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Abstract

In a choice between two options, decision makers can often be roughly divided into three groups: those who strongly prefer the first option, those who strongly prefer the second option, and those whose choices are most sensitive to the specific conditions ("Switchers"). In any reference state, such as the experimental control, Switchers' choices are unlikely to be exactly equally divided between the options, which potentially creates a ceiling effect among those most susceptible to influence by the particular conditions or experimental manipulations. The limited growth potential of the option favored by Switchers in the reference state can produce "effect propensity," whereby any condition or manipulation applied to the reference state is more likely to increase the share of the other option. We test this proposition in a series of studies in the context of choices between safe and risky options and between lower-price/quality and higher-price/quality options. The results indicate that a large majority of conceptually unrelated manipulations tend to increase the choice share of risky and higher-price/quality options. This effect propensity can be reversed when the risky and higher-price/quality options are the status quo alternatives or asymmetrically dominating in the reference state. Alternative explanations for effect propensity are examined. We discuss the implications of effect propensity for the interpretation of research findings, the selection of controls, and theory tests.

Key Words: choice, effect propensity, controls, ceiling effect

Effect Propensity

In a choice between two options, decision makers can often be roughly divided into three groups: those who strongly prefer the first option and are unlikely to select or seriously consider the second option under most conditions, those who strongly prefer the second option and are unlikely to select the first option under most conditions, and those whose choices are contingent on the particular conditions ("Switchers"). For example, members of the Republican Party are unlikely to vote for candidates of the Democratic Party under most conditions, just as members of the Democratic Party are unlikely to vote for Republican candidates. On the other hand, independent voters and lawmakers with weaker party loyalty, referred to as "swing voters" or "moderates," tend to vote based on the current conditions and the specific candidates and issues. Indeed, in most cases, the distribution of voter and lawmaker loyalty tends to be segmented rather than continuous and uniform (e.g., Campbell et al., 1960; Krehbiel, 1998). Similarly, there is an identifiable segment of consumers who tend to switch between brands over time and other segments of brand loyal consumers (e.g., Grover & Srinivasan, 1992). Numerous studies examining various influences on choice have effectively focused on the Switchers, who are most likely to be influenced by the specific manipulations and conditions. For example, context and task effects (for a review, see, e.g., Payne, Bettman, and Johnson, 1992) tend to operate on those with weaker preferences, who might consider more than one of the available options.

Thus, in any condition or reference state, most Switchers choose one of the two options, simply because there is no particular reason to expect that exactly 50% of the Switchers will select each option. For example, the so-called "Reagan Democrats" were swing voters who chose to vote for Reagan in the 1984 election, and the less famous "Clinton Republicans" were Switchers who voted for Clinton in 1996.

The notion that in virtually any reference state most Switchers choose one of the two options is potentially important, because it suggests that the impact of any randomly selected condition or manipulation is more likely to operate in a particular direction. For example, if a large majority of swing voters selected the Republican candidate for the House of Representatives in the recent elections, the growth potential of that candidate in the current elections is limited, because most of those who might potentially select the candidate have already done so in the reference state.

This analysis is similar to the logic underlying the familiar ceiling effect, except that it is focused on the subset of choosers whose preferences are most sensitive to the particular conditions, rather than on the entire population/sample. A conventional ceiling (or floor) effect might occur if, for example, one option has an 80% choice share in the reference state and the other option just 20%, in which case a manipulation applied to the reference state is unlikely to significantly increase the share of the former or decrease the share of the latter. But if each option has about 50% choice share in the reference state, a conventional ceiling effect does not apply. However, if the 50% who select one of the two options include 80% of the Switchers, then the growth potential of that option is limited roughly to the 20% of the Switchers group who did not choose it in the reference state, whereas the other option has a relatively large growth potential.

Thus, if we apply to a reference state any randomly selected manipulation, such as accountability, anticipating regret, or high involvement, its impact is likely to reflect the distribution of Switchers' choices in that reference state. That is, aside from the effect of each condition, which might be derived from the applicable theory, the direction of the effect depends on the growth potential of each option within the group of decision makers who might potentially be affected by the manipulation. Accordingly, we propose that the distribution of Switchers' choices in a reference state will often create *effect propensity*, whereby most manipulations applied to that reference state are likely to increase the share of the option with higher growth potential among Switchers. The magnitude of this effect is likely to depend on the degree to which the distribution of preferences in the reference state is skewed in the direction of a specific option and the size of the Switchers group.

