

# The Psychological Pleasure and Pain of Choosing: When People Prefer Choosing at the Cost of Subsequent Outcome Satisfaction

Simona Botti  
University of Chicago

Sheena S. Iyengar  
Columbia University

This empirical investigation tested the hypothesis that the benefits of personal choosing are restricted to choices made from among attractive alternatives. Findings from vignette and laboratory studies show that contrary to people's self-predictions prior to actually choosing, choosers only proved more satisfied than nonchoosers when selecting from among more preferred alternatives. When selecting from among less preferred alternatives, nonchoosers proved more satisfied with the decision outcome than choosers. Subsequent analyses revealed that differences in outcome satisfaction between choosers and nonchoosers emerge even before the decision outcome is experienced and that interventions during the decision-making process can serve to attenuate these differences. Theoretical and practical implications are discussed.

When a man perceives his behavior as stemming from his own choice he will cherish that behavior and its results; when he perceives his behavior as stemming from the dictates of external forces, that behavior and its results, although identical in other respects to the behavior of his own choosing, will be devaluated. (de Charms, 1968, p. 273)

Decades of research have demonstrated that regardless of whether the choice is trivial, incidental, or even illusory, individuals afforded choice demonstrate more enjoyment and higher task performance in their selected activities, whereas those denied choice experience less intrinsic motivation and decreased psycho-

logical and physical well-being (Burger, 1989; Cordova & Lepper, 1996; Deci, 1981; Deci & Ryan, 1985; Deci, Spiegel, Ryan, Koestner, & Kaufman, 1982; Glass, Singer, & Friedman, 1969; Langer, 1975; Langer & Rodin, 1976; Perlmutter & Monty, 1977; Rotter, 1966; Schulz, 1976; Schulz & Hanusa, 1978; Seligman, 1975; Stotland & Blumenthal, 1964; Taylor, 1979; Taylor & Brown, 1988; Zuckerman, Porac, Latin, Smith, & Deci, 1978).

Seminal theories in psychology such as cognitive dissonance, self-perception, and reactance have demonstrated that the halo effect associated with the exercise of choice extends beyond the opportunity to simply match personal preferences with available alternatives (Bem, 1967; Brehm, 1966; Festinger, 1957). Such research has established that when people perceive themselves as having exercised choice, their outcome evaluation rises even if that outcome is incongruent with their previously stated preferences. In contrast, if people perceive their outcomes to be externally dictated, then even when the outcomes match their preferences, their outcome valuations lessen (Averill, 1973; Collins & Hoyt, 1972; Condry, 1977; Cooper & Fazio, 1984; Deci, 1975; Gilovich & Medvec, 1995; Langer, 1975; Lefcourt, 1973; Nuttin, 1975; Perlmutter & Monty, 1977; Taylor & Brown, 1988; Weiner, 1985; Zuckerman et al., 1978). Indeed, as de Charms (1968) noted, the human desire for autonomy is powerful enough to precipitate the paradoxical moment at which tangible results are appraised not by their objective worth but by the manner in which they are attained.

Yet a growing body of research has challenged the presumed benefits of choice by suggesting that they may be, first, specific to members of independent cultures (Iyengar & Lepper, 1999; Markus & Kitayama, 1991) and second, limited to decision contexts in which the psychological burdens associated with the act of choosing are minimal. Consistent with Fromm's (1941) hypothesis that the human desire for freedom heightens feelings of isolation and insecurity, several studies have shown that the provision of additional choices, along with the high cognitive effort expended in exercising control, increases the complexity of choice making,

---

Simona Botti, Graduate School of Business, University of Chicago; Sheena S. Iyengar, Graduate School of Business, Columbia University.

Both authors contributed equally to this study as reflected in the alphabetical order of the author listing. Simona Botti gratefully acknowledges research support from the Sanford J. Grossman Fellowship in Honor of Arnold Zellner, the Kilts Center for Marketing at the University of Chicago, and the Marketing Science Institute, which selected her dissertation proposal as the winner of the 2003 Alden G. Clayton Competition. This research was also supported by a National Science Foundation Young Investigator Career Award to Sheena S. Iyengar. This article is based in part on Simona Botti's doctoral dissertation at the University of Chicago. Simona Botti thanks her advisor, Ann L. McGill, and the other members of her dissertation committee, Christopher K. Hsee, France Leclerc, and Yuval S. Rottenstreich, for their suggestions and support. We both thank Joel Brockner, Carol S. Dweck, E. Tory Higgins, and Tom Meyvis for their comments. We also acknowledge the assistance of Marc J. Andreottola, Amanda S. Conant, Krista Davies, Cassie Mogilner, Sameer K. Sabharwal, and Aarthi Vadde in the collection and analysis of the data.

Correspondence concerning this article should be addressed to Simona Botti, who is now at the Johnson Graduate School of Management, Cornell University, 364 Sage Hall, Ithaca, NY 14853-6201, or to Sheena S. Iyengar, Graduate School of Business, Columbia University, Uris Hall, Room 714, 3022 Broadway, New York, NY 10027-6902. E-mail: ss957@columbia.edu

inducing outcome dissatisfaction and the experience of anxiety and depression (Benartzi & Thaler, 2002; Chernev, 2003; Iyengar & Jiang, 2004; Iyengar & Lepper, 2000; Schneider, 1998; Schwartz, 2000; Solomon, Holmes, & McCaul, 1980).

Consider the effects of yet another psychological burden potentially associated with the act of choosing: choosing among unwanted outcomes. A significant methodological constraint of prior studies was that the subjects' choice sets were restricted to contexts including only attractive or neutral options. In the few studies that did incorporate unattractive choice sets, participants were simply asked to perceive themselves as choosers while never facing the task of actually choosing (Averill, 1973; Burger, 1989; Lefcourt, 1973; Seligman, 1975; Stotland & Blumenthal, 1964; Taylor, 1979; Taylor, Lichtman, & Wood, 1984; Zimbardo, Weisenberg, Firestone, & Levy, 1965). What if, rather than just giving research participants illusory choice, experimenters required them to make an actual selection from options that are all less preferred? Take the abject decision featured in the novel *Sophie's Choice*: A mother must choose which of her two children will be killed (Styron, 1979). Although extreme, this example raises the more general question of whether choosers would still be more satisfied than nonchoosers when every possible decision outcome is expected to be averse.

If the benefits of personal choosing stemmed solely from the ability to engage in preference matching, we might expect choosers to be more satisfied than nonchoosers, because they can either select the "most best" in a more preferred choice set or the "least worst" in a less preferred choice set. Yet this analysis presupposes that the affective experiences associated with the decision-making process do not affect the evaluations of the decision outcomes. Although no prior study has examined people's emotional reactions to making a choice amongst less desirable options, the role of affect has been explored in decision making under uncertainty. Research has suggested that in the absence of an obvious alternative, the provision of control generates emotional discomfort and outcome dissatisfaction amongst choosers assessing their various options and often anticipating the regret accompanying a less optimal selection (Beattie, Baron, Hershey, & Spranca, 1994; Carmon, Wertenbroch, & Zeelenberg, 2003; Gilovich & Medvec, 1995; Janis & Mann, 1977; Landman, 1987; Luce, Bettman, & Payne, 2001; Shafir, Simonson, & Tversky, 1993; Simonson, 1992). Such research has further indicated that during choosers' assessment of a choice set, the disadvantages of the chosen option, relative to the other options, are more salient than its advantages, provoking an increase in anxiety and a decrease in the attractiveness of the selected outcome (Brenner, Rottenstreich, & Sood, 1999; Hsee & Leclerc, 1998; Kahneman & Tversky, 1982).

Although the exercise of choice is necessarily associated with decision conflict—regardless of the desirability of the choice set—the level of this conflict is expected to vary by the valence of the options included in the choice set (Higgins, 1998; Janis & Mann, 1977; Lewin, 1951; Miller, 1944). Conflicts of the approach–approach type, in which decision makers must choose from more desirable alternatives, are easier to resolve than avoidance–avoidance conflicts, in which the choice involves selecting from among less desirable options. In approach–approach choices, the strength of the option initially selected as best continues to increase during the decision-making process, whereas in avoidance–

avoidance choices, the least worst option increasingly loses its relative strength. Consequently, choosers vacillate between unwanted options and try to escape the ensuing emotional tension by avoiding decision making altogether (Burger, 1989; Dhar, 1997; Iyengar & Jiang, 2004; Iyengar & Lepper, 2000; Luce et al., 2001; Shafir et al., 1993; Simonson, 1992). For example, Beattie et al. (1994) found that when confronted by avoidance–avoidance choices (e.g., a parent choosing which of his two children will receive a bone marrow transplant when both children will die without the procedure), people experience guilt, regret, and psychological distress, resulting in a preference for the decision to be determined by either fate or another decision maker. Thus, even though both more and less preferred choices may involve conflicts, choosers confronted by a set of less preferred options are more likely than choosers confronted by a set of more preferred options to experience pain while choosing.

Despite their awareness of the emotional burden associated with choosing from unwanted outcomes, individuals may still prefer to choose for themselves under the assumption that they will be more likely to maximize outcome satisfaction by selecting the least worst option. Yet prior studies have demonstrated that humans are often inaccurate in predicting their affective experiences (Gilbert & Ebert, 2002; Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). In less preferred choices, this inability to forecast the emotional consequences of their decisions may make choosers unwilling to relinquish decision making because they believe that outcome satisfaction they will experience is based more on their ability to choose the least worst option than on the pain resulting from actually making a choice. On the contrary, greater happiness from personal choosing may be experienced only when the choice is from among more desirable alternatives.

We propose that when scrutinizing relatively more desirable options in search of the most best, choosers engage in positive thoughts about the advantages of each option and experience the positive affect resulting from a pleasurable process of choosing. In contrast, the pursuit of the least worst amongst relatively less attractive alternatives causes choosers negative affect because they entertain aversive thoughts about the disadvantages of their choice set options, fostering an unpleasant experience of choosing. Nonchoosers' feelings during the decision-making process are by contrast hypothesized to be more affect neutral than those of choosers because, as prior research has suggested, a sense of causality and controllability is central to the experience of an enhanced emotional state (Weiner, 1985). For instance, it has been demonstrated that people exhibit greater elation for the favorable consequences and greater regret for the unfavorable consequences of an action taken than for the consequences of inaction (Gilovich & Medvec, 1995; Gilovich, Medvec, & Chen, 1995; Kahneman & Miller, 1986; Kahneman & Tversky, 1982; Landman, 1987; Mellers, 2000; Spranca, Minsk, & Baron, 1991).

In more preferred choice contexts, then, choosers benefit from the prospect of experiencing an option that better matches their preferences as well as from the sheer pleasure derived from contemplating the advantages of this option. Nonchoosers, on the other hand, are deprived of the pleasure of choosing because of their disengagement from the decision-making process. As compared with nonchoosers, choosers' greater positive affect from the decision process may carry over to the experience of the chosen

option, resulting in higher outcome satisfaction. Conversely, in less preferred choice contexts, choosers feel greater dissatisfaction than nonchoosers in spite of being given the opportunity to select the least worst option. The negative affect associated with the disadvantages of the selected alternative may thwart choosers' enjoyment of the benefits of preference matching, whereas nonchoosers' detachment from the decision process may protect them from the negative consequences of this affective spillover.

