



## LBS Research Online

Y Gu and S Botti and D Faro

Seeking and avoiding choice closure to enhance outcome satisfaction

Article

This version is available in the LBS Research Online repository: <http://lbsresearch.london.edu/974/>

Gu, Y and Botti, S and Faro, D

(2018)

*Seeking and avoiding choice closure to enhance outcome satisfaction.*

Journal of Consumer Research.

ISSN 0093-5301

(In Press)

DOI: <https://doi.org/10.1093/jcr/ucy025>

Oxford University Press

<https://academic.oup.com/jcr/advance-article/doi/1...>

© 2018 Journal of Consumer Research Inc. This is a pre-copyedited, author-produced PDF of an article accepted for publication in Journal of Consumer Research following peer review. The version of record: Yangjie Gu, Simona Botti, David Faro (2018) Seeking and Avoiding Choice Closure to Enhance Outcome Satisfaction, Journal of Consumer Research, ucy025, is available online at <https://academic.oup.com/jcr/advance-article/doi/10.1093/jcr/ucy025/4956242> and <https://doi.org/10.1093/jcr/ucy025>

---

Users may download and/or print one copy of any article(s) in LBS Research Online for purposes of research and/or private study. Further distribution of the material, or use for any commercial gain, is not permitted.

Seeking and Avoiding Choice Closure to Enhance Outcome Satisfaction

YANGJIE GU

SIMONA BOTTI

DAVID FARO

Yangjie Gu is assistant professor of marketing, HEC, Paris, 1 Rue de la Libération, 78350 Jouy-en-Josas, France (gu@hec.fr). Simona Botti is professor of marketing, London Business School, Regent's Park, London NW1 4SA, United Kingdom (sbotti@london.edu). David Faro is associate professor of marketing, London Business School, Regent's Park, London NW1 4SA, United Kingdom (dfaro@london.edu). The first two authors contributed equally to this research. Correspondence: Yangjie Gu. The authors thank the HEC Foundation and London Business School for financial support, the behavioral labs at Tilburg University and London Business School, and Zareen Choudhury, Nasima Kaker, Koen Lavrijssen, and Ileen Verbeek for their assistance in the data collection. They are also grateful to the Editor, Associate Editor, and three reviewers for their guidance throughout the process. Supplementary materials are included in the web appendix accompanying the online version of this article.

## ABSTRACT

Consumers gain choice closure when they perceive a sense of finality over a past decision and limit comparisons between the selected and the forgone options. We investigate consumers' ability to make strategic use of choice closure to enhance outcome satisfaction. Seven studies show that consumers experience greater satisfaction when they achieve choice closure with an inferior outcome and when they do not achieve choice closure with a superior outcome; however, they expect to be more satisfied by avoiding choice closure with an inferior outcome and by seeking it with a superior outcome. We provide a rationale for this experience–expectation contrast based on rule overgeneralization. Consumers form their expectation on an implicit rule learned and internalized in a context in which it is appropriate and advantageous: when they aim to increase satisfaction with a future choice; however, consumers erroneously apply the same implicit rule to a different context, one in which they aim to increase satisfaction with a past choice. We conclude that consumers are unlikely to be able to make strategic use of choice closure to enhance satisfaction with the outcome of a decision they have made.

Keywords: choice closure; outcome valence; satisfaction; prediction error; rule overgeneralization

*“Honestly, though, does choice even come into it? Is it my fault that the good times fade to nothing while the bad ones burn forever bright?”*

David Sedaris, “Leviathan,” *The New Yorker*, 5 January 2015, 28–31.

The opening quote refers to individuals’ tendency to perceive certain memories as more psychologically closed and others as more mentally alive. Psychologists have studied this varying tendency for closure with respect to life events (Beike and Wirth-Beaumont 2005). Recently, the process by which people gain a sense of finality over their past has been examined in relation to choices (Gu, Botti, and Faro 2013): consumers achieving *choice closure* come to perceive a decision as finished and resolved and limit post-choice comparisons between the selected and the rejected options. This sense of choice finality can be externally triggered without consumers being aware of it, for example by asking them to close a menu after selecting one of the featured food items.

This paper studies whether consumers are able to use choice closure as a means to enhance satisfaction with the outcome of a decision they have made. Imagine a consumer who picked a bad dish at a long-awaited celebratory dinner. As suggested by the opening quote, this choice may be inherently more likely to “burn forever bright,” compelling the consumer to reconsider the potentially superior menu options she had discarded. If she intended to still enjoy her dinner, would she follow this natural inclination, or would she resist it and seek choice closure by keeping the menu closed? Now imagine a consumer picking a good dish who also wants to make the most of a celebration. Would he let his choice “fade to nothing,” neglecting to consider how disappointed he would have been with an inferior meal, or would he instead deliberately avoid choice closure by keeping the menu open?

The answers to these questions depend on consumers' expectation for how choice closure affects satisfaction with inferior and superior decision outcomes. If this expectation were accurate, consumers would be able to make strategic use of choice closure to enhance satisfaction with past choices; on the contrary, we show that consumers' expectation for choice closure does not match their experience. Specifically, we find that consumers are more satisfied when they achieve choice closure with an inferior decision outcome and when they do not achieve it with a superior decision outcome, but they expect to be more satisfied by avoiding choice closure with an inferior outcome and by seeking it with a superior outcome. We provide a rationale for this contrast between experience with and expectation for choice closure based on rule overgeneralization (Arkes and Ayton 1999). Consumers form their expectation on an implicit rule learned and internalized in a context in which it is advantageous: when the aim is to increase satisfaction with a future choice. However, consumers erroneously apply this rule to a different context, one in which the aim is to increase satisfaction with a past choice.

### **CHOICE CLOSURE AND OUTCOME SATISFACTION**

Decisions typically require individuals to compare choice-set options in order to identify the best match with their preferences; once they have identified a preferred option, the decision is complete, and they are assumed to move on to consume and evaluate this option in isolation (Bettman, Luce, and Payne 1998). Literature on regret and option attachment (Carmon, Wertenbroch, and Zeelenberg 2003; Zeelenberg 1999), however,

indicates that individuals are often unable to deem the decision complete and tend to re-assess the alternative already chosen relative to the alternatives already discarded.

Choice closure helps consumers overcome this tendency by allowing them to perceive the decision as final and to limit comparisons between the selected and the forgone options (Gu et al. 2013).

External interventions can, unbeknown to consumers, trigger choice closure and influence satisfaction with the outcome. Participants who closed a biscuit menu or covered chocolates with a lid after choosing from a large assortment, relative to those who did not, felt greater choice finality and made fewer post-choice comparisons (Gu et al. 2013). Comparisons across alternatives with both meaningful disadvantages and meaningful advantages tend to reduce the attractiveness of the selected option because the relative disadvantages loom larger than the relative advantages (Brenner, Rottenstreich, and Sood 1999; Tversky and Shafir 1992). Thus, the sense of finality triggered by the physical act of closure increased participants' liking of the selected biscuit or chocolate because it limited comparisons that would have hurt its evaluation.

If the limitation of unfavorable comparisons entailed by choice closure enhances outcome satisfaction, the limitation of favorable comparisons should have the opposite effect. Research suggests that consumers' likelihood of engaging in comparisons that are unfavorable or favorable to the subjective value of a target depends on the perceived relative inferiority or superiority of that target, respectively (Hsee and Leclerc 1998; Simonson and Tversky 1992). In line with this literature, we expect that the perceived inferiority or superiority of the chosen option determines the types of post-choice comparisons that consumers make: an outcome seen, after the choice, as having mainly

disadvantages relative to the forgone options is likely to draw post-choice comparisons that hurt its evaluation, whereas an outcome seen as having mainly relative advantages is likely to draw comparisons that enhance its evaluation.

We hypothesize that the effect of choice closure on consumers' satisfaction with the outcome of a choice they have made depends on the perceived valence of that outcome. Achieving, versus not achieving, choice closure makes consumers more satisfied with an inferior outcome because the sense of finality limits comparisons that are unfavorable to the attractiveness of that outcome. Achieving, versus not achieving, choice closure, however, makes consumers less satisfied with a superior outcome because the sense of finality inhibits favorable comparisons:

**H1:** Consumers are more satisfied when gaining choice closure with an inferior outcome and when not gaining choice closure with a superior outcome.

Thus, choice closure may affect the subjective evaluation of inferior and superior decision outcomes and can be externally triggered without consumers being aware of it, for example by asking them to close a menu or a lid. It is yet unknown, however, whether consumers can be proactive about choice closure (Li, Wei, and Soman 2010): do they correctly anticipate the effect of choice closure on outcome satisfaction, and are they therefore able to make strategic use of external triggers of closure? For example, can the diner in the initial vignette properly forecast how closing the menu affects her enjoyment of the selected meal, and can she deliberately seek or avoid this trigger to enhance her satisfaction with the choice she has made?

## **SEEKING AND AVOIDING CHOICE CLOSURE**



In the previous section we hypothesized that the experience of satisfaction following choice closure depends on outcome valence; in this section we predict that outcome valence also influences the tendency to seek and avoid choice closure. We base this prediction on research that has investigated the relationship between valence and each of the two elements of choice closure: sense of finality and comparison limitation. Literature on psychological closure has found that unpleasant memories are perceived as inherently more emotionally vivid and less final than pleasant memories (Beike, Adams, and Wirth-Beaumont 2007; Beike and Wirth-Beaumont 2005). Literature on decision making has found that the generation of counterfactuals and the search for information about forgone options emerge more naturally as a result of negative, rather than positive, events (Kahneman and Miller 1986; Roese 1997). This research suggests that consumers' natural reaction to an inferior outcome is to avoid choice closure whereas their natural reaction to a superior outcome is to seek choice closure.

Natural reactions are well-practiced responses learned and internalized in a context in which they bring desirable outcomes (Arkes and Ayton 1999; Hsee and Ruan 2016). Previous research indicates that the tendency to avoid choice closure with an inferior outcome, and to seek it with a superior outcome, is advantageous in the context of enhancing future satisfaction. The experience of a negative event motivates individuals to improve, as it stimulates upward counterfactuals that better prepare one for the next occasion and prompts the identification of corrective actions (Epstude and Roese 2008; Markman et al. 1993; Roese 1997). Thus, not achieving choice closure with an initial inferior outcome, as compared to achieving it, is more likely to encourage reconsideration of the decision process that led to that outcome. This reconsideration

allows consumers to learn from this process, improve a subsequent decision, and increase satisfaction with a similar future choice.

The experience of a positive event, in contrast, reduces the motivation to improve, as further ameliorating a result that is already good enough may not be worth the required mental effort (Beike and Wirth-Beaumont 2005; Simon 1955). This resolution represents a more efficient allocation of cognitive resources and leads to lower regret and more positive affective and behavioral responses (Iyengar, Wells, and Schwartz 2006; Ma and Roese 2014; Schwartz et al. 2002). Thus, achieving choice closure with an initial superior outcome, as compared to not achieving it, is more likely to encourage settling on, rather than reconsidering, the decision process that led to that outcome. Settling on this process allows consumers to make a good-enough subsequent decision in an efficient fashion, reduce the discontent associated with spending unnecessary mental energy, and increase satisfaction with a similar future choice.

In the next section we argue that the tendency to avoid choice closure with an inferior outcome and to seek it with a superior outcome, which is functional to enhancing future satisfaction, may however undermine consumers' ability to make strategic use of choice closure to enhance satisfaction with a choice they have already made.