Although the analysis of effect propensity is simplified by assuming a distinct Switchers segment, effect propensity (that is not captured by a standard ceiling effect) may often occur with continuous but non-uniform distribution of preferences. To provide a simple illustration, the continuous distribution of preferences in Figure 1 can be summarized as including a large segment that strongly prefers Option B, a smaller segment that strongly prefers Option A, and a Switchers segment. Different reference states shift preferences between the two options, affecting primarily those with weaker preferences (likely switchers). Suppose further that a particular reference condition is as shown in Figure 1, indicating that most likely Switchers prefer Option A in that state. For example, Option A might be the low price brand and B is the

high quality brand, and the reference state is a condition where subjects were first exposed to a priming manipulation that highlighted frugality. In response to the priming manipulation, most of those with weak prior preferences choose the low price option (A). In this situation, the overall share of Option B may very well be higher than that of Option A, because the segment that strongly prefers B is larger. However, because most Switchers select A in the reference state, effect propensity favors Option B, indicating that most manipulations that might be applied to this reference state will increase Option B's choice share.

A reference state of particular interest to decision and other researchers is the typical experimental control, in which respondents are presented with an option set and are simply asked to make choices (or judgments). The experimental control is important because it is the reference state that is used as the benchmark for concluding that certain independent variables have a significant effect on the dependent variable of interest, such as choice. For example, researchers have studied the effect of time pressure and temporal changes on the relative weights of payoffs and probabilities (e.g., Ben Zur & Breznitz, 1981; Sagristano, Trope, & Liberman, 2002), the effect of anticipating the possibility of regret on preferences between a higher-price/quality option and a lower-price/quality option (e.g., Simonson, 1992), and the effect of adding an asymmetrically-dominated option on preferences among options (e.g., Huber, Payne, & Puto, 1982). Differences between the control and test conditions are usually interpreted in terms of a theory regarding the impact of the independent variable on the responses at issue. The implicit assumption is that the control is neutral with respect to the problem being investigated, and any observed difference between the test and control conditions is due to the impact of the independent variable.

However, we propose that the control is often not neutral, and the distribution of Switchers' preferences in the control condition may create effect propensity whereby most manipulations are likely to operate in a particular direction. We examine this proposition using two generic types of choice problems. One problem, taken from the domain of consumer decision making, involves a choice between a lower price, lower quality brand and a higher price, higher quality brand. The second problem type relates to choices between a safe option (e.g., a sure gain) and a risky option (e.g., a gamble with a low probability of a large gain). Next, we discuss the expected direction of effect propensity for these two generic choice

problems. The predictions are then tested by applying a wide range of conceptually unrelated manipulations and by showing that effect propensity reverses with a shift of the reference state.

Effect Propensity in Choices Between Price and Quality and Between Risk and Return

Research in the area of consumer choice has established the existence of brand loyal consumers and Switchers (e.g., Grover & Srinivasan, 1992). Prior research has also documented the existence of a "deal prone" segment, which consists of consumers who tend to select the brand that is on "sale" and have no strong loyalty to any brand (for a review, see, e.g., Blattberg & Neslin, 1990). Furthermore, there is a great deal of evidence that buyers who usually select a lower-price/quality option are more likely to switch (for example, in response to a "sale") to a higher-price/quality option, compared to the likelihood that those who usually choose the higher-price/quality option will switch to the lower-price/quality option (e.g., Blattberg & Wisniewski, 1989; Heath et al., 1999; Nowlis & Simonson, 2000). This pattern, which is related to the notion of polarization (Simonson & Tversky, 1992) and has been observed using both actual store data and laboratory studies, suggests that most Switchers select the less expensive option by default but are willing to switch to the more expensive option under certain conditions.

Consistent with these findings, we expect effect propensity to favor the higher price, higher quality brand. That is, if we apply a sample of conceptually unrelated manipulations to a problem involving a set of options varying in price and quality, the modal effect is expected to be an increase in the choice share of the higher-price/quality brand. This prediction, of course, does not mean that every manipulation will increase the share of that option, and actual effects will depend on the particular manipulation and choice set. However, most effects are expected to favor the higher-price/quality alternative.

With respect to choices between a safe option and a risky option, much prior research has demonstrated that certain personality characteristics and traits tend to be associated with relatively stable risk propensity (e.g., MacCrimmon & Wehrung, 1986; McCrae & John, 1992; Kowert & Hermann, 1997; Zuckerman & Kuhlman, 2000). For example, Zuckerman and Kuhlman identified personality traits (of Zuckerman's personality model called the "Alternative Five") that predict the risk propensity group to which individuals belong. Furthermore, if we account for changes in risk perception, risk propensity tends to be more stable than the pattern of choices suggests (e.g., Weber & Milliman, 1997). Thus, some people rather

consistently exhibit risk-seeking preferences, others tend to be risk averse, and a third group does not exhibit any consistent risk propensity and their choices are most sensitive to the particular conditions.