As an initial test of our predictions, we asked 164 university students to imagine themselves seated in a well-known restaurant being presented with four entrées. Participants then contemplated the four choice set options. In the more preferred choice condition, the choice set consisted of seemingly sumptuous entrées: seared yellowfin tuna with mint relish, roasted rack of lamb with rosemary, sautéed foie gras, and filet mignon in cabernet sauce. In the less preferred choice condition, however, the choice set was made up of four seemingly revolting dishes: fried scorpion, stewed snake meat, fried ants, and boiled spider eggs. Participants were then randomly assigned to either the choice condition, in which they selected one of the entrées and imagined themselves as eating the dish of their choice, or the no-choice condition, in which they imagined themselves as eating the dish chosen for them by another. After experiencing the free- or the imposed-choice process, participants were asked about their preference for choosing and their anticipated satisfaction with the selected entrée. When asked about their preference for choosing, the vast majority (more preferred choice: 84%; less preferred choice: 78%) indicated that they would rather choose for themselves than have a random other person choose for them. As for anticipated outcome satisfaction, in the case of relatively more attractive entrées, choosers anticipated that they would enjoy the selected dish more ( $M = 7.59$ ,  $SD = 1.63$ ) than nonchoosers ( $M = 4.73$ ,  $SD = 2.50$ ), whereas for relatively less attractive entrées, choosers anticipated enjoying the selected dish less ( $M = 2.44$ ,  $SD = 2.15$ ) than nonchoosers ( $M = 4.11$ ,  $SD = 2.69$ ).

Expanding on this pilot study, the following two studies tested the hypothesis that although individuals prefer to make rather than relinquish their choices, choosers experience greater outcome satisfaction than nonchoosers only when the choice sets include more preferred options. Study 1a examined people's belief that personal choosing leads to greater outcome satisfaction regardless of the valence of the choice set by measuring subjects' anticipated satisfaction prior to the act of choosing. In Study 1b, the forecasters' beliefs from Study 1a were tested by replicating the procedure described in the pilot study: Participants first engaged in either the roles of choosers or nonchoosers across more and less preferred decision-making contexts and then rated their anticipated satisfaction with the chosen outcome. As in the pilot study, the experience of choosing for oneself versus having another choose was predicted to lead to a reversal in outcome satisfaction. That is, anticipated outcome satisfaction was expected to be higher for choosers than for nonchoosers in the more preferred choice condition, whereas the opposite was expected to be true in the less preferred choice condition. Study 2 compared choosers' and nonchoosers' anticipated and experienced outcome satisfaction by exposing participants to relatively appealing and unappealing food options, and it provides evidence for the psychological mechanism

that is hypothesized to account for differences between choosers and nonchoosers across more and less preferred decision contexts.

## Study 1a

### *Method*

#### *Overview*

This investigation examined people's self-theory about the benefits of choosing over not choosing with regard to outcome satisfaction without having them experience the act of choosing. Specifically, Study 1a tested the prediction that across both more and less preferred choices, people (a) prefer choosing for themselves as compared with having others choose for them and (b) anticipate higher satisfaction with personally chosen outcomes than with outcomes chosen by others.

#### *Participants*

Sixty students at an East Coast university were recruited to participate in this 5-min questionnaire study. The average age of the participants was 25.07 years; 45% were European American, 38.3% were Asian or Asian American, 6.7% were Hispanic, and 10% classified themselves as "Other"; 54.7% of participants were men and 46.3% were women. All participants received a chocolate candy bar as compensation for their participation. None of the dependent variables differed significantly across participant demographics, nor were any interactions between the demographic terms and the dependent variables observed. Therefore, we collapsed across age, ethnicity, and gender.

#### *Instruments*

An equal number of participants were assigned to both the more preferred condition and the less preferred condition. Relative attractiveness of choice set options varied by participants' perceived tastes. That is, participants in the more preferred condition read the version of the following scenario in which they imagined liking pasta, whereas participants in the less preferred condition read the bracketed version, in which they imagined disliking pasta:

Imagine that you and your roommate are studying hard for your finals. At around 2:00 in the morning, you both realize that you are starving and ready for a late-night meal. You really like pasta. Fortunately, [You really dislike pasta. Unfortunately,] you have the ingredients to prepare any one of the following pasta dishes: spaghetti Bolognese, ravioli with cheese, fettuccine Alfredo, and pasta with a garlic-basil pesto sauce.

The first item on the questionnaire tapped participants' preference for choosing: "In which of the following situations do you think you would have felt happier?" The next two items measured predicted satisfaction: "In which of the following situations do you think you would have been more satisfied with the selected pasta dish?" and "In which of the following situations do you think you would have felt more confident that the most delicious dish was consumed?" As a manipulation check, a question was included as a measure of perceived freedom: "In which of the following situations do you think you would have felt more freedom over what you ate?" For all questions, participants selected one of two alternatives: "When you are the one choosing which pasta dish to eat" (choice) and "When your roommate is the one choosing which pasta dish to eat" (no choice).

## Results

### Manipulation Check

The manipulation check confirmed the validity of the choice manipulation. A significant majority of participants,  $\chi^2(1, N = 60) = 35.27, p < .01$ , displayed higher perceived freedom when they chose which pasta dish to eat (88.33%) than when their roommates chose which pasta to eat (11.67%). The valence of the choice did not influence the percentages of people selecting one of the two choice alternatives,  $\chi^2(1, N = 60) = 1.46, ns$ , suggesting that participants perceived themselves as having more freedom only when they were the choosers, and their perceptions did not vary by choice valence.

### Preference for Choosing

We first tested the hypothesis that people prefer personally made choices to other-made choices across both more and less preferred choice-making contexts. A chi-square test on participants' responses to the preference for choosing measure revealed that 83.33% of participants preferred choosing for themselves, whereas only 16.67% preferred having their roommates choose for them,  $\chi^2(1, N = 60) = 26.67, p < .01$ . Ninety percent of the participants assigned to the more preferred choice condition and 76.67% of those assigned to the less preferred choice condition opted for making a personal choice, suggesting that the percentages of participants selecting the personally made choice did not vary by the assigned valence of the choice condition,  $\chi^2(1, N = 60) = 1.92, ns$ .

### Predicted Satisfaction

Results confirm the hypothesis that predicted outcome satisfaction will be higher from one's own choice than from another's choice, regardless of the valence of the options making up the choice set. A chi-square test on the item measuring participants' expected satisfaction with the selected pasta dish,  $\chi^2(1, N = 60) = 17.10, p < .01$ , revealed that the majority of participants (76.67%) predicted they would be more satisfied if they chose their own pasta dish as opposed to if their roommate chose the pasta dish. These percentages were not predicted by the valence of the choice: 83.33% of participants in the more preferred choice condition and 70.00% in the less preferred choice condition predicted higher outcome satisfaction as a result of personal choosing,  $\chi^2(1, N = 60) = 1.49, ns$ . Similarly, participants predicted that they would be significantly more confident in the deliciousness of the selected dish if they were the choosers (88.33%),  $\chi^2(1, N = 60) = 35.27, p < .01$ , because 90% of more preferred choosers and 86.67% of less preferred choosers were more confident about their liking the dish in the personal choice rather than in the other choice condition. Again, this prediction did not vary by choice valence,  $\chi^2(1, N = 60) = 0.16, ns$ .

## Discussion

Results from Study 1a support the hypothesis that prior to engaging in the decision process and regardless of choice valence, people predict that they will (a) prefer choosing for themselves to

having others decide for them and (b) feel more satisfied with their own choices than with those of another. Consistent with prior theory and research, these results suggest that when the choice-making process is anticipated but not experienced, people prefer choosing even when the choice is relatively less attractive (e.g., Averill, 1973; Brehm, 1966; Burger, 1989; de Charms, 1968; Deci, 1981; Langer, 1975). Essentially, before experiencing the decision-making process, choosers base their predictions of outcome satisfaction on the assumption that they are better able to preference match for themselves than others doing so on their behalf.

## Study 1b

### Method

#### Overview

This study examined the accuracy of people's self-predictions of their satisfaction with chosen and nonchosen outcomes by having participants experience a choice before predicting their satisfaction with its outcome. Study 1b tested the hypothesis that contrary to observers' predictions in Study 1a, choosers, as opposed to nonchoosers, will only exhibit greater outcome satisfaction when the choice set includes more attractive options.

#### Participants

One hundred fifty-nine students from an East Coast university were recruited at on-campus dining halls to participate in this 5-min questionnaire study. Of the participants, 52.2% were men and 47.8% were women; their average age was 21.6 years; 52.8% were European American, 28.9% were Asian or Asian American, 6.3% were African American, 5.7% were Hispanic, and 6.3% classified themselves as "Other." All participants received a chocolate candy bar as compensation for their participation. None of the dependent variables significantly differed across participant demographics, nor were any interactions between the demographic terms and the dependent variables observed. Therefore, we collapsed across gender, age, and ethnicity.

#### Instrument

This study used a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) between-subjects factorial design. All conditions had 40 participants except for the choice/less preferred condition, which had 39 participants. Participants were randomly assigned to one of the same two pasta scenarios (more and less preferred condition) described in Study 1a. After reading one of the two scenarios, participants in this study encountered either a choice or a no-choice manipulation. Recall that they were offered four potential pasta options: spaghetti Bolognese, ravioli with cheese, fettuccine Alfredo, and pasta with a garlic-basil pesto sauce. Participants in the choice condition were told, "You insist on choosing which pasta dish you will both eat," and then were prompted to circle the pasta dish they would most prefer, whereas participants in the no-choice condition were told, "Your roommate insists on choosing which dish you will both eat. The pasta dish your roommate chooses is . . ." We used a yoked design where each participant in the no-choice condition was assigned the identical pasta dish that a participant in the choice condition had chosen (e.g., Cordova & Lepper, 1996; Iyengar & Lepper, 1999, 2000; Zuckerman et al., 1978).

After reading the vignette, participants completed a questionnaire designed to tap the constructs of preference for choosing and anticipated satisfaction. To gauge participants' preference for choosing, we asked,



“How happy do you think you would have felt about being the one to choose which pasta dish to eat?” whereas participants in the no-choice condition were asked, “How happy do you think you would have felt about not being the one to choose which pasta dish to eat?” Anticipated satisfaction was measured by asking “How satisfied do you think you would have been with the selected pasta dish?” and “How confident are you that the selected pasta dish was one that you would like more than any of the other options?” Responses to both questions were highly correlated ( $r = .82, p < .01$ ), allowing us to create a composite anticipated satisfaction measure. Finally, as a manipulation check (perceived freedom), participants were asked, “To what extent would you feel you had freedom over what you ate?” Responses to all questions were given on a 1 (*not at all*) to 9 (*very much*) scale.

## Results

### Preliminary Analysis

Results show that 22.78% of participants chose spaghetti Bolognese, 22.78% chose ravioli with cheese, 25.32% chose fettuccine Alfredo, and 29.11% chose pasta with pesto sauce, revealing no differences across pasta alternative preferences,  $\chi^2(3, N = 79) = 0.85, ns$ , or by choice valence,  $\chi^2(3, N = 79) = 2.32, ns$ . All analyses of variance (ANOVAs) reported below initially included pasta choice as a covariate, but because it did not prove significant, we collapsed across all pasta selections.