## **CHOICE CLOSURE AND SATISFACTION IN THE PAST AND THE FUTURE**

Natural tendencies can be applied outside of the context in which they have been learned and internalized to become implicit rules driving a variety of judgments and behaviors (Arkes and Ayton 1999; Hsee and Ruan 2016; Wood and Neal 2007). This

generalization of a tendency is due to the associated sense of familiarity and fluency, which favors its automatic application across different contexts (Dhar and Gorlin 2013; Hsee and Hastie 2006). Thus, individuals often base their judgments on implicit rules instead of more deliberate assessments because these rules represent salient defaults that feel like the right answers leading to desired goals (Gilbert 2002; Kahneman and Frederick 2002; Schwarz and Clore 1983).

We propose that the tendency to avoid choice closure with an inferior outcome and to seek it with a superior outcome, although functional to enhancing satisfaction with a future choice, becomes an implicit rule on which consumers rely when judging the effect of choice closure on satisfaction with the outcome of a choice they have already made. This generalization leads to an expectation that contrasts with our first hypothesis. H1 predicts consumers to be more satisfied when achieving choice closure with an inferior outcome and when not achieving choice closure with a superior outcome; based on the implicit rule, consumers would instead expect greater satisfaction by avoiding choice closure after selecting an inferior outcome and by seeking choice closure after selecting a superior outcome:

**H2:** Consumers expect to be more satisfied by avoiding choice closure with an inferior outcome and by seeking choice closure with a superior outcome.

The hypothesized contrast between experience with and expectation for choice closure is therefore an instance of rule overgeneralization: an implicit rule learned and internalized in a context in which it is appropriate and advantageous is incorrectly applied to another context and leads to undesirable consequences (Arkes and Ayton 1999; Hsee and Ruan 2016). Although appropriate and advantageous in the context of

enhancing future satisfaction, the application of the implicit rule in the context of enhancing past satisfaction results in consumers being unlikely to make correct predictions about the effect of choice closure on outcome satisfaction and therefore to make strategic use of choice-closure triggers.

We support this theorizing in two ways. First, we test whether consumers believe that the implicit rule is functional to enhancing satisfaction with the outcome of a similar future choice. Specifically, we hypothesize that consumers anticipate not achieving choice closure with an initial inferior outcome and achieving choice closure with an initial superior outcome to increase satisfaction with a subsequent similar choice:

**H3:** Consumers anticipate they will be more (less) satisfied with the outcome of a subsequent similar choice after not gaining choice closure with an initial inferior (superior) outcome.

Second, we test whether reliance on the implicit rule is attenuated when consumers are made to consider the possibility that its default application is inappropriate (Gilbert 2002; Kahneman and Frederick 2002; Schwarz and Clore 1983). We hypothesize that consumers are less likely to base their expectation for how choice closure affects past satisfaction on the implicit rule when it is made salient to them that this choice is a one-time occasion, and that there will not be a subsequent similar choice:

**H4:** When it is more, versus less, salient that a choice is a one-time occasion, consumers are less likely to expect greater satisfaction by avoiding choice closure with an inferior outcome and by seeking choice closure with a superior outcome.

We tested our hypotheses in seven studies. Whereas previous research has used physical acts as external triggers of closure (Gu et al. 2013; Li et al. 2010), in this paper we triggered choice closure via visual cues.

## STUDY 1A

Study 1a tests H1, which predicts that consumers are more satisfied when they achieve choice closure with an inferior outcome than when they do not achieve it, and that this pattern reverses in the context of a superior outcome.

### Method

This study employed a 2 (choice closure: trigger vs. no trigger)  $\times$  2 (outcome valence: inferior vs. superior) between-subjects design and was conducted on Prolific Academic. Four hundred three respondents were paid a nominal fee for their participation.

Participants chose one video clip to watch from a set of twelve 30-second video clips portraying animals. These videos were pre-tested to be similar in terms of valence. One hundred fifty-three Amazon Mechanical Turk workers rated on 9-point scales how much they enjoyed and liked four randomly chosen video clips out of a sample of 24 video clips. Twelve video clips with a similar average score were selected to form the assortment used in the main study ( $M_{\text{lowest}} = 6.50$ ,  $SD = 2.16$ ;  $M_{\text{highest}} = 6.94$ ,  $SD = 1.87$ ).

The video-clip assortment included snapshots of the videos featuring short, descriptive titles (e.g., “Naughty kitten and sleepy cat”). After participants chose a video

to watch, we administered the outcome-valence manipulation by showing them a graph, which allegedly compared survey ratings of the selected video relative to the average survey ratings of all the videos in the assortment. In the inferior-outcome condition, the ratings of the selected video were below average; in the superior-outcome condition, they were above average (Appendix A).

The choice-closure manipulation was administered while participants watched the video they had chosen. In both conditions, an image of the original video-clip assortment appeared at the top of the video; in the trigger condition, this image displayed the snapshot of the selected video clip appended with a “selected” label and the snapshots of the forgone video clips appended with “not selected” labels (Image 1). In the no-trigger condition, this image displayed the selected and the forgone video-clip snapshots without labels (Image 2; Appendix B). A separate pre-test confirmed that Image 1 (with labels) was more likely to trigger both elements of choice closure—sense of finality and comparison limitation—than Image 2 (without labels; Appendix C).

After watching the video, participants reported their satisfaction by answering the following questions: “How satisfied are you with the video that you chose?” and “How much did you enjoy the video that you chose?” (1 = not at all; 9 = completely).

## Results

Responses were averaged into an overall satisfaction score ( $\alpha = 0.91$ ) and submitted to a 2 (choice closure: trigger vs. no trigger)  $\times$  2 (outcome valence: inferior vs. superior) ANOVA. There was no main effect of choice closure ( $M_{\text{trigger}} = 7.19$ ,  $SD = 1.92$ ;  $M_{\text{no}}$

trigger = 7.22, SD = 1.98;  $F(1, 399) < 1$ , NS) or valence ( $M_{\text{inferior}} = 7.27$ , SD = 1.83;  $M_{\text{superior}} = 7.16$ , SD = 2.03;  $F(1, 399) < 1$ , NS), but the hypothesized interaction was significant ( $F(1, 399) = 12.38$ ,  $p < .0001$ ; figure 1).

---

Insert figure 1 about here

---

Contrast analyses on this interaction confirmed H1. In the inferior-outcome condition, participants who were exposed to the choice-closure trigger were more satisfied ( $M = 7.65$ , SD = 1.33) than those who were not exposed to it ( $M = 6.91$ , SD = 2.14;  $F(1, 399) = 6.50$ ,  $p < .05$ ). However, in the superior-outcome condition, participants who were not exposed to the trigger were more satisfied than those who were ( $M_{\text{trigger}} = 6.85$ , SD = 2.21;  $M_{\text{no trigger}} = 7.46$ , SD = 1.80;  $F(1, 399) = 5.90$ ,  $p < .05$ ).

## STUDY 1B

Study 1b tests H2, which predicts that consumers expect to enhance outcome satisfaction by deliberately avoiding, versus seeking, choice closure with an inferior outcome and by seeking, versus avoiding, choice closure with a superior outcome.

### Method

The study employed a between-subjects design with a single two-level factor (outcome valence: inferior vs. superior). One hundred fourteen participants recruited through Prolific Academic took part in exchange for a nominal fee.

The initial procedure was the same as in study 1a: participants chose a video to watch from the same assortment of 12 videos and were shown the information portraying this video as either inferior or superior to the forgone ones (Appendix A). Next, they were presented with the two images used in study 1a (Image 1, featuring the labelled options, and Image 2, without labels; Appendix B) and told that one of the two would appear at the top of the video as they watched it. Participants then answered the question “Which one of these two images do you think might lead to greater satisfaction with the video that you chose?” on a bipolar scale (1 = definitely Image 1; 9 = definitely Image 2).

## Results

A one-way ANOVA (outcome valence: inferior vs. superior) revealed that participants in the inferior-outcome condition, relative to those in the superior-outcome condition, thought that Image 2, which did not feature the trigger, would be more likely to lead to greater outcome satisfaction than Image 1, which featured the trigger ( $M_{\text{inferior}} = 6.13$ ,  $SD = 2.67$ ;  $M_{\text{superior}} = 5.09$ ,  $SD = 2.77$ ;  $F(1, 112) = 4.14$ ,  $p < .05$ ). In other words, participants faced with an inferior outcome expected that avoiding choice closure would be more likely to enhance outcome satisfaction with the choice they had made than seeking it; similarly, participants faced with a superior outcome expected that seeking choice closure would be more likely to enhance outcome satisfaction than avoiding it.



## Discussion

Studies 1a and 1b represent a first demonstration that consumers' experience with choice closure contradicts their expectation. Study 1a showed that participants were more satisfied when they achieved choice closure with an inferior outcome and when they did not achieve it with a superior outcome. Study 1b, however, showed that participants expected to be more satisfied by avoiding choice closure with an inferior outcome and by seeking it with a superior outcome.

To demonstrate the experience–expectation contrast we used different experimental procedures. In study 1a, participants were separately exposed to either the image that included the choice-closure trigger or the image that did not include the trigger. This design is consistent with previous research (Gu et al. 2013; Li et al. 2013) and allowed us to test how the inclusion, versus exclusion, of the trigger affected outcome satisfaction unbeknown to participants. In study 1b, participants were instead simultaneously exposed to both images; this design allowed us to test whether they were able to forecast the effect of the inclusion and exclusion of the trigger on outcome satisfaction, and determine in a deliberate manner which setting would be more likely to enhance it. Similar procedures have been used in research on affective forecasting (e.g., Nelson and Meyvis 2008, study 1; Gilbert et al. 1998, study 2). However, to address potential concerns about the difference in procedures across the two studies, we replicated the results of study 1b by separately exposing participants to each image. We report this study in the Web Appendix.

The next two studies aim to replicate the experience–expectation contrast observed in studies 1a and 1b with different stimuli. Study 2a also tests the proposed mechanism for the effect of choice closure on satisfaction.

## **STUDY 2A**

According to our theorizing, achieving choice closure with an inferior outcome limits unfavorable comparisons that would decrease satisfaction, and achieving choice closure with a superior outcome limits favorable comparisons that would increase satisfaction. To test this process, in study 2a we manipulated the extent to which participants engaged in comparisons orthogonally to choice closure. Specifically, we asked half the participants (forced-comparison condition) to simulate the comparison type presumed by the theory—unfavorable for inferior outcomes and favorable for superior outcomes—regardless of whether they were exposed to the choice-closure trigger; the other half (control condition) were not asked to make a specific comparison type. We reasoned that when the inhibition of comparisons associated with choice closure is disrupted by forced comparisons, the advantages of gaining choice closure with an inferior outcome and the disadvantages of gaining it with a superior outcome would be offset. Thus, we predicted the differences in satisfaction across the trigger and no-trigger conditions obtained in study 1a to replicate in the control condition but to be attenuated in the forced-comparison condition.

## Method

Study 2a used a 2 (choice closure: trigger vs. no trigger)  $\times$  2 (outcome valence: inferior vs. superior)  $\times$  2 (comparison: control vs. forced comparison) between-subjects design. Two hundred forty-three students recruited from different universities in the UK participated in exchange for £10.