In many laboratory studies, respondents have little at stake, and their participation in the study is motivated in large part by incentives, such as course credit or monetary compensation. Consequently, it is reasonable to assume that, by default, subjects tend to avoid making difficult and/or uncertain choices (e.g., Bruner, Goodnow, & Austin, 1956). Of course, as many studies have shown, it is possible to enhance the respondents' cognitive and emotional involvement with the task or influence the way they think or feel about alternatives using various manipulations (e.g., task importance, accountability).

However, in the absence of experimental manipulations that enhance task involvement, we expect the tendency to avoid uncertainty and difficult decisions to prevail. For example, Luce, Bettman, and Payne (1997, 2001; see also Luce, 1998) showed that, when faced with a decision involving conflict, people tend to adopt tradeoff-avoidant strategies (e.g., select the status-quo option), unless they are forced to make the difficult choices. Relatedly, Simonson (1992) showed that, when the possibility of regret is not salient at the time that a purchase is made, people are more likely to favor default and less risky options (e.g., betting on a "favorite" with a high probability of a small gain over a "long-shot").

Research further indicates that people tend to feel less regret if they choose the default (omission) alternative (e.g., Ritov and Baron, 1992; Seta et al., 2001), which suggests that a desire to minimize regret and cognitive effort will favor a safe choice (e.g., a sure gain over a gamble). Liberman et al. (1999) demonstrated that, under conditions that emphasize the desire to prevent losses and mistakes rather than promote gains, people tend to avoid change and select less risky options. Consistent with these findings, concerns about criticism promote selection of safe, compromise options (e.g., Simonson, 1989). Relatedly, it has been shown that compromise, safe options and options that have average values on all attributes tend to be preferred when decision makers are uncertain about their preferences and try to avoid making difficult decisions (Dhar & Simonson, 2003). Finally, selection of a risky gamble over a sure outcome often requires more time and effort, such as having to compute expected value.

Thus, in choices between a risky option (e.g., a gamble) and a safe option (e.g., a sure gain), the typical experimental control tends to favor the latter. It is therefore expected that, in the experimental

control group, most of the Switchers select the safer option by default, though they might shift to the more risky alternative under certain conditions. Accordingly, when a randomly selected condition is compared to the typical control, the predicted effect propensity indicates that there is a higher likelihood that the condition will increase the share of the risky option, because the majority of those most likely to choose the safer alternative have already done so in the experimental control.

In summary, we expect effect propensity to favor (a) the higher-price/quality option in choices between low price and high quality and (b) the higher-risk/return option in choices between low risk and high potential return. A question that naturally arises is how to test for effect propensity. One research strategy might be to conduct an initial study that attempts to identify the Switchers group in a particular category. Next, in a separate study, apply different manipulations to choices in the same category and try to establish that the Switchers are responsible for any consistent pattern of results across manipulations. For example, a researcher may first try to identify those with weak preferences (i.e., Switchers) in the domain of digital cameras and then examine whether most experimental manipulations increase the share of the higher quality camera within the Switchers group while having little effect on other consumers. However, like other within-subject research designs, such an approach will be difficult to implement and may create confounds due to repeated preference measurement under different conditions. Furthermore, such a study will provide limited, if any, insights, because, measurement issues and reactance aside, it is self-evident that those with weak preferences are most susceptible to influence. It is also noteworthy that measuring confidence or strength-of-preference after choices are made will provide little information, because (a) choosers of each option include both Switchers and non-Switchers, (b) the manipulation that caused the switch is likely to affect confidence and strength-of-preference, and (c) such measures require self-insight that people often lack (e.g., Nisbett & Wilson, 1977).

Another research strategy is to apply a wide range of conceptually unrelated manipulations and examine whether effect propensity emerges. Indeed, assuming (a) a non-uniform, segmented distribution of preferences (see, e.g., Figure 1) and (b) a significant majority of likely switchers select one of the two options in the reference state (e.g., most select the safe option in the control), then effect propensity almost by definition must occur. That is, assuming alternative explanations are ruled out, if a robust effect

propensity is observed, then the most straightforward account is that most Switchers selected one of the two options in the control, which limited the growth potential of that option. To further enhance our confidence in this account, we should test potentially viable rival explanations for the results. In addition, it is important to show that the magnitude and direction of effect propensity can be controlled by manipulations that are expected to shift the distribution of Switchers' choices in the reference state.

We adopt this latter research approach. In Study 1 and follow-up studies, we examine effect propensity in problems involving price-quality and risk-return tradeoffs, using a wide range of conceptually unrelated manipulations. We then test alternative explanations for the observed results in Study 2. Finally, in Studies 3 and 4, we investigate the impact of shifting the distribution of Switchers' choices in the control on the magnitude and direction of effect propensity.