Results also confirm the validity of the choice manipulation. A 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on perceived freedom revealed a significant effect for choice,  $F(1, 155) = 11.63, p < .01$ , and for choice valence,  $F(1, 155) = 12.60, p < .01$ , but no interaction effect,  $F(1, 155) = 0.00, ns$ . Choosers ( $M = 5.66, SD = 2.27$ ) perceived themselves as having greater freedom than nonchoosers ( $M = 4.45, SD = 2.32$ ), and participants in the more preferred condition ( $M = 5.67, SD = 2.28$ ) considered themselves freer than participants in the less preferred condition ( $M = 4.42, SD = 2.30$ ). Perhaps, then, the positive effect of choosing derives not only from the selection of one option from a set but also from the selection of the choice set, because choosers in the less preferred condition perceive more constraint when confronted by a set of relatively unattractive alternatives than choosers in the more preferred condition (Lewin, 1951; Miller, 1944).

### Preference for Choosing

A 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA revealed a significant effect for choice,  $F(1, 155) = 305.77, p < .01$ , and choice valence,  $F(1, 155) = 12.17, p < .01$ , but no interaction effect,  $F(1, 155) = 0.92, ns$ . As shown in the top panel of Figure 1, choosers ( $M = 7.43, SD = 1.35$ ) more than nonchoosers ( $M = 3.30, SD = 1.71$ ) and participants in the more preferred condition ( $M = 5.77, SD = 2.49$ ) more than participants in the less preferred condition ( $M = 4.92, SD = 2.62$ ) reported being significantly happier with their condition assignments.

### Anticipated Satisfaction

Are choice-loving participants actually more satisfied with their decision outcomes than those denied the opportunity to choose for

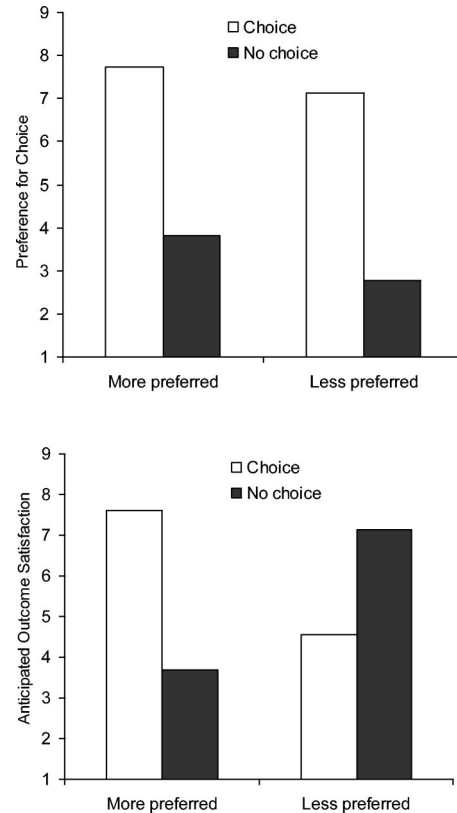


Figure 1. Top panel: Measure of preference for choice in Study 1b. Choosers' and nonchoosers' mean predicted preferences for the assigned choice condition by choice attractiveness, measured on a 9-point scale ranging from 1 (*not at all happy*) to 9 (*very happy*). Bottom panel: Measure of outcome satisfaction in Study 1b. Choosers' and nonchoosers' mean anticipated outcome satisfaction by choice valence, measured on a 9-point scale ranging from 1 (*not at all*) to 9 (*very much*).

themselves? We conducted a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on anticipated satisfaction, yielding a main effect for choice,  $F(1, 155) = 8.39, p < .01$ , and no significant main effect for choice valence,  $F(1, 155) = 0.71, ns$ . These effects are best interpreted through the significant interaction between choice and choice valence,  $F(1, 155) = 198.48, p < .01$  (see the bottom panel of Figure 1). As predicted, in the more preferred condition,  $F(1, 155) = 145.17, p < .01$ , choosers ( $M = 7.61, SD = 1.61$ ) anticipated being more satisfied than nonchoosers ( $M = 3.69, SD = 1.56$ ). However, in the less preferred condition,  $F(1, 155) = 62.23, p < .01$ , choosers ( $M = 4.55, SD = 1.59$ ) anticipated being less satisfied than nonchoosers ( $M = 7.14, SD = 0.98$ ).

### Discussion

The combined findings of Studies 1a and 1b are striking because they suggest that people may prefer choosing even when the exercise of choice renders them less satisfied than not choosing at all. Results of Study 1a show that self-made choices were preferred to other-made choices, regardless of the desirability of the options included in the

choice set. Yet on examining participants' satisfaction in Study 1b after making a decision but before experiencing its outcome, we observed a reversal in anticipated satisfaction. Choosers anticipated being more satisfied than nonchoosers with the outcome of the decision when the selection included relatively attractive alternatives; however, nonchoosers anticipated higher outcome satisfaction when the choice set included relatively unattractive alternatives.

Curiously, nonchoosers' outcome evaluation in the less preferred condition was comparable to that of choosers in the more preferred condition and was significantly higher than nonchoosers' evaluation of the relatively more attractive imposed option,  $F(1, 155) = 111.13, p < .01$ . The experience of reactance among nonchoosers, then, may be more prevalent in decision contexts including more preferred options than in decision contexts including less preferred options (e.g., Brehm, 1966). One possibility is that nonchoosers confronted by more preferred options are more likely to have developed preconceived preferences than nonchoosers confronted by less preferred alternatives.

Although the findings from Studies 1a and 1b provide compelling evidence to suggest a reversal in outcome satisfaction between choosers and nonchoosers across more and less preferred decision contexts, these studies are limited in that they do not allow us to specify the mechanisms underlying this observed reversal. Recall that according to our hypothesis, the reversal in outcome satisfaction stems from an affective asymmetry in the decision process that distinguishes choosers from nonchoosers and decision makers across relatively more attractive versus less attractive choice-making contexts. Specifically, we predict that choosers' greater investment in the decision process, as compared with nonchoosers, results in choosers generating a higher number of positive thoughts associated with the advantages of more preferred options and a higher number of negative thoughts associated with the disadvantages of less preferred options. Consequently, pondering the advantages of the more preferred choice set options may induce greater positive affect in choosers than in nonchoosers, which in turn will be positively correlated with outcome satisfaction. In contrast, contemplating the disadvantages of the options in a less preferred context may detrimentally influence choosers' affect, subsequently hampering choosers' outcome satisfaction as compared with their no-choice-making counterparts. Thus, the following study tested the prediction that these differences in experienced affect account for the observed reversal in outcome satisfaction between choosers and nonchoosers across more and less preferred decision contexts.

Moreover, Study 2 investigated whether intervening during the decision process so as to make both choosers and nonchoosers engage in analogous decision processes mitigates the asymmetry in affective responses. Drawing on prior research that has suggested the neutralizing effects of introspection, we predicted that if choosers and nonchoosers are required to focus on the advantages and disadvantages of every choice set option before making a choice or having one imposed on them, they will both be equally engaged in the selection process, and their affective reactions to the process itself will be neutralized (Wilson, Lisle, Schooler, & Hodges, 1993; Wilson & Schooler, 1991). Thus, Study 2 tested the hypothesis that an intervention in the decision process, making participants elaborate equally on the pros and cons of each choice set option, will limit the pleasure or pain felt when considering the choice set options so as to attenuate the reversal

in satisfaction between choosers and nonchoosers across more and less preferred decision contexts.

## Study 2

### Method

#### Overview

Study 2 had three aims. The first was to expand on the findings of Study 1b in a laboratory context in which we measured both anticipated and experienced satisfaction to examine whether choosers' reversal in outcome satisfaction was influenced by the actual experience of decision outcomes. Second, by examining the thought protocols of choosers and nonchoosers, we tested the prediction that the observed reversal in outcome satisfaction is associated with an asymmetry in the affective experiences of choosers and nonchoosers across more and less preferred choice sets. Third, we varied the type of decision-making processes participants experienced (free vs. forced elaboration) so that we could examine whether an intervention in the decision process, that is, having choosers attend to the advantages (*pros*) and disadvantages (*cons*) of every option in their choice sets, would attenuate differences in outcome satisfaction across choosers and nonchoosers.

#### Participants

One hundred eighty students at a Midwestern university were recruited for this 20-min study. The average age of participants was 21 years; 79% were European American, 17% were Asian or Asian American, and 4% classified themselves as "Other"; 45% were men, and 55% were women. Only participants who regularly eat yogurt were allowed to participate in the study. All participants received \$5 as compensation for their participation.

#### Design

This study had a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred)  $\times$  2 (elaboration: free vs. forced) between-subjects factorial design in which participants were randomly assigned to one of eight conditions. The number of participants in each of the eight conditions ranged from 17 to 29.

#### Stimulus Material

We chose experimental stimuli that would be unfamiliar to study participants. In doing so, precautions were taken to ensure (a) that the stimuli in the more preferred condition would be regarded as more attractive than stimuli in the less preferred condition and (b) that across both the more preferred and less preferred conditions, the choice-making decision itself remained equally difficult.

The first pretest was designed to identify a set of four relatively more preferred and four relatively less preferred yogurt flavors. Forty-four university students were shown 23 unknown flavors of yogurt and asked to rate how much they thought they would like or dislike each flavor on a 1 (*I would not like it at all*) to 9 (*I would extremely like it*) scale. Care was taken to select flavors that were not available in the local markets so as to avoid participants' preexisting preferences for yogurt flavors (Iyengar & Jiang, 2004; Iyengar & Lepper, 2000). As shown in the Appendix, ratings of liking ranged from  $M = 1.77$  (plain yogurt with mustard seeds) to  $M = 5.40$  (plain yogurt with brown sugar). The four yogurts rated as relatively more preferable were brown sugar ( $M = 5.40, SD = 2.35$ ), cinnamon ( $M = 5.34, SD = 2.33$ ), cocoa powder ( $M = 4.90, SD = 2.38$ ), and mint ( $M = 4.45, SD = 2.10$ ), whereas among the relatively less preferable were celery

seeds ( $M = 2.23$ ,  $SD = 1.82$ ), tarragon ( $M = 2.14$ ,  $SD = 1.92$ ), chili powder ( $M = 2.05$ ,  $SD = 1.78$ ), and sage ( $M = 2.05$ ,  $SD = 1.65$ ). When selecting which yogurt flavors would be included in the less preferred choice condition, extreme negative ratings ( $M < 2$ ) were excluded to avoid floor effects.

After more and less preferred yogurt flavors were selected, we conducted a second pretest to examine whether the act of choosing from among four relatively more attractive versus from among four relatively less attractive alternatives resulted in an easier decision-making process. Because prior research has suggested that choosers more frequently make choices from among attractive rather than unattractive alternatives, any differences among choice versus no choice across more preferred and less preferred choice sets may stem from differences in the cognitive attention required (Dhar & Simonson, 1992). From a separate set of 50 participants, half were presented with the aforementioned more appealing yogurt flavors (mint, cocoa, cinnamon, brown sugar), and half were presented with the less appealing yogurt flavors (sage, chili powder, tarragon, celery seeds). Participants then selected their yogurt and were asked, "How difficult was it to choose the yogurt flavor you selected?" and "How uncertain do you think the outcome of this choice is?" All the responses were given on a 1 (*not at all*) to 9 (*extremely*) scale. Choosers' perceptions of difficulty ( $M = 4.78$ ,  $SD = 2.42$ ),  $F(1, 48) = 2.19$ , *ns*, and uncertainty ( $M = 5.18$ ,  $SD = 2.21$ ),  $F(1, 48) = 0.04$ , *ns*, did not vary by the attractiveness of their yogurt choice set.