Participants sat in individual cubicles before a computer. They were asked to imagine purchasing a box of same-flavor chocolates and to select the flavor from an assortment of 12 different chocolate flavors. Each chocolate flavor was illustrated with a picture, a name, and a description (e.g., Exotique: Passion fruit jam and caramel encased in dark chocolate). After selecting a chocolate flavor, participants moved on to the next screen, in which outcome valence was manipulated by providing ratings of the selected chocolate relative to the forgone ones as in study 1a; this time, the quantitative ratings were complemented by qualitative reviews (Appendix A). Next, the choice-closure manipulation was administered: in the trigger condition, participants were shown a screen displaying the selected chocolate together with the rejected ones; each of the rejected chocolates was appended with “rejected” labels. In the no-trigger condition, both the selected and the rejected chocolates were displayed without labels (Appendix B). Finally, participants ate the chocolate they chose.

The comparison manipulation was administered while participants were eating the chocolate. In the control condition, all participants were asked to write down anything that came to mind about the chocolates. In the forced-comparison condition, participants eating a chocolate portrayed as inferior were asked to describe how the

selected chocolate flavor might have been worse than the other flavors in the assortment (unfavorable comparisons); participants eating a chocolate portrayed as superior were asked to describe how the selected chocolate flavor might have been better than the other flavors (favorable comparisons). At the end of the study, participants reported their satisfaction by answering the same questions as in study 1a.

We predicted that we would replicate the results of study 1a in the control condition: participants in the inferior-outcome condition would be more satisfied after being exposed to the choice-closure trigger than after not being exposed to it, and participants in the superior-outcome condition would be more satisfied after not being exposed to the trigger than after being exposed to it. In the forced-comparison condition, we predicted an attenuation of these differences in satisfaction: instructing participants with an inferior outcome to generate unfavorable comparisons would work against the positive effect of choice closure, and instructing participants with a superior outcome to generate favorable comparisons would counteract its negative effect.

## Results

A 2 (choice closure: trigger vs. no trigger)  $\times$  2 (outcome valence: inferior vs. superior)  $\times$  2 (comparison: control vs. forced comparison) ANOVA was conducted on the average of the two-item satisfaction measure ( $\alpha = 0.94$ ). The main effects of choice closure ( $M_{\text{trigger}} = 6.92$ ,  $SD = 1.52$ ;  $M_{\text{no trigger}} = 6.93$ ,  $SD = 1.60$ ;  $F(1, 235) < 1$ , NS) and comparison ( $M_{\text{control}} = 7.00$ ,  $SD = 1.46$ ;  $M_{\text{forced comparison}} = 6.84$ ,  $SD = 1.66$ ;  $F(1, 235) < 1$ , NS) were not significant, but the main effect of valence was significant ( $M_{\text{inferior}} = 6.43$ ,

SD = 1.69;  $M_{\text{superior}} = 7.54$ , SD = 1.09;  $F(1, 235) = 37.43$ ,  $p < .0001$ ). The ANOVA also revealed a significant three-way interaction ( $F(1, 235) = 7.10$ ,  $p < .01$ ).

Contrast analyses focused on the two choice-closure  $\times$  outcome-valence interactions separately for the control and forced-comparison conditions (figure 2). In the control condition, the main effect of choice closure was not significant ( $M_{\text{trigger}} = 7.02$ , SD = 1.23;  $M_{\text{no trigger}} = 6.99$ , SD = 1.67;  $F(1, 235) < 1$ , NS) but that of valence was significant ( $M_{\text{inferior}} = 6.67$ , SD = 1.56;  $M_{\text{superior}} = 7.41$ , SD = 1.21;  $F(1, 235) = 8.51$ ,  $p < .005$ ). The interaction was significant ( $F(1, 235) = 8.41$ ,  $p < .005$ ): replicating study 1a, in the inferior-outcome condition participants who were exposed to the trigger ( $M = 7.01$ , SD = 1.20) were more satisfied than those who were not ( $M = 6.32$ , SD = 1.81;  $F(1, 235) = 4.30$ ,  $p < .05$ ); in the superior-outcome condition, participants who were not exposed to the trigger were more satisfied than those who were ( $M_{\text{trigger}} = 7.02$ , SD = 1.29;  $M_{\text{no trigger}} = 7.78$ , SD = 1.02;  $F(1, 235) = 4.15$ ,  $p < .05$ ).

In the forced-comparison condition, the main effect of choice closure was not significant ( $M_{\text{trigger}} = 6.81$ , SD = 1.80;  $M_{\text{no trigger}} = 6.88$ , SD = 1.52;  $F(1, 235) < 1$ , NS) but that of valence was significant ( $M_{\text{inferior}} = 6.15$ , SD = 1.81;  $M_{\text{superior}} = 7.68$ , SD = 0.93;  $F(1, 235) = 31.78$ ,  $p < .0001$ ). As expected, the interaction was not significant ( $F(1, 235) < 1$ , NS): participants experienced the same level of satisfaction with an inferior and a superior outcome regardless of whether they were exposed to the trigger or not (inferior outcome:  $M_{\text{trigger}} = 5.98$ , SD = 1.92;  $M_{\text{no trigger}} = 6.31$ , SD = 1.71;  $F(1, 235) < 1$ , NS; superior outcome:  $M_{\text{trigger}} = 7.77$ , SD = 1.01;  $M_{\text{no trigger}} = 7.58$ , SD = 0.84;  $F(1, 235) < 1$ , NS).

---

Insert figure 2 about here

---

## STUDY 2B

### Method

As in study 1b, the design of study 2b included only one factor, outcome valence (inferior vs. superior). One hundred four students from a university in the Netherlands received €7 to participate.

The initial procedure was similar to that of study 2a. Each participant sat in a cubicle before a computer and was asked to choose one chocolate flavor from the same selection used in study 2a. Following the choice, the outcome-valence manipulation was administered. Participants read an ostensibly independent report rating the 12 chocolate flavors, which indicates that the overall rating for the selected chocolate was among the last three (inferior-outcome condition) or top three (superior-outcome condition).

Next, participants were asked to imagine logging in to the same website to check their purchase history webpage, which could feature one of two designs: as in study 2a, Webpage A displayed the chosen chocolate together with the forgone chocolates labelled as “rejected”; Webpage B displayed both the chosen and the forgone chocolates without labels (Appendix B). Participants then answered the question “Which one of these two webpages do you think might lead to greater satisfaction with the chocolate that you chose?” by choosing between Webpage A and B.

Finally, participants answered a series of questions to ensure that the presence, versus absence, of the “rejected” labels triggered a greater sense of finality (“To what extent would each of these two webpages help you think of the chocolate decision as

complete / reach closure about your chocolate choice?") and induced fewer comparisons ("To what extent does each of these two webpages make you keep comparing your chosen chocolate with the chocolates that you have not chosen / thinking about the chocolates that you have not chosen?"). All these manipulation-check questions were answered on bipolar scales (1 = definitely Webpage A; 9 = definitely Webpage B).

## Results

*Manipulation check.* The two items measuring finality ( $\alpha = 0.77$ ) and the two items measuring comparisons ( $\alpha = 0.76$ ) were averaged into single scores. One-sample *t*-tests using the scale's midpoint as a benchmark confirmed that participants considered Webpage A, which included the "rejected" labels, to be more effective in delivering a sense of decision finality and in limiting comparisons than Webpage B, which did not include these labels (finality:  $M = 4.04$ ,  $SD = 2.54$ ;  $t(103) = -3.86$ ,  $p < .0001$ ; comparison:  $M = 6.13$ ,  $SD = 2.51$ ;  $t(103) = 4.60$ ,  $p < .0001$ ).

*Expectation.* We employed a binary logistic regression to examine the influence of outcome valence (0 = inferior; 1 = superior) on webpage choice (0 = Webpage A; 1 = Webpage B). Confirming H2, this regression yielded a significant effect (Wald  $\chi^2(1) = 18.84$ ,  $p < .0001$ ): more participants in the inferior-outcome condition (75.47%) than in the superior-outcome condition (31.37%) thought that the webpage without the "rejected" labels would lead to greater satisfaction with the selected outcome than the webpage with the "rejected" labels. Thus, participants who selected a chocolate portrayed as inferior expected that avoiding choice closure would be more likely to

enhance satisfaction with that chocolate than seeking choice closure; similarly, participants who selected a chocolate portrayed as superior expected that seeking choice closure would be more likely to enhance satisfaction than avoiding it.

## Discussion

Studies 2a and 2b replicated the experience–expectation contrast observed in studies 1a and 1b: participants who achieved choice closure after selecting an inferior outcome were more satisfied than those who did not, and participants who did not achieve choice closure after selecting a superior outcome were more satisfied than those who did.

However, participants expected that avoiding choice closure with an inferior outcome and seeking choice closure with a superior outcome would be more likely to enhance their satisfaction with that outcome. Study 2a also supported the proposed process linking choice closure to satisfaction: the greater satisfaction following closure with an inferior outcome and no-closure with a superior outcome was attenuated when forced comparisons offset the unfavorable and favorable comparisons limited by perceived finality, respectively.

The experience–expectation contrast demonstrated in these initial studies implies that consumers are unlikely to be able to make strategic use of choice closure to enhance satisfaction with the outcome of past decisions. The remainder of the paper provides evidence supporting the rationale for this contrast: consumers form their expectation on the implicit rule of avoiding choice closure with an inferior outcome and seeking it with a superior outcome, which is advantageous in the context of enhancing satisfaction with



a future choice but is inappropriately applied in the context of enhancing satisfaction with a past choice.

The next two studies test H3, according to which consumers believe that the implicit rule is advantageous in the context of enhancing future satisfaction. Both studies asked participants to make two choices from the same assortment; study 3a tests whether consumers anticipate that not gaining closure with an initial inferior outcome facilitates improving a subsequent similar choice and enhances satisfaction with that choice; study 3b tests whether they anticipate that gaining choice closure with an initial superior outcome facilitates making an efficient, good-enough subsequent similar choice and enhances satisfaction with that choice.

### **STUDY 3A**

#### Method

Study 3a used a 2 (choice closure: trigger vs. no trigger)  $\times$  2 (initial outcome valence: inferior vs. superior) between-subjects design. Three hundred ninety-four Amazon Mechanical Turk workers participated in this online study for a nominal fee.

Participants read that they would make two choices from the same selection of chocolates used in the previous studies. After making the first choice, participants were exposed to the same manipulations of valence and choice closure as in study 2a.

Participants then read that they would return to the same chocolate selection to make a second choice with the intent of picking a better chocolate. Before repeating the choice

they were asked: “How much do you think that making the first choice helps you improve your second choice?” and after repeating the choice they were asked: “How satisfied would you be with the chocolate that you chose?” and “How much would you enjoy the chocolate that you chose?” All these questions were answered on 9-point scales (1 = not at all; 9 = extremely).

We predicted that participants who were not exposed to the choice-closure trigger after selecting an initial inferior outcome, relative to those who were, would be more likely to think that this first choice helps them improve the second choice and to anticipate greater satisfaction with it. As initial superior outcomes do not provide the same motivation, we did not expect a difference between the trigger and no-trigger conditions on any of these measures.

