0.10*

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TABLE 3

CONSOLIDATED MEANS FROM STUDY 2

Dependent Measure	Counterfactual Thinking		Control	
	Moderate Outcome	**Severe Outcome**	**Moderate Outcome**	**Severe Outcome**
Goal Strength	45.58 (15.86)	41.78 (18.19)	39.15 (17.18)	46.89 (17.33)
Behavioral Intentions *(% of those who chose low side effect option)*	79	73	55	88

Note: Standard deviations are in parentheses.

[a] indicates a choice measure

TABLE 4

CONSOLIDATED MEANS FROM STUDY 3

Dependent Measure	Counterfactual Thinking		Control	
	Negative Framing	**Positive Framing**	**Negative Framing**	**Positive Framing**
Behavioral Intentions:				
Likelihood of collecting more information	4.42 (1.95)	4.76 (1.97)	5.11 (1.62)	5.03 (1.73)
Likelihood of considering the new medication	5.22 (1.31)	5.83 (1.61)	5.78 (0.75)	5.26 (1.66)

Note: Standard deviations are in parentheses.