### Procedure

On entering the laboratory, participants were greeted by an experimenter and directed to a table with four round plastic cups of approximately 11 cm in diameter and 4 cm in height, each containing one of the four flavorings. These four uncovered, transparent cups were labeled, allowing participants to easily see and smell the flavorings contained inside. The four yogurt flavors varied across the more versus less preferred conditions. Drawing on the results from the pretest, the yogurt flavors included in the more preferred condition were mint, cocoa, cinnamon, and brown sugar, and the yogurt flavors included in the less preferred condition were sage, chili powder, tarragon, and celery seeds.

Once seated, the experimenter explained, "The purpose of this study is to test consumers' preferences for the four new flavors of yogurt displayed on the table." All participants were advised that they would be given a serving of about 2 tbsp (30 ml) of plain yogurt mixed with the selected flavoring. After encountering the four yogurt flavors, participants in the free-elaboration condition were either told to "choose whichever yogurt you would like to taste" (choice condition) or "to ensure that an equal number of people try each of the four flavors, you will be randomly assigned one of the flavors" (no-choice condition).

In the forced-elaboration condition, participants were either told to "choose whichever yogurt you would like to taste" (choice condition) or "you will either be allowed to select the yogurt of your choice or be randomly assigned to one yogurt flavor" (no-choice condition). By making their status as nonchoosers uncertain, we endeavored to ensure both that participants in the no-choice condition would be involved in the decision process as much as choosers and that they would engage in a decision-making process comparable to that of their choice-making counterparts. Next, all participants were given a sheet of paper listing the four available yogurt flavors. Two columns labeled "Pros" and "Cons" contained five blank rows underneath each flavor name, allowing participants to describe their perceived pluses and minuses of each alternative. The order in which the flavors were listed was counterbalanced so that there were four different sheets for each attractiveness condition.

To maintain the pretense of a random drawing in the no-choice conditions, experimenters drew a slip of paper out of a transparent plastic bowl to show participants which flavor they would taste. In actuality, we used a

yoked design by which all participants in the no-choice conditions were assigned the identical yogurt flavor that participants in the choice conditions had earlier chosen.

After the selection of the yogurt flavor, the experimenter mixed 30 ml (i.e., 2 tbsp) of Dannon plain fat-free yogurt with either 5 ml (1 tsp) of the milder tasting flavorings (e.g., brown sugar, tarragon) or one pinch of the stronger tasting flavorings (e.g., cinnamon, chili) in a 142-g (5-oz) plastic cup. Before letting participants taste the yogurt, the experimenter handed them a brief presurvey, in which participants were asked a series of questions concerning their anticipation of how satisfied they would be with the selected yogurt. In addition, at the end of the presurvey, only participants in the free-elaboration condition were asked to recall the thoughts they engaged in during the yogurt selection process. Next, participants were handed the selected yogurt flavor and given the opportunity to "eat as much as you want." Unbeknownst to participants, the cups in which they sampled the yogurt were marked with the corresponding participant identification numbers, allowing us to measure the amount of yogurt (in milliliters) eaten by each participant, thus constituting a behavioral measure of satisfaction.

When participants were finished with their yogurt tasting, they were given a second questionnaire (postsurvey), with items measuring participants' preference for choosing and experienced satisfaction with the sampled yogurt. Demographic information was also gathered at this time.

### Dependent Measures

*Preference for choosing.* This study included questions that measured both the participants' preference for personal choosing and their preference for having decision outcomes externally dictated. The first question to specifically measure participants' liking of their condition assignment asked choosers, "How much did you like having to choose which yogurt to taste?" and asked nonchoosers, "How much did you like not having to choose which yogurt to taste?" The second question measured participants' desire for being given the opposing condition assignment by asking choosers, "How much would you rather not have to choose which yogurt to taste?" and nonchoosers, "How much would you rather have had to choose which yogurt to taste?" Responses were given on a 1 (*not at all*) to 9 (*extremely*) scale. By separately measuring the preference for choosing and the preference for not choosing, we allowed for the possibility of there being circumstances in which both options were equally attractive or unattractive (Lepper, Henderlong, & Iyengar, 2003; Lepper, Sethi, Daldin, & Drake, 1996).

*Outcome satisfaction.* Two self-reported measures of satisfaction were gathered before and after the yogurt was sampled. The anticipated satisfaction measure ( $r = .85$ ,  $p < .01$ ) consisted of two questions: "How satisfied do you think you will be with the selected yogurt?" and "How confident are you that you will like the selected yogurt?" Similarly, experienced satisfaction ( $r = .90$ ,  $p < .01$ ) was measured through the items "How satisfied were you with the yogurt you tasted?" and "How much did you enjoy the sample you tasted?" All responses were given on a 1 (*not at all*) to 9 (*extremely*) scale. The amount of yogurt eaten, measured in milliliters, served as a behavioral measure of satisfaction.

*Manipulation check.* All participants provided ratings of liking for each of the yogurt flavors present in their condition assignment. Findings confirmed that participants in the more preferred condition indeed perceived the yogurt flavors ( $M = 5.88$ ,  $SD = 1.11$ ) as being relatively more tasty than did participants in the less preferred condition ( $M = 4.73$ ,  $SD = 1.65$ ),  $F(1, 88) = 13.90$ ,  $p < .01$ .

It is possible that the reversal in outcome satisfaction between choosers and nonchoosers across more and less preferred decision contexts is explained by differences in regret following the decision process (Gilovich et al., 1995; Gilovich & Medvec, 1995; Kahneman & Miller, 1986; Kahneman & Tversky, 1982; Landman, 1987; Simonson, 1992; Spranca et al., 1991). To examine this possibility, we assessed participants' regret by

including the following question in the postsurvey: "How much do you regret eating the yogurt you tasted?" Responses were given on a 1 (*not at all*) to 9 (*extremely*) scale.

**Thought protocol analyses.** In the free-elaboration condition, participants' thought protocols were content analyzed by two raters unaware of the experimental hypotheses. First, the number of words and number of thoughts generated by each participant in the free-elaboration condition were counted. Findings suggest that the number of thoughts was only marginally different across choice conditions,  $F(1, 90) = 3.62, p < .1$ , with choosers ( $M = 2.96, SD = 1.49$ ) generating a marginally higher number of thoughts than nonchoosers ( $M = 2.48, SD = 1.33$ ). Neither the main effect for choice valence,  $F(1, 90) = 1.66, ns$ , nor the Choice  $\times$  Valence interaction,  $F(1, 90) = 1.72, ns$ , were significant. The number of words ( $M = 23.21, SD = 13.76$ ), however, was independent of choice,  $F(1, 90) = 1.37, ns$ ; valence,  $F(1, 90) = 2.04, ns$ ; and Choice  $\times$  Valence,  $F(1, 90) = 0.94, ns$ , suggesting that even when participants were free to generate their own thoughts, the amount of elaboration was similar across conditions.

Next, to gauge both the number of positive and negative thoughts about the options included in the choice set that were freely voiced by participants, coders content analyzed all responses in terms of the total number of pros and cons listed—an analysis that proved highly reliable (pros:  $r = .97, p < .01$ ; cons:  $r = .92, p < .01$ ). Raters used the following criteria for categorizing pros and cons. Thoughts were coded as pros if participants (a) liked specific attributes of a flavor ("Mint would be fun, but cocoa is so delicious"), (b) positively valued a flavor on the basis of their reported preferences ("I knew right away that I wanted the cocoa flavor, because I love chocolate"), or (c) engaged in relative or absolute comparisons between liked product attributes ("I chose cocoa over sugar because I thought it might be healthier in some small way"). Thoughts were coded as cons if participants (a) disliked characteristics of the flavors ("The mint ingredients were rather repulsive, they being grassy and all"), (b) flavors were excluded from participants' reported preferences ("I do certainly hope that they do not draw chili powder"), or (c) relative and absolute comparisons between disliked products' attributes were voiced ("Man, all these flavors are terrible").

The validity of the elaboration manipulation was confirmed by comparing the raters' counts of the number of pros and cons per participant in the free-elaboration condition with the number of pros and cons listed by participants in the forced-elaboration condition: Free-elaboration participants generated significantly fewer pros ( $M = 0.59, SD = 0.90$ ) and cons ( $M = 1.71, SD = 1.75$ ) compared with forced-elaboration participants: pros ( $M = 5.48, SD = 1.93$ ),  $F(1, 172) = 511.53, p < .01$ ; cons ( $M = 5.10, SD = 1.61$ ),  $F(1, 172) = 215.17, p < .01$ . Participants in the free-elaboration condition were not required to generate pros and cons; therefore, we only content analyzed those responses that contained pros and cons.

## Results

### Preliminary Analysis

Initially, gender, age, country of origin, and order in which the four yogurt flavors were presented in the pros and cons sheet were included as covariates in the following sets of analyses. Because there were no significant main effects for these variables, the analyses reported below collapse across demographics and order of yogurt presentation.

Additionally, chi-square tests conducted on participant yogurt flavor preferences show that in the more preferred condition, 42.5% of participants chose brown sugar, 22.5% chose cocoa, 22.5% chose cinnamon, and 12.5% chose mint, resulting in a marginally significant difference in yogurt flavor preferences,

$\chi^2(3, N = 40) = 7.60, p < .1$ . In the less preferred condition, 32.7% of participants chose celery seeds, 23.1% chose chili powder, 26.9% chose tarragon, and 17.3% chose sage, resulting in no significant differences in yogurt flavor preferences,  $\chi^2(3, N = 52) = 2.61, ns$ . Because yogurt flavor preferences did not significantly affect any of the dependent measures, and there were no significant differences between the free- and the forced-elaboration conditions either in more preferred,  $\chi^2(3, N = 40) = 2.26, ns$ , or less preferred,  $\chi^2(3, N = 52) = 0.84, ns$ , choice contexts, we collapsed across yogurt flavors in the analyses reported below.

In addition, participants' reported regret with the selected yogurt flavor did not account for the reversal in outcome satisfaction. Specifically, the 2 (choice)  $\times$  2 (choice valence) ANOVA conducted on participants' regret for eating the selected yogurt yielded only a main effect for choice valence,  $F(1, 172) = 14.85, p < .01$ ; that is, participants in the less preferred decision context ( $M = 3.79, SD = 2.69$ ) regretted their outcomes more than participants in the more preferred decision contexts ( $M = 2.1, SD = 1.81$ ).