## Results

*Improving a second choice.* Participants’ ratings of the extent to which they thought making the first choice helps them improve the second choice were submitted to a 2 (choice closure: trigger vs. no trigger)  $\times$  2 (initial outcome valence: inferior vs. superior) ANOVA. This analysis yielded a not-significant main effect of choice closure ( $M_{\text{trigger}} = 5.81$ ,  $SD = 1.94$ ;  $M_{\text{no trigger}} = 5.89$ ,  $SD = 1.86$ ;  $F(1, 390) < 1$ , NS), a significant main effect of initial outcome valence ( $M_{\text{inferior}} = 6.16$ ,  $SD = 1.81$ ;  $M_{\text{superior}} = 5.55$ ,  $SD = 1.93$ ;  $F(1, 390) = 10.41$ ,  $p = .001$ ), and the predicted interaction ( $F(1, 390) = 5.09$ ,  $p < .05$ ; figure 3): in the inferior-outcome condition, participants who were not exposed to the choice-closure trigger after the first choice anticipated that this first choice would

help them improve the second choice more than those who were exposed to the trigger ( $M_{\text{trigger}} = 5.90$ ,  $SD = 1.89$ ;  $M_{\text{no trigger}} = 6.42$ ,  $SD = 1.70$ ;  $F(1, 390) = 3.80$ ,  $p = .05$ ). In the superior-outcome condition, this difference was not significant ( $M_{\text{trigger}} = 5.71$ ,  $SD = 2.00$ ;  $M_{\text{no trigger}} = 5.39$ ,  $SD = 1.87$ ;  $F(1, 390) = 1.54$ , NS).

*Anticipated satisfaction with a second choice.* A 2 (choice closure: trigger vs. no trigger)  $\times$  2 (initial outcome valence: inferior vs. superior) ANOVA was conducted on the average of the two items measuring anticipated satisfaction with the second choice ( $\alpha = 0.89$ ). The main effects of choice closure ( $M_{\text{trigger}} = 7.11$ ,  $SD = 1.29$ ;  $M_{\text{no trigger}} = 7.30$ ,  $SD = 1.21$ ;  $F(1, 390) = 2.38$ , NS) and initial outcome valence ( $M_{\text{inferior}} = 7.15$ ,  $SD = 1.17$ ;  $M_{\text{superior}} = 7.25$ ,  $SD = 1.33$ ;  $F(1, 390) < 1$ , NS) were not significant, but the predicted interaction was ( $F(1, 390) = 4.19$ ,  $p < .05$ ; figure 4): in the inferior-outcome condition, participants who were not exposed to the trigger ( $M = 7.38$ ,  $SD = 1.05$ ) reported greater anticipated satisfaction than those who were exposed ( $M = 6.93$ ,  $SD = 1.24$ ;  $F(1, 390) = 6.38$ ,  $p < .05$ ); in the superior-outcome condition, this difference was not significant ( $M_{\text{trigger}} = 7.29$ ,  $SD = 1.31$ ;  $M_{\text{no trigger}} = 7.22$ ,  $SD = 1.35$ ;  $F(1, 390) < 1$ , NS).

---

Insert figures 3 and 4 about here

---

## STUDY 3B

Method

Study 3b used the same design as study 3a. Three hundred fifty-five Amazon Mechanical Turk workers participated in this online study for a nominal fee.

The procedure and manipulations were the same as in study 3a. In study 3b, however, participants read that they would return to the same chocolate selection to make a second choice with the intent to pick a good-enough chocolate without spending unnecessary effort. Before repeating their choice participants were asked: “How much do you think that making the first choice helps you select a good-enough chocolate in your second choice?” (1 = not at all; 9 = extremely), and after repeating their choice they were asked the same questions about anticipated satisfaction as in study 3a.

We predicted that participants who were exposed to the choice-closure trigger after selecting an initial superior outcome, relative to those who were not, would be more likely to think that this first choice helps them make an efficient, good-enough second choice and to anticipate greater satisfaction with it. As initial inferior outcomes do not provide the same motivation, we did not expect a difference between the trigger and no-trigger conditions on any of these measures.

## Results

*Making a good-enough second choice.* A 2 (choice closure: trigger vs. no trigger)  $\times$  2 (initial outcome valence: inferior vs. superior) ANOVA was conducted on the extent to which participants thought the first choice helps them pick a good-enough second chocolate. The main effects of choice closure ( $M_{\text{trigger}} = 6.14$ ,  $SD = 2.04$ ;  $M_{\text{no trigger}} = 5.93$ ,  $SD = 1.75$ ;  $F(1, 351) = 1.10$ , NS) and initial outcome valence

( $M_{\text{inferior}} = 6.08$ ,  $SD = 1.91$ ;  $M_{\text{superior}} = 5.99$ ,  $SD = 1.91$ ;  $F(1, 351) < 1$ , NS) were not significant, but the predicted interaction was significant ( $F(1, 351) = 4.28$ ,  $p < .05$ ; figure 5). In the superior-outcome condition, participants who were exposed to the choice-closure trigger after the first choice anticipated that this first choice would help them choose a second good-enough chocolate more than those who were not exposed to the trigger ( $M_{\text{trigger}} = 6.30$ ,  $SD = 1.95$ ;  $M_{\text{no trigger}} = 5.67$ ,  $SD = 1.82$ ;  $F(1, 351) = 4.80$ ,  $p < .05$ ). In the inferior-outcome condition, this difference was not significant ( $M_{\text{trigger}} = 5.98$ ,  $SD = 2.13$ ;  $M_{\text{no trigger}} = 6.18$ ,  $SD = 1.64$ ;  $F(1, 351) < 1$ , NS).

*Anticipated satisfaction with a second choice.* A 2 (choice closure: trigger vs. no trigger)  $\times$  2 (initial outcome valence: inferior vs. superior) ANOVA was conducted on the average of the two measures of anticipated satisfaction ( $\alpha = 0.89$ ). The main effect of choice closure was significant ( $M_{\text{trigger}} = 7.20$ ,  $SD = 1.28$ ;  $M_{\text{no trigger}} = 6.91$ ,  $SD = 1.24$ ;  $F(1, 351) = 4.70$ ,  $p < .05$ ), whereas that of initial outcome valence was not ( $M_{\text{inferior}} = 7.14$ ,  $SD = 1.17$ ;  $M_{\text{superior}} = 6.98$ ,  $SD = 1.35$ ;  $F(1, 351) = 1.59$ , NS). The predicted interaction was significant ( $F(1, 351) = 5.79$ ,  $p < .05$ ; figure 6): in the superior-outcome condition, participants who were exposed to the trigger ( $M = 7.28$ ,  $SD = 1.28$ ) anticipated greater satisfaction than those who were not exposed ( $M = 6.67$ ,  $SD = 1.37$ ;  $F(1, 351) = 10.32$ ,  $p = .001$ ), but this difference was not significant in the inferior-outcome condition ( $M_{\text{trigger}} = 7.12$ ,  $SD = 1.28$ ;  $M_{\text{no trigger}} = 7.16$ ,  $SD = 1.04$ ;  $F(1, 351) < 1$ , NS).

---

Insert figures 5 and 6 about here

---

## Discussion

Studies 3a and 3b confirm H3, according to which consumers believe that the implicit rule of avoiding choice closure with an inferior outcome and seeking it with a superior outcome is advantageous in the context of enhancing future satisfaction. Participants in study 3a anticipated that not achieving choice closure with an initial inferior outcome would improve a subsequent similar choice and enhance satisfaction with it; those in study 3b anticipated that achieving choice closure with an initial superior outcome would facilitate an efficient, good-enough subsequent similar choice and enhance satisfaction with it.

The next study tests whether consumers overgeneralize the implicit rule from the context of enhancing satisfaction with a future choice to that of enhancing satisfaction with a past choice. This overgeneralization implies that consumers automatically rely on the implicit rule in forming their expectation for the effect of choice closure on satisfaction with the outcome of a decision they have already made; however, if consumers were compelled to consider the potential inappropriateness of this default application of the implicit rule, they would be less likely to rely on it. Specifically, study 4 tests H4, according to which making salient to consumers that a choice will not be followed by a subsequent similar one attenuates their expectation that avoiding choice closure with an inferior outcome and seeking it with a superior outcome enhances satisfaction with that outcome.

This study also addresses an alternative explanation for the expectation that avoiding choice closure with an inferior outcome enhances satisfaction. This expectation

could be based on the notion that ruminating on an inferior past choice reduces the discomfort of having made that choice (Festinger 1957; Wilson and Gilbert 2008). As the desire to reduce discomfort with an inferior past choice is equally relevant both when the choice is assumed to be repeated and when it is a one-time occurrence, this alternative explanation would not predict the difference between these two conditions that is hypothesized in H4.

## STUDY 4

### Method

This study employed a 2 (outcome valence: inferior vs. superior)  $\times$  2 (choice context: control vs. no repetition) between-subjects design. Two hundred seventeen Amazon Mechanical Turk workers took part in this online study in exchange for a nominal fee.

All participants were told that they would choose one chocolate flavor from the same assortment used in the previous studies. In the control condition, participants proceeded to make this choice. In the no-repetition condition, participants read a vignette before making their choice; this vignette made salient to them that the choice would not be followed by a subsequent similar one. In the *inferior-outcome* (superior-outcome) condition, participants read:

Sometimes you can make more than one choice from the same chocolate selection. For example, one day you choose one chocolate from a selection and eat it; the day after you can go back to the same selection and choose again. In this situation your first choice can help you *improve your second choice* (find a good-enough chocolate the second time around in an efficient way, meaning without spending too much effort). Other times you cannot make more than one

choice from the same chocolate selection. For example, one day you choose one chocolate from a selection and eat it; the day after that initial selection is unavailable and you choose again from a completely different selection. In this situation your first choice cannot help you *improve your second choice* (find a good-enough chocolate the second time around in an efficient way).

Participants were then asked to imagine being in the second situation, in which they could not make more than one choice from the same selection.

After choosing, participants in both conditions were given the same survey results used in study 2b to manipulate valence. Next, they were shown two webpages: Webpage 1, which featured the choice-closure trigger used in study 1b, and Webpage 2, which did not feature this trigger (Appendix B); a pre-test confirmed the effectiveness of this manipulation (Appendix C). Finally, participants answered the question “Which of the two webpages do you think would make you more satisfied with the chocolate that you chose?” on a bipolar scale (1 = definitely Webpage 1; 9 = definitely Webpage 2).

## Results

A 2 (outcome valence: inferior vs. superior)  $\times$  2 (choice context: control vs. no repetition) ANOVA yielded a significant main effect of valence ( $M_{\text{inferior}} = 6.43$ ,  $SD = 2.61$ ;  $M_{\text{superior}} = 5.38$ ,  $SD = 2.85$ ;  $F(1, 213) = 6.61$ ,  $p < .05$ ), a not-significant main effect of context ( $M_{\text{control}} = 6.02$ ,  $SD = 2.93$ ;  $M_{\text{no repetition}} = 5.90$ ,  $SD = 2.55$ ;  $F(1, 213) < 1$ , NS), and the predicted significant interaction ( $F(1, 213) = 9.71$ ,  $p < .005$ ; figure 7).

---

Insert figure 7 about here

---



Contrast analyses showed that results of studies 1b and 2b were replicated in the control condition: participants with an inferior outcome, relative to those with a superior outcome, thought that Webpage 2, without choice-closure trigger, would be more likely to enhance satisfaction than Webpage 1, with trigger ( $M_{\text{inferior}} = 6.89$ ,  $SD = 2.57$ ;  $M_{\text{superior}} = 4.80$ ,  $SD = 2.98$ ;  $F(1, 213) = 17.81$ ,  $p < .001$ ). This difference was not significant in the no-repetition condition ( $M_{\text{inferior}} = 5.80$ ,  $SD = 2.55$ ;  $M_{\text{superior}} = 6.00$ ,  $SD = 2.58$ ;  $F(1, 213) < 1$ , NS).