### Preference for Choosing

Recall that we examined participants' reported preferences for personal choosing versus for relinquishing choice to a random draw. A 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred)  $\times$  2 (elaboration: free vs. forced) ANOVA was conducted on participants' liking of their condition assignment, yielding a significant effect of choice,  $F(1, 171) = 28.89, p < .01$ , and the interaction between choice and choice valence,  $F(1, 171) = 4.25, p < .05$ . As in Studies 1a and 1b, choosers ( $M = 6.00, SD = 2.24$ ) reported liking their condition assignment significantly more than nonchoosers ( $M = 4.35, SD = 2.07$ ). However, a significant interaction suggests that the difference between choosers ( $M = 6.67, SD = 1.96$ ) and nonchoosers ( $M = 4.27, SD = 1.88$ ),  $F(1, 171) = 24.07, p < .01$ , in the more preferred condition was greater than in the less preferred condition (choosers:  $M = 5.50, SD = 2.31$ ; nonchoosers:  $M = 4.41, SD = 2.22$ ),  $F(1, 171) = 6.45, p < .05$ . No effects proved significant for choice valence,  $F(1, 171) = 2.34, ns$ , and elaboration,  $F(1, 171) = 0.09, ns$ , or the interactions between choice and elaboration,  $F(1, 171) = 0.02, ns$ ; valence and elaboration,  $F(1, 171) = 0.97, ns$ ; and choice, choice valence, and elaboration,  $F(1, 171) = 0.16, ns$ .

Relatedly, the preference for relinquishing choice making to a random draw proved undesirable across all conditions. A 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred)  $\times$  2 (elaboration: free vs. forced) ANOVA on participants' preference for the opposing condition assignment revealed that there was only a main effect for choice,  $F(1, 171) = 67.53, p < .01$ . Nonchoosers ( $M = 6.07, SD = 2.00$ ) reported a greater preference for switching to the opposite choice condition than did choosers ( $M = 3.21, SD = 2.43$ ), suggesting that choosers preferred the status quo whereas nonchoosers would have preferred to decide for themselves. None of the remaining effects proved significant: the main effects for choice valence,  $F(1, 171) = 0.04, ns$ , and elaboration,  $F(1, 171) = 1.09, ns$ ; the two-way interactions between choice and valence,  $F(1, 171) = 0.31, ns$ , choice and elaboration,  $F(1, 171) = 0.61, ns$ , and valence and elaboration,  $F(1, 171) = 0.16, ns$ ; and the three-way interac-



tion between choice, valence, and elaboration,  $F(1, 171) = 0.07$ , *ns*. Hence, although the desirability of being a chooser as compared with a nonchooser proved more sensitive to the valence of the choice, the desirability for allowing external forces to dictate the outcome proved unattractive regardless of the valence of the choice.

### Outcome Satisfaction

As hypothesized, results suggest that differences in satisfaction among choosers and nonchoosers across more preferred and less preferred decision-making contexts varied depending on whether or not participants were made to elaborate on the pros and cons of the options included in the choice set. A 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred)  $\times$  2 (elaboration: free vs. forced) ANOVA on overall outcome satisfaction revealed main effects for choice valence,  $F(1, 171) = 129.28$ ,  $p < .01$ ; elaboration,  $F(1, 171) = 4.26$ ,  $p < .05$ ; and the three-way interaction,  $F(1, 171) = 4.48$ ,  $p < .05$ . All the other effects were not significant: main effect for choice,  $F(1, 171) = 0.11$ , *ns*; Choice  $\times$  Choice Valence interaction,  $F(1, 171) = 2.87$ , *ns*; Choice  $\times$  Elaboration interaction,  $F(1, 171) = 0.00$ , *ns*; and Choice Valence  $\times$  Elaboration interaction,  $F(1, 171) = 0.39$ , *ns*. Not surprisingly, participants in the more preferred condition ( $M = 5.54$ ,  $SD = 1.56$ ) proved more satisfied than participants in the less preferred condition ( $M = 2.97$ ,  $SD = 1.48$ ). Moreover, participants in the forced-elaboration condition ( $M = 4.33$ ,  $SD = 1.95$ ) were more satisfied than participants in the free-elaboration condition ( $M = 3.84$ ,  $SD = 1.98$ ). The significant three-way interaction is best understood by separately analyzing the outcome satisfaction of participants across the free- and forced-elaboration conditions.

**Free elaboration.** Recall that we measured anticipated satisfaction, which consisted of participants' predictions of satisfaction with the selected yogurt, and experienced satisfaction, which consisted of questions measuring participants' satisfaction with the sampled yogurt. Although these two measures of satisfaction proved highly correlated ( $\alpha = .89$ ,  $p < .01$ ), they were analyzed separately in order to have a better understanding of the psychological process underlying the effects on outcome satisfaction. As predicted, a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on anticipated satisfaction in the free-elaboration condition revealed significant effects for the Choice  $\times$  Choice Valence interaction,  $F(1, 171) = 8.31$ ,  $p < .01$ , and for choice valence,  $F(1, 171) = 56.38$ ,  $p < .01$ , but not for choice,  $F(1, 171) = 0.05$ , *ns*. Analogously, the same 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA conducted on experienced satisfaction yielded no significant effect for choice,  $F(1, 172) = 0.04$ , *ns*, but a significant main effect for choice valence,  $F(1, 172) = 33.85$ ,  $p < .01$ , and a marginally significant effect for Choice  $\times$  Choice Valence,  $F(1, 172) = 3.62$ ,  $p < .06$ . Collapsing across anticipated and experienced satisfaction to create an overall satisfaction measure again revealed a significant Choice  $\times$  Choice Valence interaction,  $F(1, 171) = 7.81$ ,  $p < .01$ , along with significant effects for choice valence,  $F(1, 171) = 62.15$ ,  $p < .01$ , and no significant main effect for choice,  $F(1, 171) = 0.06$ , *ns*. As depicted in the top panel of Figure 2, in the more preferred condition, choosers ( $M = 5.72$ ,  $SD = 1.40$ ) reported being more satisfied than nonchoosers

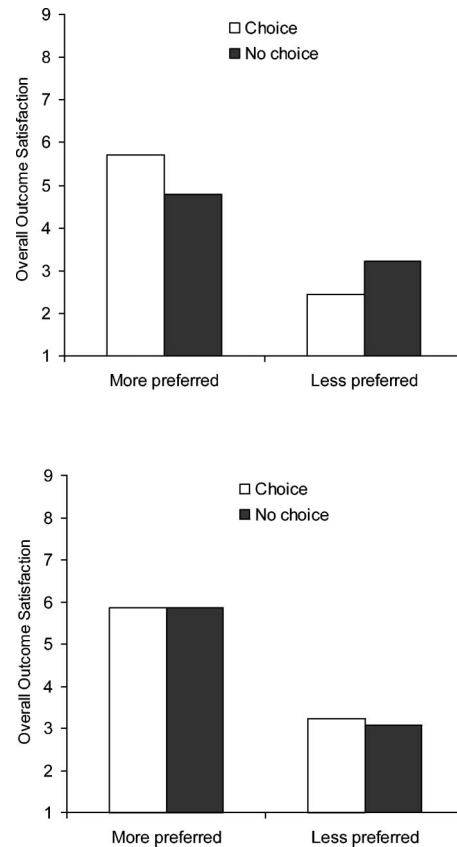


Figure 2. Top panel: Measure of overall outcome satisfaction in Study 2. Choosers' and nonchoosers' mean outcome satisfaction by choice valence in the free-elaboration condition. Overall satisfaction measure was created by averaging across each participant's satisfaction measures collected before and after selected yogurt was tasted, measured on a 9-point scale ranging from 1 (*not at all*) to 9 (*extremely*). Bottom panel: Measure of overall outcome satisfaction in Study 2. Choosers' and nonchoosers' mean outcome satisfaction by choice valence in the forced-elaboration condition. Overall satisfaction measure was created by averaging across each participant's satisfaction measures collected before and after a taste of the selected yogurt, measured on a 9-point scale ranging from 1 (*not at all*) to 9 (*extremely*). Measures were taken after elaboration on pros and cons of each choice alternative.

( $M = 4.79$ ,  $SD = 1.78$ ),  $F(1, 171) = 3.98$ ,  $p < .05$ , whereas in the less preferred condition, nonchoosers ( $M = 3.23$ ,  $SD = 1.62$ ) reported higher satisfaction than choosers ( $M = 2.44$ ,  $SD = 1.33$ ),  $F(1, 171) = 3.88$ ,  $p < .05$ .

A similar pattern of results was observed when examining yogurt consumption (see the top panel of Figure 3). Once again, a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on the amount of yogurt consumed in the free-elaboration condition, measured in milliliters, revealed a significant main effect for choice valence,  $F(1, 172) = 7.45$ ,  $p < .01$ , but not for choice,  $F(1, 172) = 1.01$ , *ns*. As might be expected, participants sampling one of the four more preferred yogurt flavors ( $M = 21.8$ ,  $SD = 8.87$ ) ate more than participants sampling one of the four less preferred yogurt flavors

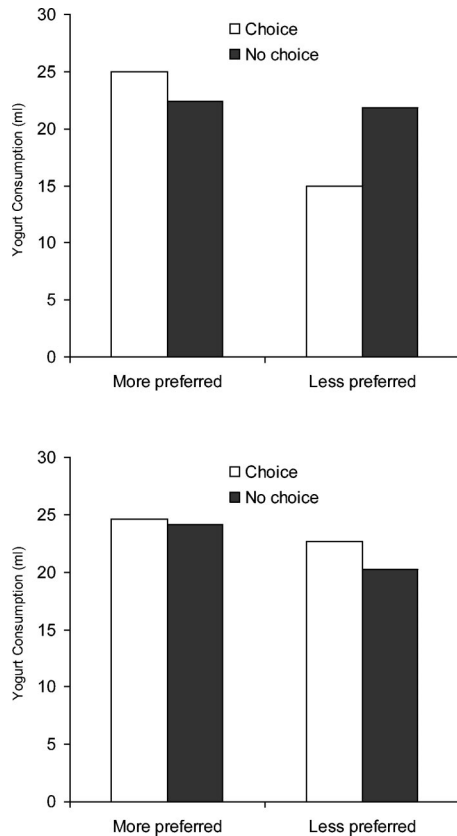


Figure 3. Top panel: Measure of yogurt consumption (in milliliters) in Study 2. Choosers' and nonchoosers' mean consumption of yogurt by choice valence in the free-elaboration condition. Yogurt consumed was measured by subtracting the amount of yogurt eaten from the original amount of 30 ml of yogurt. Bottom panel: Measure of yogurt consumption (in milliliters) in Study 2. Choosers' and nonchoosers' mean consumption of yogurt by choice valence in the forced-elaboration condition. Yogurt consumed was measured by subtracting the amount of yogurt eaten from the original amount of 30 ml of yogurt.

( $M = 19.04, SD = 11.47$ ). This analysis also yielded a significant two-way interaction between choice and choice valence,  $F(1, 172) = 7.76, p < .05$ . Orthogonal contrasts revealed that in the more preferred condition, no differences were found among choosers and nonchoosers in the amount of yogurt consumed ( $M = 23.37, SD = 8.04, F(1, 172) = 1.36, ns$ ). However, in the less preferred condition, orthogonal contrasts revealed that choosers ( $M = 14.93, SD = 12.13, F(1, 172) = 8.61, p < .01$ ), ate significantly less than did nonchoosers ( $M = 21.85, SD = 9.21$ ). Not surprisingly, participants' reported overall satisfaction with the selected yogurt was significantly correlated with their yogurt consumption ( $r = .43, p < .01$ ).

**Forced elaboration.** As hypothesized, when choosers and nonchoosers were made to elaborate on the advantages and disadvantages of each option in the choice set, differences among choosers' and nonchoosers' anticipated and experienced satisfaction across more preferred and less preferred choice sets were mitigated. The 2 (choice: choice vs. no choice)  $\times$  2 (choice

valence: more preferred vs. less preferred) ANOVA on anticipated satisfaction in the forced-elaboration condition revealed a significant effect for choice valence (more preferred:  $M = 6.26, SD = 1.23$ ; less preferred:  $M = 3.22, SD = 1.53$ ),  $F(1, 171) = 81.75, p < .01$ , but not for choice,  $F(1, 171) = 0.01, ns$ , nor for the interaction between choice and choice valence,  $F(1, 171) = 0.13, ns$ . Similarly, a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on experienced satisfaction yielded only a significant effect for choice valence (more preferred:  $M = 5.34, SD = 2.25$ ; less preferred:  $M = 3.09, SD = 1.86$ ),  $F(1, 172) = 24.08, p < .01$ , but no significant effect for choice,  $F(1, 172) = 0.27, ns$ , or the interaction between choice and choice valence,  $F(1, 172) = 0.02, ns$ . Moreover, when the two measures were combined into an overall measure of satisfaction and the 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA was conducted on this measure, we observed only a main effect for choice valence (more preferred:  $M = 5.86, SD = 1.39$ ; less preferred:  $M = 3.15, SD = 1.44$ ),  $F(1, 172) = 67.16, p < .01$ , depicted in the bottom panel of Figure 2, but no significant main effect for choice,  $F(1, 172) = 0.08, ns$ , or Choice  $\times$  Choice Valence interaction,  $F(1, 172) = 0.02, ns$ . Table 1 compares the means for anticipated, experienced, and overall satisfaction across the free- and forced-elaboration conditions.

Furthermore, a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on yogurt consumption shown in the bottom panel of Figure 3 revealed no

Table 1  
Study 2: Interaction Between Choice and Choice Valence on Outcome Satisfaction in Free and Forced Elaboration Conditions

| Choice valence           | Free elaboration |           | Forced elaboration |           |
|--------------------------|------------------|-----------|--------------------|-----------|
|                          | Choice           | No choice | Choice             | No choice |
| Anticipated satisfaction |                  |           |                    |           |
| More preferred           |                  |           |                    |           |
| <i>M</i>                 | 6.00             | 5.02      | 6.22               | 6.31      |
| <i>SD</i>                | 1.04             | 1.71      | 1.13               | 1.38      |
| Less preferred           |                  |           |                    |           |
| <i>M</i>                 | 2.74             | 3.57      | 3.30               | 3.15      |
| <i>SD</i>                | 1.67             | 1.74      | 1.48               | 1.60      |
| Experienced satisfaction |                  |           |                    |           |
| More preferred           |                  |           |                    |           |
| <i>M</i>                 | 5.45             | 4.55      | 5.47               | 5.18      |
| <i>SD</i>                | 2.29             | 2.49      | 2.11               | 2.45      |
| Less preferred           |                  |           |                    |           |
| <i>M</i>                 | 2.14             | 2.87      | 3.17               | 3.00      |
| <i>SD</i>                | 1.62             | 2.03      | 1.68               | 2.06      |
| Overall satisfaction     |                  |           |                    |           |
| More preferred           |                  |           |                    |           |
| <i>M</i>                 | 5.72             | 4.79      | 5.85               | 5.87      |
| <i>SD</i>                | 1.40             | 1.78      | 1.40               | 1.43      |
| Less preferred           |                  |           |                    |           |
| <i>M</i>                 | 2.44             | 3.23      | 3.24               | 3.07      |
| <i>SD</i>                | 1.33             | 1.62      | 1.31               | 1.57      |

significant main effects for choice,  $F(1, 172) = 0.55$ , *ns*; choice valence,  $F(1, 172) = 2.32$ , *ns*; or the two-way interaction between choice and choice valence,  $F(1, 172) = 0.27$ , *ns*. As with the free-elaboration participants, we observed a significant correlation between participants' reported overall satisfaction with the selected yogurt and the quantity of yogurt consumed ( $r = .57$ ,  $p < .01$ ). Table 2 reports the means for yogurt consumption both in the free- and forced-elaboration conditions.

### Mediation Analysis

Consistent with our prediction of choosers being more invested in the decision outcome than nonchoosers, in the free-elaboration condition, choosers generated more pros and cons as compared with their non-choice-making counterparts. Specifically, a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on the number of pros verbalized during the decision-making process revealed a main effect for choice,  $F(1, 90) = 4.36$ ,  $p < .05$ , and for choice valence,  $F(1, 90) = 7.96$ ,  $p < .01$ , but no significant effect for the Choice  $\times$  Choice Valence interaction,  $F(1, 90) = 0.30$ , *ns*. As predicted, choosers ( $M = .74$ ,  $SD = .91$ ) generated a larger number of pros associated with the desirable alternatives in the set than did nonchoosers ( $M = .39$ ,  $SD = .86$ ), and the overall number of pros was higher when participants were confronted with a more preferred ( $M = .87$ ,  $SD = .93$ ) rather than a less preferred ( $M = .37$ ,  $SD = .82$ ) choice set. Likewise, the same 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on the number of cons yielded again a main effect for choice,  $F(1, 90) = 6.00$ ,  $p < .05$ , and a main effect for choice valence,  $F(1, 90) = 17.34$ ,  $p < .01$ , but no significant interaction between choice and choice valence,  $F(1, 90) = 1.02$ , *ns*. Again, choosers ( $M = 2.19$ ,  $SD = 1.84$ ) generated more cons than did nonchoosers ( $M = 1.29$ ,  $SD = 1.54$ ), and participants in the less preferred choice condition ( $M = 2.31$ ,  $SD = 1.77$ ) generated more cons than participants in the more preferred choice condition ( $M = 0.92$ ,  $SD = 1.36$ ).

In contrast, forcing choosers and nonchoosers to focus on the advantages and disadvantages of the options included in their choice set made them less likely to be skewed in the generation of positive and negative thoughts. In fact, the overall mean number of pros listed in the forced-elaboration condition ( $M = 5.46$ ,  $SD = 1.91$ ) did not vary by choice,  $F(1, 80) = 3.75$ , *ns*; choice valence,  $F(1, 80) = 2.97$ , *ns*; or Choice  $\times$  Choice Valence,  $F(1, 80) = 0.03$ ,

*ns*. A comparable mean for the cons ( $M = 5.12$ ,  $SD = 1.64$ ) also revealed no significant effects for choice,  $F(1, 80) = 1.00$ , *ns*; choice valence,  $F(1, 80) = 0.09$ , *ns*; or Choice  $\times$  Choice Valence,  $F(1, 80) = 1.58$ , *ns*, confirming the validity of the elaboration manipulation.

To test the extent to which the number of advantages and disadvantages voiced by participants explains the reversal in outcome satisfaction between choosers and nonchoosers across more and less preferred choice conditions, we calculated a ratio by dividing the number of pros by the total number of pros and cons for each participant's selected outcome, and then we tested whether this ratio mediated the relationship between choice, choice valence, and outcome satisfaction. The mediation analysis (Baron & Kenny, 1986) was conducted by creating dummy variables for choice condition (free choice = 1; imposed choice = -1) and choice valence (more preferred = 1; less preferred = -1). The first criterion for mediation was satisfied because the coefficients for choice condition ( $\beta = 0.15$ ,  $SD = 0.05$ ),  $t(1, 51) = 3.00$ ,  $p < .01$ ; choice valence ( $\beta = 0.28$ ,  $SD = 0.05$ ),  $t(1, 51) = 5.45$ ,  $p < .01$ ; and Choice  $\times$  Valence ( $\beta = 0.11$ ,  $SD = 0.05$ ),  $t(1, 51) = 2.16$ ,  $p < .05$ , proved to be significant when the pros over pros-plus-cons ratio for the selected outcome was regressed on choice, choice valence, and the interaction between the two. The second criterion was also satisfied, because when overall satisfaction was regressed on the same ratio, the coefficient for the ratio was significant ( $\beta = 3.00$ ,  $SD = 0.46$ ),  $t(1, 53) = 6.60$ ,  $p < .01$ . The third and final criterion was supported when the effect of choice condition and choice valence on overall outcome evaluation was weakened when the pros over pros-plus-cons ratio for the selected outcome was included in the regression model. Results show that when overall satisfaction was regressed only on choice, choice valence, and the interaction between the two, the coefficient for choice was not significant ( $\beta = 0.02$ ,  $SD = 0.16$ ),  $t(1, 90) = 0.15$ , *ns*, whereas the coefficient for valence ( $\beta = 1.26$ ,  $SD = 0.16$ ),  $t(1, 90) = 7.88$ ,  $p < .01$ , and the Choice  $\times$  Choice Valence interaction ( $\beta = 0.42$ ,  $SD = 0.16$ ),  $t(1, 90) = 2.60$ ,  $p < .01$ , were significant. However, with the inclusion of the said ratio in this model, the coefficient for the Choice  $\times$  Choice Valence interaction became nonsignificant ( $\beta = 0.19$ ,  $SD = 0.24$ ),  $t(1, 50) = 0.78$ , *ns*, whereas the coefficient for the pros over pros-plus-cons ratio remained significant ( $\beta = 1.70$ ,  $SD = 0.64$ ),  $t(1, 50) = 2.66$ ,  $p < .01$ .

The same mediation analysis was performed using yogurt consumed rather than overall satisfaction as the dependent variable. The coefficient for the pros over pros-plus-cons ratio was significant when yogurt consumed was regressed on the ratio ( $\beta = 7.17$ ,  $SD = 3.11$ ),  $t(1, 53) = 2.31$ ,  $p < .05$ , suggesting that the relative amount of positive versus negative thoughts voiced by participants represents a significant predictor of the amount of yogurt they ate. The Choice  $\times$  Choice Valence interaction that was significant when yogurt consumed was regressed over choice, choice valence, and Choice  $\times$  Choice Valence ( $\beta = 2.39$ ,  $SD = 1.03$ ),  $t(1, 90) = 2.33$ ,  $p < .05$ , became nonsignificant when the ratio was included in the regression model ( $\beta = 1.07$ ,  $SD = 1.71$ ),  $t(1, 50) = 0.63$ , *ns*. The coefficient for the ratio also weakened ( $\beta = 7.50$ ,  $SD = 4.51$ ),  $t(1, 90) = 1.66$ ,  $p = .1$ , suggesting that the mediation of the ratio on yogurt consumption was weaker than that on overall satisfaction. Perhaps yogurt consumption was more influenced than ratings of overall satisfaction by demand effects, so that participants

Table 2  
Study 2: Interaction Between Choice and Valence on Yogurt Consumption in Free and Forced Elaboration Conditions

| Yogurt consumption (ml) | Free elaboration |           | Forced elaboration |           |
|-------------------------|------------------|-----------|--------------------|-----------|
|                         | Choice           | No choice | Choice             | No choice |
| More preferred choice   |                  |           |                    |           |
| <i>M</i>                | 25.00            | 21.75     | 24.60              | 24.18     |
| <i>SD</i>               | 7.45             | 8.39      | 7.89               | 7.53      |
| Less preferred choice   |                  |           |                    |           |
| <i>M</i>                | 14.93            | 21.85     | 22.65              | 20.21     |
| <i>SD</i>               | 12.13            | 9.21      | 7.36               | 7.67      |

felt that they had to eat at least a moderate amount to perform the task they were allegedly recruited for, that is, market test new yogurt flavors.