In line with H4, contrast analyses showed that when the outcome was inferior, the expectation that Webpage 2, without choice-closure trigger, would lead to greater satisfaction than Webpage 1, with trigger, was lower in the no-repetition than in the control condition ( $M_{\text{no repetition}} = 5.80$ ,  $SD = 2.55$ ;  $M_{\text{control}} = 6.89$ ,  $SD = 2.57$ ;  $F(1, 213) = 4.83$ ,  $p < .05$ ); when the outcome was superior, the expectation that Webpage 2 would lead to greater satisfaction than Webpage 1 was higher in the no-repetition than in the control condition ( $M_{\text{no repetition}} = 6.00$ ,  $SD = 2.58$ ,  $M_{\text{control}} = 4.80$ ,  $SD = 2.98$ ;  $F(1, 213) = 4.90$ ,  $p < .05$ ). In other words, relative to those in the control condition, participants in the no-repetition condition were less likely to expect that avoiding choice closure would enhance satisfaction with an inferior outcome and that seeking choice closure would enhance satisfaction with a superior outcome.

## Discussion

Results of study 4 supported our proposed overgeneralization account and ruled out a potential alternative explanation according to which choice closure could reduce the

discomfort of having selected an inferior outcome. When it was made salient to participants that the choice would not be repeated in the future, they were less likely to expect that avoiding choice closure enhances satisfaction with an inferior outcome and that seeking it enhances satisfaction with a superior outcome.

## **GENERAL DISCUSSION**

Individuals are naturally inclined to relive past undesirable events and to settle on desirable ones. We show that this tendency prevents consumers from making strategic use of choice closure to enhance satisfaction with choices they have made.

We present three main results. First, consumers' satisfaction following choice closure depends on outcome valence. Studies 1a and 2a demonstrate that participants are more satisfied after achieving choice closure with an inferior outcome and after not achieving it with a superior outcome. Second, consumers' expectation contrasts their experienced satisfaction. Studies 1b and 2b show that participants expect greater satisfaction by deliberately avoiding choice closure with an inferior outcome and by seeking it with a superior outcome. Third, this experience–expectation contrast is the result of rule overgeneralization. Consumers form their expectation on the implicit rule of avoiding choice closure with an inferior outcome and seeking it with a superior outcome. This rule is appropriate in the context of enhancing satisfaction with a future choice because it facilitates improving or making an efficient, good-enough subsequent choice, respectively; however, when applied to the context of a past choice, it leads to the undesirable consequence of reducing, rather than enhancing, satisfaction. Studies 3a

and 3b confirm that participants anticipate that not achieving choice closure with an initial inferior outcome and achieving it with an initial superior outcome increases satisfaction with a subsequent similar choice. Study 4 shows that participants are less likely to expect that avoiding choice closure with an inferior outcome and seeking it with a superior outcome enhances satisfaction when they are explicitly told that the choice will not be followed by a subsequent similar one.

These results contribute to literature examining how a psychological separation between the present and the past influences subjective well-being. Li et al. (2010) question whether self-help practices involving conscious efforts to physically enclose written memories of negative events might be effective in gaining psychological closure over those events. Related research on the “fresh start effect” show that naturally arising time markers create opportunities to leave one’s imperfections behind and speculate that individuals might intentionally create fresh starts to behave better (Dai, Milkman, and Riis 2014). However, the strategic use of closure triggers and temporal markers has not been explored. Our results provide insight into individuals’ deliberate assessments of how choice closure influences outcome satisfaction.

Our findings also clarify how choice closure relates to cognitive dissonance (Festinger 1957), the psychological immune system (Gilbert et al. 1998), and rumination (Martin and Tesser 1996). The literature on cognitive dissonance and the psychological immune system investigates only processes that reduce aversive responses to freely made choices and bolster the value of selected relative to forgone options. Similarly, the literature on rumination, or the tendency to engage in conscious and repetitive thoughts about an instrumental theme, typically involves thoughts about a negative event or an

unattainable goal (Whitmer and Gotlib 2013). We examine instead both the negative and the positive effects of choice closure on outcome satisfaction and specific types of thoughts—comparative assessments between the selected and the forgone options—that can be either negative (unfavorable comparisons) or positive (favorable comparisons).

Finally, we indicate that in the case of choice closure, consumers behave in a way that favors future satisfaction. Most research documents instances in which the default response serves current satisfaction at the expense of future satisfaction, for example in the context of food consumption and financial decision making (Shiv and Fedorikhin 1999; Thaler and Benartzi 2004). Our work contrasts with this research but is consistent with emerging research on hyperopia, which shows a tendency to serve future objectives at the expense of short-term hedonic utility (Kivetz and Keinan 2006).

From a managerial perspective, this paper relates to situations in which the post-choice evaluation of the outcome is affected by information that was unavailable during the decision, for example when consumers review experts' comments or hear about peers' experiences after having made a purchase (Cooke, Meyvis, and Schwartz 2001; Faro 2010). Whereas previous work has focused on physical interventions (Gu et al. 2013; Li et al. 2010), this research shows that in these situations choice closure can be triggered via visual cues, a possibility that is especially relevant to online companies.

The opening quote suggests that individuals do not have control over the fact that past negative decisions “burn forever bright” whereas past positive decisions “fade to nothing.” We contend instead that achieving closure can be a matter of choice: consumers deliberately avoid closure with past inferior outcomes and seek closure with past superior outcomes. Whether this is a fault or a blessing, however, depends on

whether they aim to increase satisfaction with a choice they have already made or will make in the future.

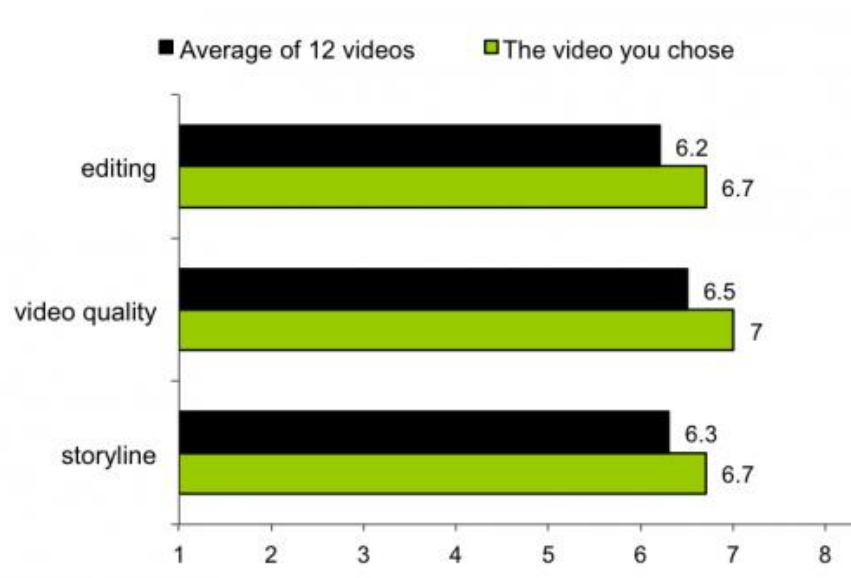
### Data Collection Information

The current paper includes seven studies. The first author collected data for studies 1a and 1b through Prolific Academic in the winter of 2016. The first author supervised the data collection for study 2a by research assistants at Tilburg University Lab in the autumn of 2013. The three authors jointly supervised the collection of data for study 2b by research assistants at the London Business School Behavioural Lab in the autumn of 2012. Data for studies 3a, 3b, and 4 were collected by the first author through Amazon Mechanical Turk in the spring of 2015 and autumn of 2016. The first author was primarily responsible for the data analysis. Data were discussed throughout the research project by all authors.

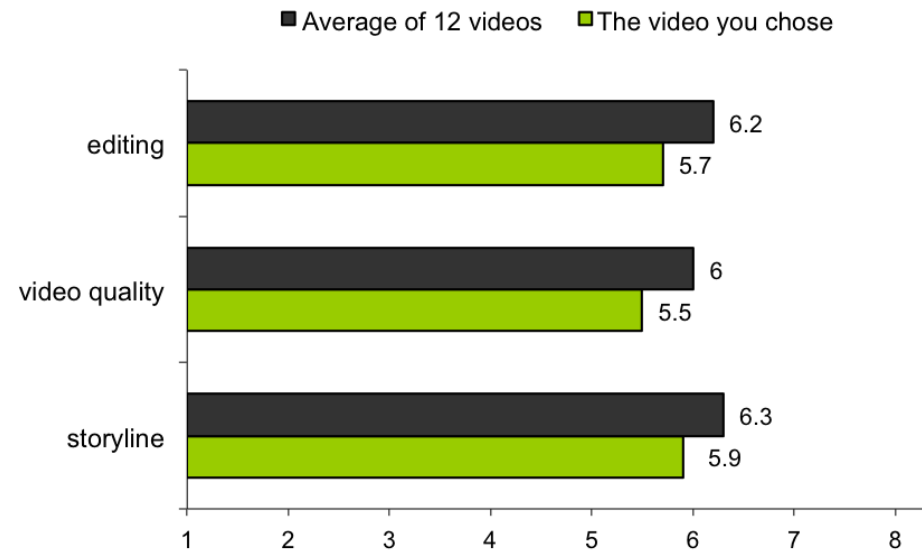
## Appendix A: Outcome-Valence Manipulation

### Studies 1a and 1b

Superior outcome

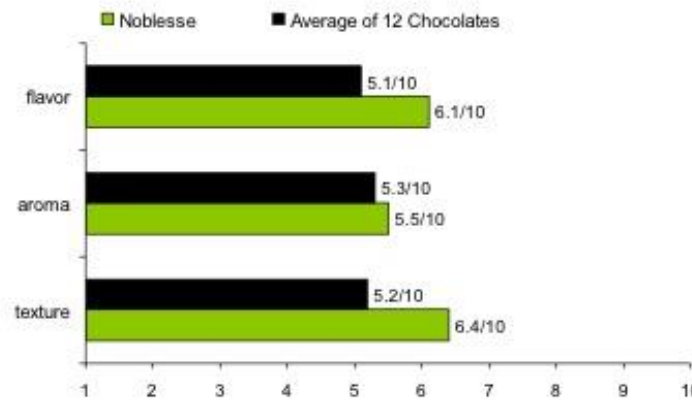


Inferior outcome



## Studies 2a, 3a, and 3b

### Superior outcome



#### Reviewer 1:

The texture of Noblesse was soft but nothing special. Its taste was richer than Exotique.

#### Reviewer 2:

Noblesse had a nice, creamy texture, but it tasted slightly heavy. However, I would still recommend this flavor over Tresor.

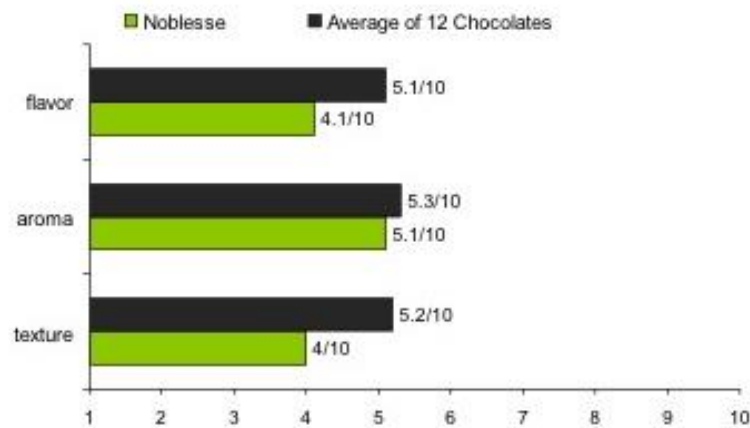
#### Reviewer 3:

Overall Noblesse was good, but it was a bit too sweet. Still I would love to try Noblesse again.