Although the results from this mediation analysis suggest that the ratio of pros over pros plus cons for selected outcomes accounts for choosers and nonchoosers' differences in outcome satisfaction across more preferred and less preferred choices, a closer investigation of the pattern of the ratio across the experimental conditions suggests that this explanation may only partially explain the reversal in outcome satisfaction between choosers and nonchoosers across more and less preferred decision contexts. In particular, a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on the ratio of pros over pros plus cons for the selected outcomes yielded a significant main effect for choice,  $F(1, 51) = 9.03, p < .01$ , and choice valence,  $F(1, 51) = 29.67, p < .01$ , indicating that the ratio was higher for choosers ( $M = .43, SD = .48$ ) than for nonchoosers ( $M = .14, SD = .33$ ), and for participants in the relatively more attractive ( $M = .80, SD = .40$ ) than less attractive ( $M = .12, SD = .29$ ) choice condition. Results also yielded a significant Choice  $\times$  Choice Valence interaction,  $F(1, 51) = 4.67, p < .05$ . Subsequent orthogonal contrasts analyses, however, show that we only observed a significant difference for the pros over pros-plus-cons ratio between choosers ( $M = .92, SD = .28$ ) and nonchoosers ( $M = .40, SD = .49$ ),  $F(1, 51) = 8.91, p < .01$ , when they were confronted by more preferred options but not when they were exposed to less preferred options (choosers:  $M = .15, SD = .32$ ; nonchoosers:  $M = .07, SD = .26$ ),  $F(1, 51) = 0.71, ns$ . Indeed, the ratio of pros over pros plus cons for the selected outcomes was so close to zero as to suggest the possibility of there being a floor effect. Thus, given the lack of difference between choosers and nonchoosers in the less preferred choice context and given the confirmatory mediation analyses, the results suggest that the number of pros rather than the number of cons generated proved more predictive of outcome satisfaction.

### General Discussion

People prefer making choices for themselves even at the cost of their own subsequent personal satisfaction. When facing a set of either relatively attractive or relatively unattractive options, people not only prefer making their own decisions to having their decisions dictated by external forces, but they also predict they will be happier with the outcome of a self-made choice as opposed to an externally determined choice. However, choosers experienced greater anticipated and experienced satisfaction than nonchoosers only when the decision-making context was more preferred; when the choice was less preferred, choosers experienced lower anticipated and experienced satisfaction than nonchoosers.

How can we explain this observed reversal in satisfaction among choosers and nonchoosers across more and less preferred decision-making contexts? Consistent with our hypothesis, choosers in a more preferred choice condition delineated more favorable attributes of the options included in their choice sets than nonchoosers; in comparison, when confronted by less preferred options, choosers focused more on the unattractive attributes of their choice set options than nonchoosers. Choosers, then, experienced more pleasure with the decision process than their disengaged

non-choice-making counterparts when the choice set was preferable, and they experienced more pain than the less invested nonchoosers when the alternatives were less preferable. Indeed, not only was outcome satisfaction correlated with the degree to which choosers focused on the pros as compared with the cons of their selected options, but the ratio of pros over pros plus cons also partially mediated the relationship between choice and choice valence on outcome satisfaction. Moreover, the intervention during the decision process that made both choosers and nonchoosers reason about the pros and cons associated with the options included in their choice set was observed to attenuate differences in choosers' and nonchoosers' outcome satisfactions. Such findings are consistent with earlier research by Wilson and his colleagues (Wilson et al., 1993; Wilson & Schooler, 1991), which suggests that a reason-based decision-making process neutralizes affective experiences during the choice process itself.

On the face of it, the lack of difference in the ratio of pros over pros plus cons for the selected outcome between choosers and nonchoosers confronting less preferred alternatives is seemingly at odds with the hypotheses proposed in this article. Yet it is possible that in the less preferred choice condition, the negative affect experienced by participants may not be fully represented by the count of pros and cons associated with the selected outcomes; indeed, Wilson and his colleagues (Wilson et al., 1993; Wilson & Schooler, 1991) demonstrated that people are not capable of verbalizing all the determinants of their affective experiences. Also, in the less preferred choice condition, choosers may still select the least worst choice set option, namely, the option that has the relative lower number of disadvantages. Accordingly, we would not expect choosers' ratio to be lower than that of nonchoosers when selecting from less preferred choice set options, because choosers will choose to experience the option that better corresponds to their preferences. Consequently, even when choosers confronting less preferred alternatives persuade themselves that they have chosen the least worst option, they may still underestimate the impact of the affective experience associated with the decision process on their subsequent satisfaction.

One alternative explanation for the observed reversal in outcome satisfaction between choosers and nonchoosers is that choosers' greater involvement in the decision-making process lends to a greater sense of responsibility, which, in turn, enhances choosers' affective responses to the decision outcome (Beattie et al., 1994; Burger, 1989; Weiner, 1985). To examine this possibility, in Study 1b we measured participants' perceived responsibility for the consequences of their pasta selections. Results of a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on this measure of perceived responsibility yielded a main effect for choice (choosers:  $M = 5.42, SD = 2.30$ ; nonchoosers:  $M = 3.27, SD = 2.11$ ),  $F(1, 155) = 41.67, p < .01$ , and choice valence (more preferred:  $M = 5.05, SD = 2.47$ ; less preferred:  $M = 3.62, SD = 2.23$ ),  $F(1, 155) = 18.24, p < .01$ , but no significant interaction between choice and choice valence,  $F(1, 155) = 1.32, ns$ . Moreover, the inclusion of perceptions of responsibility as a covariate in a 2 (choice: choice vs. no choice)  $\times$  2 (choice valence: more preferred vs. less preferred) ANOVA on outcome satisfaction did not mediate the significant interaction between choice and choice valence,  $F(1, 154) = 194.33, p < .01$ . Hence, there is not enough evidence in our studies to support the



hypothesis that perceived responsibility could explain the differences between choosers' and nonchoosers' affective responses to positive and negative valence decision outcomes.

At face value, the observation that choosers were less satisfied than nonchoosers in the negative valence decision context is at odds with the predictions of cognitive dissonance theory, which suggests that the postdecisional discomfort following an unsatisfactory decision compels choosers to increase their attraction to the selected option (Collins & Hoyt, 1972; Cooper & Fazio, 1984; Festinger, 1957; Gilovich et al., 1995). However, cognitive dissonance reduction is facilitated by people's perception of themselves as having chosen the unsatisfactory outcome (Collins & Hoyt, 1972; Cooper & Fazio, 1984). It may be that the experience of cognitive dissonance was mitigated in our studies because choosers confronted by less preferred options thought of themselves as being forced to make a choice. That is, if they were truly free of making their decisions, they may have decided to avoid choosing altogether (e.g., Beattie et al., 1994).

Additionally, some research on counterfactual thinking maintains that when faced with all relatively attractive alternatives, choosers' satisfaction could be reduced by upward counterfactuals, whereas when faced with all relatively unattractive alternatives, engaging in downward counterfactuals could increase choosers' satisfaction. Choosers' regret when considering alternative decision outcomes (Gilovich et al., 1995; Gilovich & Medvec, 1995; Kahneman & Miller, 1986; Kahneman & Tversky, 1982; Landman, 1987; Simonson, 1992; Spranca et al., 1991), then, would predict results that are different both from those of Brenner et al. (1999), which imply that upward counterfactuals always loom larger than downward counterfactuals, and from those presented in this article. Evidence from Study 2 revealing only a main effect for valence on regret, however, suggests that regret does not account for the observed reversal in outcome satisfaction.

An important methodological constraint of the current investigation concerns its limitation to decision contexts that are not highly consequential. Ethnographic studies conducted in naturalistic settings, however, suggest that our laboratory findings may be relevant to life events. In particular, recent interviews conducted at the MacLean Center for Clinical Medical Ethics found that French parents better coped with the deaths of their newborn infants than American parents (Orfali & Gordon, in press). In France, physicians decide which treatments are in a patient's best interest, whereas in the United States, patients or their families are responsible for choosing the treatments they will undergo. Additional evidence collected in the field of medical decision making suggests that patients' autonomy may result in suboptimal decisions and lower satisfaction (Schneider, 1998). These results represent a real-world test of our hypothesis that freedom of choice in negative choice contexts may reduce people's satisfaction with the consequences of their choices.

Clearly, the psychological mechanisms underlying both choosers' and nonchoosers' affective responses to decision outcome demand that our choice/no-choice paradigms include more variations of choice and no-choice manipulations (Iyengar & DeVoe, 2003). Future studies might explore the consequences on outcome satisfaction of confronting nonchoosers in more and less preferred choice contexts with a one-choice condition rather than with a choice set including the same options as those presented to choos-

ers. Furthermore, studies should consider situations that are more similar to previous research in which people asked to make a choice from relatively less attractive options were given the opportunity not to choose (e.g., Beattie et al., 1994; Dhar, 1997). Would outcome satisfaction be greater for those who opted to avoid the pain of choosing than for those who were assigned a choice? Indeed, another prospect for future research would be to build on the work of Carmon et al. (2003), who showed that when people were asked to elaborate on the advantages of relatively attractive choice set options, their evaluations of the rejected alternatives rose. Would the attractiveness of the forgone alternatives increase even in the case in which choosers were confronted by relatively unattractive options?

In sum, our investigation is part of a growing body of research that challenges the long-standing belief regarding the positive consequences of choice on people's happiness and satisfaction (Benartzi & Thaler, 2002; Chernev, 2003; Iyengar & Jiang, 2004; Iyengar & Lepper, 1999, 2000; Schneider, 1998; Schwartz, 2000). By contrasting the preference for choosing with the outcome satisfaction exhibited by choosers and nonchoosers, this study pinpoints a discrepancy between what people want and what makes them happy (cf. Hsee, 2000). Perhaps the reason for such a discrepancy lies in people's value of choice as an end rather than as a means to their desired outcome. Instead of arbitrarily valuing choice, decision makers should emphasize the importance of the overarching goals and desires that initially motivate the exercise of choosing. Only then will they be better able to distinguish those circumstances in which happiness is enhanced by personal choice from those circumstances in which happiness is better achieved by allowing someone else to shoulder the burden of decision making.