#### Reviewer 4:

The flavor of Noblesse is fine and deep without being too overwhelming. The combination of ingredients is more interesting than that of Temptation and Sienna.

### Inferior outcome



#### Reviewer 1:

Although the flavor of Noblesse was intense to start, it weakened rather quickly. It was less rich than the taste of Calice.

#### Reviewer 2:

Overall, these chocolates taste fine. However, Noblesse is not as good as it looks. Surprisingly, Mandolina tastes better than how it looks.

#### Reviewer 3:

The taste of Noblesse is a little bit too sweet for my liking and seems to be more so than Tresor, which has a slightly higher concentration of cocoa.

#### Reviewer 4:

The flavor of Noblesse is a little bit too overwhelming. In contrast, Torte and Comtesse taste nice and deep.



Appendix B: Choice-Closure Manipulation

Studies 1a and 1b

Image 1 (Trigger)


















 <b>Selected</b>	 <b>Not Selected</b>	 <b>Not Selected</b>	 <b>Not Selected</b>
<b>Cat loves baby</b>	<b>Dog says "I love you"</b>	<b>Baby-sitter dog</b>	<b>Animals with funny screaming</b>
 <b>Not Selected</b>	 <b>Not Selected</b>	 <b>Not Selected</b>	 <b>Not Selected</b>
<b>Kitten mother love</b>	<b>Feeding baby animals</b>	<b>Naughty kitten and sleepy cat</b>	<b>Kitten on treadmill</b>
 <b>Not Selected</b>	 <b>Not Selected</b>	 <b>Not Selected</b>	 <b>Not Selected</b>
<b>Bunny eating a carrot</b>	<b>Sleepy dogs and cats</b>	<b>Funny cats in water</b>	<b>Singing cat</b>

Image 2 (No trigger)

			
<b>Cat loves baby</b>	<b>Dog says "I love you"</b>	<b>Baby-sitter dog</b>	<b>Animals with funny screaming</b>
			
<b>Kitten mother love</b>	<b>Feeding baby animals</b>	<b>Naughty kitten and sleepy cat</b>	<b>Kitten on treadmill</b>
			
<b>Bunny eating a carrot</b>	<b>Sleepy dogs and cats</b>	<b>Funny cats in water</b>	<b>Singing cat</b>

## Studies 2a, 2b, 3a, 3b

## Webpage A (Trigger)



**Cupidon:** An intense aromatic white chocolate ganache with roasted arabica coffee



**Exotique:** A fine white lemon ganache in a crisp darling chocolate shell



**Tresor:** A velvety smooth hazelnut praline covered in milk chocolate



**Mystere:** Ground mocha coffee mousse on a crunchy chocolate base covered in white chocolate



**Arabia:** A rich dark ganache blended with raspberry pulp coated in dark chocolate and sprinkled with raspberry pieces



**Torte:** Smooth hazelnut praline and waffle biscuit pieces



**Comtesse:** Rich dark chocolate filled with a vanilla ganache & ground vanilla seeds



**Mandolina:** A velvety cinnamon flavored cream smothered in milk chocolate and topped with spicy biscuit pieces



**Temptation:** Crisp hazelnut praline covered in milk chocolate



**Sienna:** Smooth milk chocolate filled with buttery caramel



**Calice:** Passion fruit jam and caramel encased in dark chocolate



**Noblesse:** A dark chocolate square filled with a delicate salted caramel

## Webpage B (No trigger)



**Cupidon:** An intense aromatic white chocolate ganache with roasted arabica coffee



**Exotique:** A fine white lemon ganache in a crisp darling chocolate shell



**Tresor:** A velvety smooth hazelnut praline covered in milk chocolate



**Mystere:** Ground mocha coffee mousse on a crunchy chocolate base covered in white chocolate



**Arabia:** A rich dark ganache blended with raspberry pulp coated in dark chocolate and sprinkled with raspberry pieces



**Torte:** Smooth hazelnut praline and waffle biscuit pieces



**Comtesse:** Rich dark chocolate filled with a vanilla ganache & ground vanilla seeds



**Mandolina:** A velvety cinnamon flavored cream smothered in milk chocolate and topped with spicy biscuit pieces



**Temptation:** Crisp hazelnut praline covered in milk chocolate



**Sienna:** Smooth milk chocolate filled with buttery caramel



**Calice:** Passion fruit jam and caramel encased in dark chocolate



**Noblesse:** A dark chocolate square filled with a delicate salted caramel

## Study 4

### Webpage 1 (Trigger)

					
Cupidon: An intense aromatic white chocolate ganache with roasted arabica coffee	Exotique: Passion fruit jam and caramel encased in dark chocolate	Tresor: A velvety smooth hazelnut praline covered in milk chocolate	Mystere: Coffee flavored mousse filling enrobed in white chocolate & decorated with dark chocolate	Arabia: Smooth milk chocolate with a creamy & rich coffee center	Torte: Chocolate center with a dark, bittersweet chocolate shell
					
Comtesse: White chocolate with almond cream filling & hazelnut crocante	Mandolina: Milk chocolate with a smooth almond cream & almond crocante	Temptation: Crispy hazelnut praline covered in milk chocolate	Sienna: Almond pistachio filling in rich dark chocolate	Calice: Dark chocolate encasing a rich hazelnut cream with chopped hazelnuts	Noblesse: A dark chocolate square filled with a delicate salted caramel

### Webpage 2 (No trigger)

					
Cupidon: An intense aromatic white chocolate ganache with roasted arabica coffee	Exotique: Passion fruit jam and caramel encased in dark chocolate	Tresor: A velvety smooth hazelnut praline covered in milk chocolate	Mystere: Coffee flavored mousse filling enrobed in white chocolate & decorated with dark chocolate	Arabia: Smooth milk chocolate with a creamy & rich coffee center	Torte: Chocolate center with a dark, bittersweet chocolate shell
					
Comtesse: White chocolate with almond cream filling & hazelnut crocante	Mandolina: Milk chocolate with a smooth almond cream & almond crocante	Temptation: Crispy hazelnut praline covered in milk chocolate	Sienna: Almond pistachio filling in rich dark chocolate	Calice: Dark chocolate encasing a rich hazelnut cream with chopped hazelnuts	Noblesse: A dark chocolate square filled with a delicate salted caramel

### Appendix C: Pre-tests (Studies 1a and 4)

Study 1a's pre-test ( $N = 73$ ) was conducted on Amazon Mechanical Turk and study 4's pre-test ( $N = 75$ ) on Prolific Academic. Participants chose one video clip or chocolate from the same selections used in the respective main studies and were then shown the two images or webpages employed in the main studies to manipulate choice closure.

Sense of finality was measured by asking which image (study 1a) or webpage (study 4) was more likely to “make you perceive your choice as an ‘unfinished business’ (reverse-coded) / ‘closed book?’”; “help you feel that this choice is complete / reconsider your decision of what to choose (reverse-coded) / think of this choice as behind you / reach closure with your choice?” (study 1a's pre-test:  $\alpha = 0.83$ ; study 4's pre-test:  $\alpha = 0.88$ ). Comparison limitation was measured by asking which image (study 1a) or webpage (study 4) was more likely to “make you keep comparing what you chose with what you did not choose / thinking about what you chose relative to what you did not choose?” (study 1a's pre-test:  $\alpha = 0.70$ ; study 4's pre-test:  $\alpha = 0.84$ ). All questions, which were adapted from previous research (Gu et al. 2013), were answered on bipolar scales (1 = definitely Image 1 / Webpage 1; 9 = definitely Image 2 / Webpage 2).

One-sample  $t$ -tests on the aggregate scores using the scale's midpoint as benchmark confirmed that Image 1 and Webpage 1, which featured the choice-closure trigger, were more effective in inducing a sense of finality ( $M_{\text{Image1}} = 3.78$ ,  $SD = 2.03$ ;  $t(72) = -5.14$ ,  $p < .001$ ;  $M_{\text{Webpage1}} = 3.52$ ,  $SD = 1.82$ ;  $t(74) = -7.04$ ,  $p < .001$ ) and in limiting comparisons ( $M_{\text{Image1}} = 5.71$ ,  $SD = 2.62$ ;  $t(72) = 2.30$ ,  $p < .05$ ;  $M_{\text{Webpage1}} = 6.04$ ,  $SD = 2.26$ ;  $t(74) = 3.98$ ,  $p < .001$ ) than Image 2 and Webpage 2, which did not feature this trigger.

## REFERENCES

- Arkes, Hal R. and Peter Ayton (1999), "The Sunk Cost and Concorde Effects: Are Humans Less Rational Than Lower Animals?" *Psychological Bulletin*, 125 (5), 591–600.
- Beike, Denise R. and Erin Wirth-Beaumont (2005), "Psychological Closure as a Memory Phenomenon," *Memory*, 13 (6), 574–93.
- Beike, Denise R., Laura P. Adams, and Erin T. Wirth-Beaumont (2007), "Incomplete Inhibition of Emotion in Specific Autobiographical Memories," *Memory*, 15 (4), 375–89.
- Bettman, James R., Mary Frances Luce, and John W. Payne (1998), "Constructive Consumer Choice Processes," *Journal of Consumer Research*, 25 (3), 187–217.
- Brenner, Lyle, Yuval S. Rottenstreich, and Sanjay Sood (1999), "Comparison, Grouping, and Preference," *Psychological Science*, 10 (3), 225–29.
- Carmon, Ziv, Klaus Wertebroch, and Marcel Zeelenberg (2003), "Option Attachment: When Deliberating Makes Choosing Feel Like Losing," *Journal of Consumer Research*, 30 (1), 15–29.
- Cooke, Alan D. J., Tom Meyvis, and Alan Schwartz (2001), "Avoiding Future Regret in Purchase-Timing Decisions," *Journal of Consumer Research*, 27 (4), 447–459.
- Dai, Hengchen, Katherine L. Milkman, and Jason Riis (2014), "The Fresh Start Effect: Temporal Landmarks Motivate Aspirational Behavior," *Management Science*, 60 (10), 2563–82.

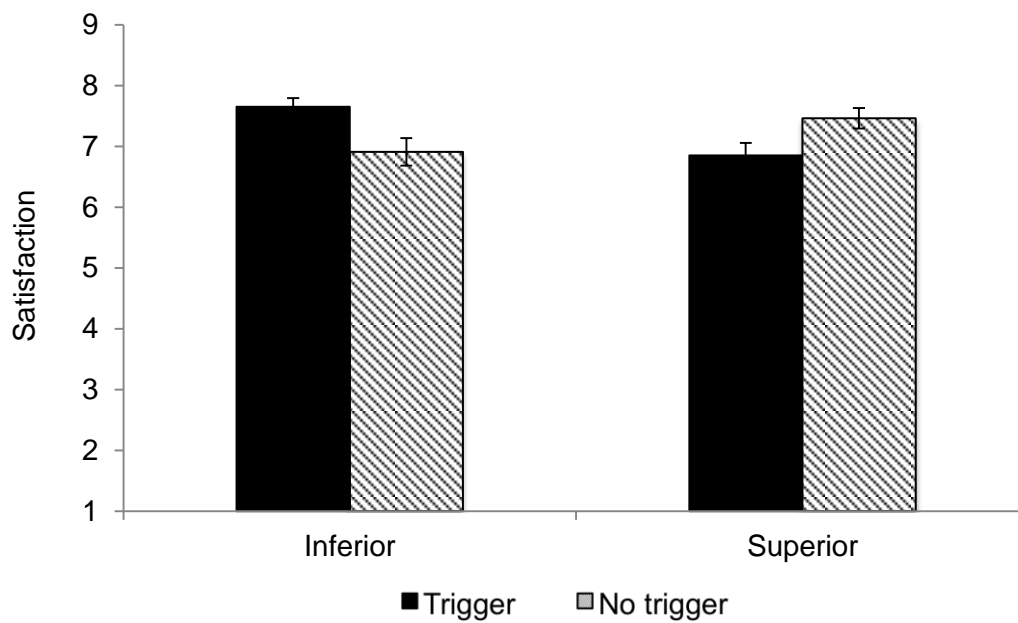
- Dhar, Ravi and Margarita Gorlin (2013), "A Dual-System Framework to Understand Preference Construction Processes in Choice," *Journal of Consumer Psychology*, 23 (4), 528–42.
- Epstude, Kai and Neal Roese (2008), "The Functional Theory of Counterfactual Thinking," *Personality and Social Psychology Review*, 12 (2), 168–92.
- Faro, David (2010), "Changing the Future by Reshaping the Past: The Influence of Causal Beliefs on Estimates of Time to Onset," *Journal of Consumer Research*, 37(2), 279–91.
- Festinger, Leon (1957), *A Theory of Cognitive Dissonance*, Stanford, CA: Stanford University Press.
- Gilbert, Daniel T. (2002), "Inferential Correction," in *Heuristics and Biases: The Psychology of Intuitive Judgment*, ed. Thomas Gilovich, Dale Griffin, and Daniel Kahneman, Cambridge, UK: Cambridge University Press, 167–84.
- Gilbert, Daniel T., Elizabeth C. Pinel, Timothy D. Wilson, Stephen J. Blumberg, and Thalia P. Wheatley (1998), "Immune Neglect: A Source of Durability Bias in Affective Forecasting," *Journal of Personality and Social Psychology*, 75 (3), 617–38.
- Gu, Yangjie, Simona Botti, and David Faro (2013), "Turning the Page: The Impact of Choice Closure on Satisfaction," *Journal of Consumer Research*, 40 (2), 268–83.
- Hsee, Christopher K. and France Leclerc (1998), "Will Products Look More Attractive When Presented Separately or Together?" *Journal of Consumer Research*, 25 (2), 175–86.

- Hsee, Christopher K. and Bowen Ruan (2016), “The Pandora Effect: The Power and Peril of Curiosity,” *Psychological Science*, 27 (5), 659–66.
- Hsee, Christopher K. and Reid Hastie (2006), “Decision and Experience: Why Don’t We Choose What Makes Us Happy?” *Trends in Cognitive Sciences*, 10 (1), 31–7.
- Iyengar, Sheena S., Rachael E. Wells, and Barry Schwartz (2006), “Doing Better but Feeling Worse—Looking for the ‘Best’ Job Undermines Satisfaction,” *Psychological Science*, 17 (2), 143–50.
- Kahneman, Daniel and Shane Frederick (2002), “Representativeness Revisited: Attribute Substitution in Intuitive Judgment,” in *Heuristics and Biases: The Psychology of Intuitive Judgment*, ed. Thomas Gilovich, Dale Griffin, and Daniel Kahneman, Cambridge, UK: Cambridge University Press, 49–81.
- Kahneman, Daniel and Dale T. Miller (1986), “Norm Theory: Comparing Reality to Its Alternatives,” *Psychological Review*, 93 (2), 136–53.
- Kivetz, Ran and Anat Keinan (2006), “Repenting Hyperopia: An Analysis of Self-Control Regrets,” *Journal of Consumer Research*, 33 (2), 273–82.
- Li, Xiuping, Liyuan Wei, and Dilip Soman (2010), “Sealing the Emotions Genie: The Effects of Physical Enclosure on Psychological Closure,” *Psychological Science*, 21 (8), 1047–50.
- Ma, Jingjing and Neal J. Roese (2014), “The Maximizing Mind-set,” *Journal of Consumer Research*, 41 (1), 71–92.
- Markman, Keith D., Igor Gavanski, Steven J. Sherman, and Matthew N. McMullen (1993), “The Mental Simulation of Better and Worse Possible Worlds,” *Journal of Experimental Social Psychology*, 29 (1), 87–109.

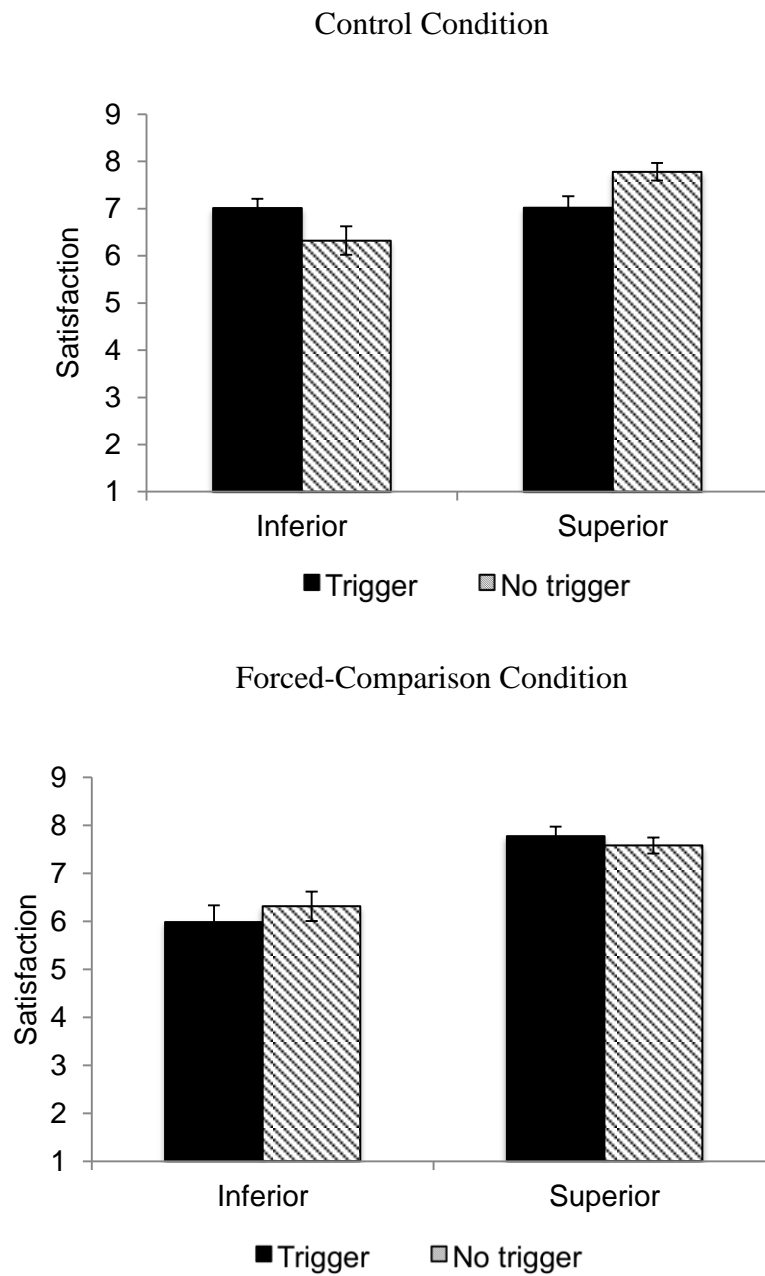
- Martin, Leonard L. and Abraham Tesser (1996), "Some Ruminative Thoughts," in *Advances in Social Cognition*, Vol. 9, ed. Robert S. Wyer, Hillsdale, NJ: Erlbaum, 1–47.
- Nelson, Leif. D. and Meyvis Tom (2008), "Interrupted Consumption: Disrupting Adaptation to Hedonic Experiences," *Journal of Marketing Research*, 45 (6), 654–64.
- Roese, Neal J. (1997), "Counterfactual Thinking," *Psychological Bulletin*, 121 (1), 133–48.
- Schwarz, Norbert and Gerald L. Clore (1983), "Mood, Misattribution, and Judgments of Well-being: Informative and Directive Functions of Affective States," *Journal of Personality and Social Psychology*, 45 (3), 513–34.
- Schwartz, Barry, Andrew Ward, John Monterosso, Sonja Lyubomirsky, Katherine White, and Darrin R. Lehman (2002), "Maximizing versus Satisficing: Happiness Is a Matter of Choice," *Journal of Personality and Social Psychology*, 83 (5), 1178–97.
- Shiv, Baba and Alexander Fedorikhin (1999), "Heart and Mind in Conflict: The Interplay of Affect and Cognition in Consumer Decision Making," *Journal of Consumer Research*, 26 (3), 278–92.
- Simonson, Itamar and Amos Tversky (1992), "Choice in Context: Tradeoff Contrast and Extremeness Aversion," *Journal of Marketing Research*, 29 (3), 281–95.
- Simon, Herbert A. (1955), "A Behavioral Model of Rational Choice," *The Quarterly Journal of Economics*, 69 (1), 99–118.



- Thaler, Richard H. and Shlomo Benartzi (2004), “Save More Tomorrow: Using Behavioral Economics to Increase Employee Saving,” *Journal of Political Economy*, 112 (1), 164–87.
- Tversky, Amos and Eldar Shafir (1992), “Choice under Conflict: The Dynamics of Deferred Decision,” *Psychological Science*, 3 (6), 358–61.
- Whitmer, Anson J. and Ian H. Gotlib (2013), “An Attentional Scope Model of Rumination,” *Psychological Bulletin*, 139 (5), 1036–61.
- Wilson, Timothy D. and Daniel T. Gilbert (2008), “Explaining Away: A Model of Affective Adaptation,” *Perspectives on Psychological Science*, 3 (5), 370–86.
- Wood, Wendy and David T. Neal (2007), “A New Look at Habits and the Habit–Goal Interface,” *Psychological Review*, 114 (4), 843–63.
- Zeelenberg, Marcel (1999), “Anticipated Regret, Expected Feedback and Behavioral Decision Making,” *Journal of Behavioral Decision Making*, 12 (2), 93–106.