## References

- Averill, J. R. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin*, *80*, 286–303.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.
- Beattie, J., Baron, J., Hershey, J. C., & Spranca, M. D. (1994). Psychological determinants of decision attitude. *Journal of Behavioral Decision Making*, *7*, 129–144.
- Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review*, *74*, 183–200.
- Benartzi, S., & Thaler, R. H. (2002). How much is investor autonomy worth? *Journal of Finance*, *57*, 1593–1616.
- Brehm, J. (1966). *A theory of psychological reactance*. New York: Academic Press.
- Brenner, L., Rottenstreich, Y., & Sood, S. (1999). Comparison, grouping, and preference. *Psychological Science*, *10*, 225–229.
- Burger, J. (1989). Negative reactions to increases in perceived personal control. *Journal of Personality and Social Psychology*, *56*, 246–256.
- Carmon, Z., Wertenbroch, K., & Zeelenberg, M. (2003). Option attachment: When deliberating makes choosing feel like losing. *Journal of Consumer Research*, *30*, 15–29.
- Chernev, A. (2003). When more is less and less is more: The impact of ideal point availability and assortment in consumer choice. *Journal of Consumer Research*, *30*, 170–183.
- Collins, B. E., & Hoyt, M. F. (1972). Personal responsibility-for-consequences: An integration and extension of the "forced compliance" literature. *Journal of Experimental Social Psychology*, *8*, 558–593.

- Condry, J. (1977). Enemies of exploration: Self-initiated versus other-initiated learning. *Journal of Personality and Social Psychology*, *37*, 459–477.
- Cooper, J., & Fazio, R. H. (1984). A new look at dissonance theory. *Advances in Experimental Social Psychology*, *17*, 229–266.
- Cordova, D. I., & Lepper, M. R. (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Educational Psychology*, *88*, 715–730.
- de Charms, R. (1968). *Personal causation*. New York: Academic Press.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press.
- Deci, E. L. (1981). *The psychology of self-determination*. Lexington, MA: Heath.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., Spiegel, N. H., Ryan, R. M., Koestner, R., & Kaufman, M. (1982). The effects of performance standards on teaching styles: The behavior of controlling teachers. *Journal of Educational Psychology*, *74*, 852–859.
- Dhar, R. (1997). Consumer preference for a no-choice option. *Journal of Consumer Research*, *24*, 215–231.
- Dhar, R., & Simonson, I. (1992). The effect of focus of comparison on consumer preferences. *Journal of Marketing Research*, *24*, 430–440.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.
- Fromm, E. (1941). *Escape from freedom*. New York: Henry Holt.
- Gilbert, D. T., & Ebert, J. E. (2002). Decisions and revisions: The affective forecasting of changeable outcomes. *Journal of Personality and Social Psychology*, *82*, 503–514.
- Gilbert, D. T., Pinel, E. C., Wilson, T., Blumberg, S. J., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology*, *75*, 617–638.
- Gilovich, T., & Medvec, V. H. (1995). The experience of regret: What, when, and why. *Psychological Review*, *102*, 379–395.
- Gilovich, T., Medvec, V. H., & Chen, S. (1995). Commission, omission, and dissonance reduction: Coping with regret in the “three doors” problem. *Personality and Social Psychology Bulletin*, *21*, 182–190.
- Glass, D. C., Singer, J. E., & Friedman, L. N. (1969). Psychic cost of adaptation to an environmental stressor. *Journal of Personality and Social Psychology*, *12*, 2002–2010.
- Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 30, pp. 1–46). New York: Freeman.
- Hsee, C. K. (2000). Attribute evaluability: Its implications for joint-separate evaluation reversals and beyond. In D. Kahneman & A. Tversky (Eds.), *Choices, values, and frames* (pp. 543–563). New York: Sage.
- Hsee, C. K., & Leclerc, F. (1998). Will products look more attractive when presented separately or together? *Journal of Consumer Research*, *25*, 175–186.
- Iyengar, S. S., & DeVoe, S. E. (2003). Rethinking the value of choice: Considering cultural mediators of intrinsic motivation. In V. Murphy-Berman & J. J. Berman (Eds.), *Nebraska Symposium on Motivation: Vol. 49. Cross-cultural differences in perspectives on the self* (pp. 129–174). Lincoln: University of Nebraska Press.
- Iyengar, S. S., & Jiang, W. (2004). *Choosing not to choose: The effect of more choices on retirement savings decisions*. Manuscript submitted for publication.
- Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology*, *76*, 349–366.
- Iyengar, S. S., & Lepper, M. R. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology*, *79*, 995–1006.
- Janis, I. L., & Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice, and commitment*. New York: Free Press.
- Kahneman, D., & Miller, D. T. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, *93*, 136–152.
- Kahneman, D., & Tversky, A. (1982). The psychology of preferences. *Scientific American*, *246*, 160–173.
- Landman, J. (1987). Regret and elation following action and inaction: Affective responses to positive versus negative outcomes. *Personality and Social Psychology Bulletin*, *13*, 524–536.
- Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, *32*, 311–328.
- Langer, E. J., & Rodin, J. (1976). The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting. *Journal of Personality and Social Psychology*, *34*, 191–198.
- Lefcourt, H. M. (1973). The function of the illusions of control and freedom. *American Psychologist*, *28*, 417–425.
- Lepper, M. R., Henderlong, J., & Iyengar, S. S. (2003). *Intrinsic and extrinsic motivational orientations in the classroom: Developmental trends and academic correlates*. Manuscript submitted for publication.
- Lepper, M. R., Sethi, S., Dialdin, D., & Drake, M. (1996). Intrinsic and extrinsic motivation: A developmental perspective. In S. Luthar, J. Burack, D. Cicchetti, & J. Weisz (Eds.), *Developmental psychopathology: Perspectives on adjustments* (pp. 23–50). Cambridge, MA: Cambridge University Press.
- Lewin, K. (1951). *Field theory in social science*. Chicago: University of Chicago Press.
- Luce, M. F., Bettman, J. A., & Payne, J. (2001). Emotional decisions: Tradeoff difficulty and coping in consumer choice. *Monographs of the Journal of Consumer Research*, *1*.
- Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*, 224–253.
- Mellers, B. (2000). Choice and the relative pleasure of consequences. *Psychological Bulletin*, *126*, 910–924.
- Miller, N. E. (1944). Experimental studies in conflict. In J. M. Hunt (Ed.), *Personality and the behavior disorders* (pp. 431–465). New York: Ronald.
- Nuttin, J. (1975). *The illusion of attitude change: Towards a response contagion theory of persuasion*. London: Academic Press.
- Orfali, K., & Gordon, E. J. (in press). Autonomy gone awry: A cross-cultural study of parents’ experiences in neonatal intensive care units. *Theoretical Medicine and Bioethics*.
- Perlmutter, L. C., & Monty, R. A. (1977). The importance of perceived control: Fact or fantasy? *American Scientist*, *65*, 759–765.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*, 1–28.
- Schneider, C. (1998). *The practice of autonomy: Patients, doctors, and medical decisions*. Oxford, England: Oxford University Press.
- Schulz, R. (1976). Effects of control and predictability on the physical and psychological well-being of the institutionalized aged. *Journal of Personality and Social Psychology*, *33*, 563–573.
- Schulz, R., & Hanusa, B. (1978). Long-term effects of control and predictability-enhancing interventions: Findings and ethical issues. *Journal of Personality and Social Psychology*, *36*, 1194–1201.
- Schwartz, B. (2000). Self-determination: The tyranny of freedom. *American Psychologist*, *55*, 79–88.
- Seligman, M. E. (1975). *Helplessness: On depression, development, and death*. San Francisco: Freeman.
- Shafir, E., Simonson, I., & Tversky, A. (1993). Reason-based choice. *Cognition*, *49*, 11–36.

- Simonson, I. (1992). The influence of anticipating regret and responsibility on purchase decisions. *Journal of Consumer Research*, 19, 1–14.
- Solomon, S., Holmes, D. S., & McCaul, K. D. (1980). Behavioral control over aversive events: Does control that requires effort reduce anxiety and psychological arousal? *Journal of Personality and Social Psychology*, 39, 729–736.
- Spranca, M., Minsk, E., & Baron, J. (1991). Omission and commission in judgment and choice. *Journal of Experimental Psychology*, 27, 76–105.
- Stotland, E., & Blumenthal, A. L. (1964). The reduction of anxiety as a result of the expectation of making a choice. *Canadian Journal of Psychology*, 18, 139–145.
- Styron, W. (1979) *Sophie's choice*. New York: Random House.
- Taylor, S. E. (1979). Hospital patient behavior: Reactance, helplessness, or control? *Journal of Social Issues*, 35, 156–184.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103, 193–210.
- Taylor, S. E., Lichtman, R. R., & Wood, J. V. (1984). Attributions, beliefs about control, and adjustment to breast cancer. *Journal of Personality and Social Psychology*, 46, 489–502.
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, 92, 548–573.
- Wilson, T. D., Lisle, D. J., Schooler, J. W., & Hodges, S. D. (1993). Introspecting about reasons can reduce post-choice satisfaction. *Personality and Social Psychology Bulletin*, 19, 331–339.
- Wilson, T. D., & Schooler, J. W. (1991). Thinking too much: Introspection can reduce the quality of preferences and decisions. *Journal of Personality and Social Psychology*, 60, 181–192.
- Zimbardo, P. G., Weisenberg, M., Firestone, I., & Levy, M. (1965). Communicator effectiveness in producing public conformity and private attitude change. *Journal of Personality*, 33, 233–255.
- Zuckerman, M., Porac, J., Latin, D., Smith, R., & Deci, E. L. (1978). On the importance of self-determination for intrinsically motivated behavior. *Personality and Social Psychology Bulletin*, 4, 443–446.

## Appendix

## Ranking of Yogurt Flavors

| Yogurt flavor  | Rating <sup>a</sup> |           |
|----------------|---------------------|-----------|
|                | <i>M</i>            | <i>SD</i> |
| Mustard seeds  | 1.77                | 1.16      |
| Horseradish    | 1.80                | 1.75      |
| Onion          | 1.89                | 1.59      |
| Curry powder   | 1.92                | 1.45      |
| Oregano        | 1.98                | 1.56      |
| Sage           | 2.05                | 1.65      |
| Chili powder   | 2.05                | 1.78      |
| Tarragon       | 2.14                | 1.92      |
| Celery seeds   | 2.23                | 1.82      |
| Poppy seeds    | 2.42                | 1.75      |
| Cardamom       | 2.55                | 1.97      |
| Anise          | 2.63                | 1.86      |
| Licorice       | 2.68                | 2.11      |
| Cloves         | 2.73                | 2.31      |
| Yellow ginger  | 2.86                | 1.84      |
| Orange peel    | 3.45                | 2.08      |
| Coffee bean    | 4.00                | 2.42      |
| Nutmeg         | 4.13                | 2.11      |
| Coconut powder | 4.18                | 2.60      |
| Mint           | 4.45                | 2.10      |
| Cocoa powder   | 4.90                | 2.38      |
| Cinnamon       | 5.34                | 2.33      |
| Brown sugar    | 5.40                | 2.35      |

<sup>a</sup> Measure of predicted liking of the yogurt on a 9-point scale ranging from 1 (*not at all*) to 9 (*extremely*).

Received July 1, 2003  
 Revision received April 7, 2004  
 Accepted April 8, 2004 ■

**Wanted: Old APA Journals!**

APA is continuing its efforts to digitize older journal issues for the PsycARTICLES database. Thanks to many generous donors, we have made great strides, but we still need many issues, particularly those published in the 1950s and earlier.

If you have a collection of older journals and are interested in making a donation, please e-mail [journals@apa.org](mailto:journals@apa.org) or visit <http://www.apa.org/journals/donations.html> for an up-to-date list of the issues we are seeking.