**FIGURE 1****STUDY 1A: CHOICE CLOSURE AND SATISFACTION**

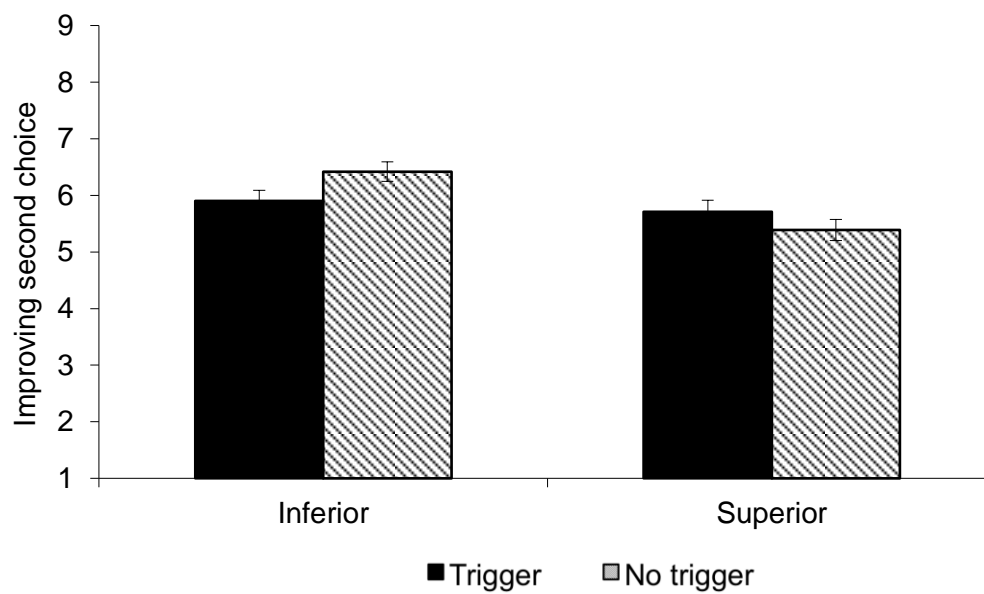
NOTE.—Error bars represent standard errors of the mean.

**FIGURE 2****STUDY 2A: CHOICE CLOSURE, FORCED COMPARISON, AND SATISFACTION**

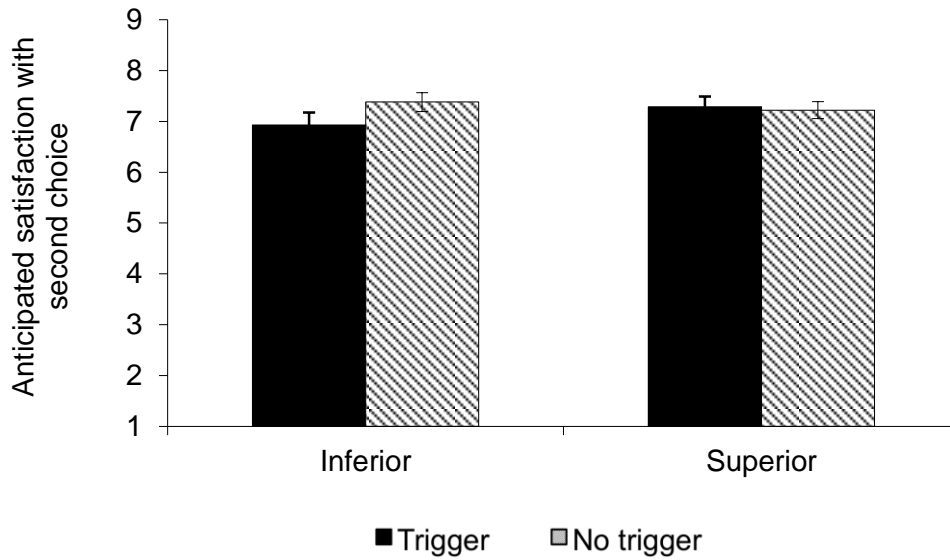
NOTE.—Error bars represent standard errors of the mean.

**FIGURE 3**

STUDY 3A: CHOICE CLOSURE AND IMPROVING A SECOND CHOICE



NOTE.—Error bars represent standard errors of the mean.

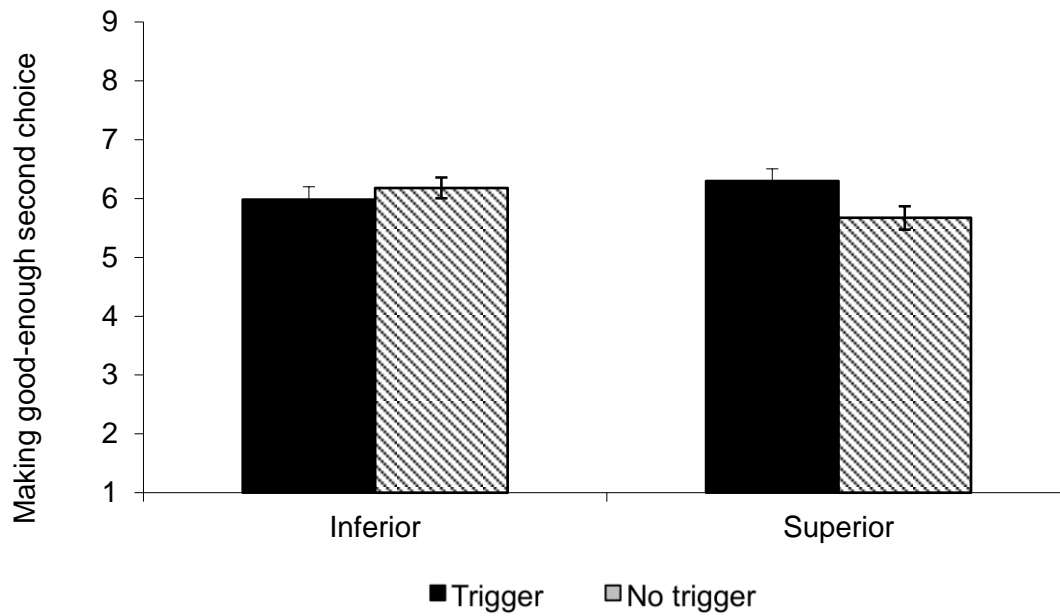
**FIGURE 4****STUDY 3A: CHOICE CLOSURE AND ANTICIPATED SATISFACTION WITH A  
SECOND CHOICE**

NOTE.—Error bars represent standard errors of the mean.

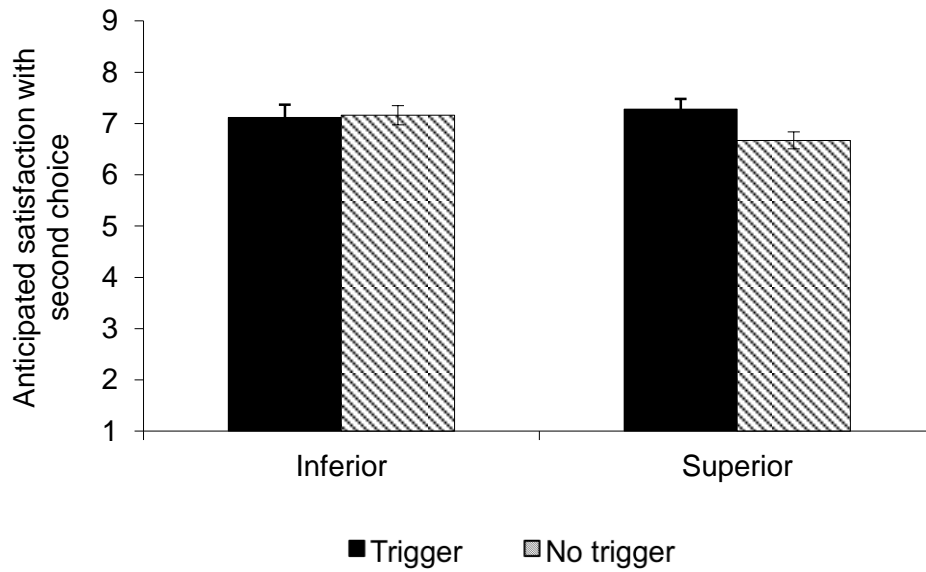
**FIGURE 5**

STUDY 3B: CHOICE CLOSURE AND MAKING A GOOD-ENOUGH SECOND

CHOICE



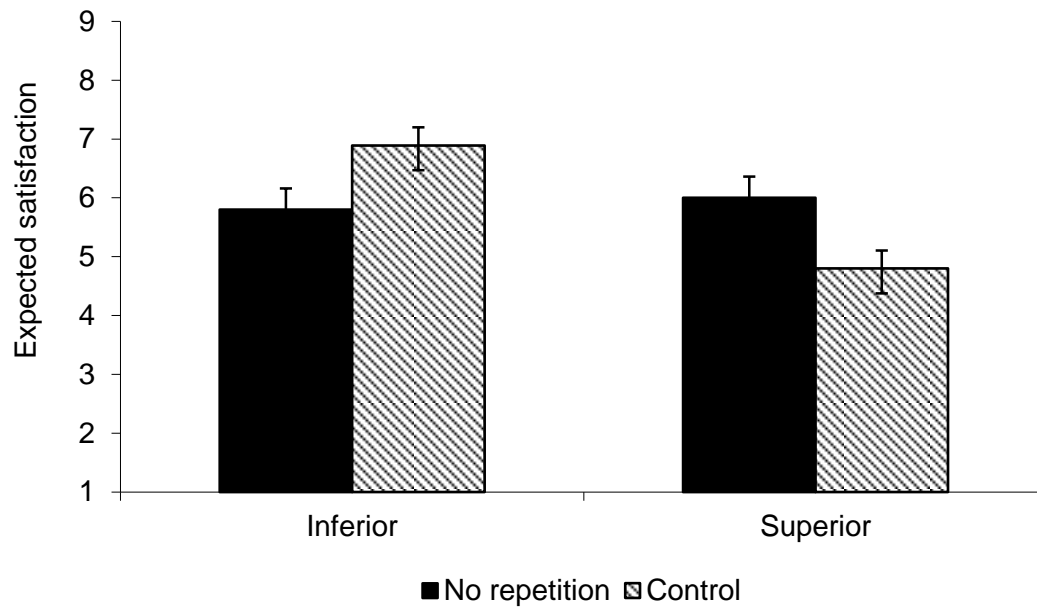
NOTE.—Error bars represent standard errors of the mean.

**FIGURE 6****STUDY 3B: CHOICE CLOSURE AND ANTICIPATED SATISFACTION WITH A  
SECOND CHOICE**

NOTE.—Error bars represent standard errors of the mean.

**FIGURE 7**

STUDY 4: EXPECTATION FOR THE EFFECT OF CHOICE CLOSURE ON  
SATISFACTION AND SALIENCE OF NO REPETITION



NOTE.—Error bars represent standard errors of the mean. The scale is bipolar: higher values indicate higher expectation that the webpage without the choice-closure trigger would lead to greater satisfaction; lower values indicate higher expectation that the webpage with the choice-closure trigger would lead to greater satisfaction.



**Headings List**

- 1) CHOICE CLOSURE AND OUTCOME SATISFACTION**
- 2) SEEKING AND AVOIDING CHOICE CLOSURE**
- 3) CHOICE CLOSURE AND SATISFACTION IN THE PAST AND THE FUTURE**
- 4) STUDY 1A**
- 5) Method
- 6) Results
- 7) STUDY 1B**
- 8) Method
- 9) Results
- 10) Discussion
- 11) STUDY 2A**
- 12) Method
- 13) Results
- 14) STUDY 2B**
- 15) Method
- 16) Results
- 17) *Manipulation check*
- 18) *Expectation*
- 19) Discussion
- 20) STUDY 3A**
- 21) Method
- 22) Results
- 23) *Improving a second choice*
- 24) *Anticipated satisfaction with a second choice*
- 25) STUDY 3B**
- 26) Method
- 27) Results
- 28) *Making a good-enough second choice*
- 29) *Anticipated satisfaction with a second choice*
- 30) Discussion
- 31) STUDY 4**
- 32) Method
- 33) Results
- 34) Discussion
- 35) GENERAL DISCUSSION**