Study 1

The respondents were 731 travelers at the domestic terminal of the San Francisco International Airport. Respondents, who received no compensation for their participation, were asked to make four choices in a short questionnaire titled, "Consumer Preferences." The problems involved tradeoffs between lower price and higher quality, between a sure gain and a gamble, and between options that varied in terms of both quality and risk. To test the proposition that, relative to the typical experimental control most conditions favor the higher price/quality option and gamble, respondents were assigned to one of ten conceptually different conditions, as described below.

Method

Respondents were randomly assigned to the control group or to one of the following nine conditions:

Control condition. Those in the control group were simply asked to participate in a "non-commercial, academic study sponsored by Stanford University" in which they would make several choices.

Involvement / decision importance. The effects of involvement and task importance on decision making have been studied in a wide range of domains, with involvement operationalized in different ways (see, e.g., Zaichkowsky, 1985). Prior research indicates, for example, that people are more sensitive to argument quality under high involvement (for a review, see Petty & Cacioppo, 1990). There is also

evidence that involvement produced through a manipulation of task importance can affect information search patterns (e.g., Billings & Scherer, 1988).

In the present study, the following instructions were added (in bold letters) in the high involvement/importance task to the control group instructions: “The purpose of the study is to learn which products consumers prefer. We are asking only 50 people to complete this questionnaire, so it is very important for you to think about the options carefully before entering each choice.” In addition, just before each choice set, respondents were told (in bold letters): “Before marking your choice, remember that your [digital camera] preference will affect the results of the study on consumer preferences.”

Rating. Prior research has examined the impact of rating each option on preferences between options (e.g., Bettman, 1982). Prior research indicates, for example, that when options are rated separately, people are more likely to prefer a higher-quality, more expensive brand to a lower quality, less expensive brand (Nowlis & Simonson, 1997). Respondents in the “option rating” task were told (in bold letters) in the introductory instructions that “In each case, we will ask you to indicate how likely you are to purchase each of the options.” Then, in each category, respondents were presented with each option and indicated the likelihood of purchasing (or choosing) it on a 1 (not at all likely) to 7 (very likely) scale. It was assumed that the respondent preferred the option rated higher (ties were excluded from the analysis).

Articulating reasons for choice. Timothy Wilson and his colleagues (e.g., Wilson & Schooler, 1991) have examined the effect of thinking about reasons, or introspection, on attitudes and choices. Their findings are consistent with the proposition that people who need to explain their decisions tend to over-emphasize aspects that are more verbalizable, accessible, plausible, and/or self-enhancing. Simonson and Nowlis (2000) showed that people who need to provide reasons, particularly those with a high need for uniqueness, tend to make less conventional choices. For example, providing reasons decreases the likelihood of choosing a compromise and increases the tendency to select a gamble with a possible loss over a sure gain (which virtually eliminates loss aversion in choices between a sure gain and a gamble).

In the present study, respondents in the reason articulation condition were informed in the task introduction that they would be asked to explain each choice. Then, following the introduction to each problem (above the choice set), respondents were told (in bold letters): “Before marking your choice below,

briefly explain why you are selecting the option that you intend to choose:" (reasons were entered in the provided space).

Anticipating regret. Regret has received a great deal of attention in different fields (e.g., Bell, 1982; Gilovich & Medvec, 1994, 1995; Kahneman & Miller, 1986). Research has also examined the effect of anticipating regret on current choices (e.g., Ritov, 1996; Simonson, 1992). Simonson (1992) showed that (a) in a choice between a higher-price/quality option and a lower-price/quality option, considering the possibility of selecting the wrong option (overpaying for the more expensive option or selecting a less expensive product that turns out to have inferior quality) increases the likelihood of selecting the more expensive alternative, and (b) a loss resulting from a bet on a "long-shot" rather than a "favorite" (e.g., at the horse race track) is associated with lower regret but greater self-blame (or responsibility).

A similar manipulation of anticipated regret was employed in the present research. Respondents were told in the introduction (in bold letters): "In each case, before you make your choice, we will describe two scenarios and ask you in which scenario you are more likely to feel regret." Then, in the camera choice problem, for example, respondents were asked, just above the choice set:

"After evaluating the two digital cameras below but before marking your choice, consider in which of the following two scenarios you are more likely to feel regret:

Scenario 1: If you were to choose the Sony camera (described below) and found out later that the Fuji camera is just as good and is a much better buy than the Sony.

Scenario 2: If you were to choose the Fuji camera and found out later that the Sony camera is significantly better and a much better buy than the Fuji.

I would feel more regret in Scenario _____"

Finally, the respondents indicated which of the two options they would choose.

Expecting to be evaluated. Numerous studies have examined the effects of being evaluated by others and the related topics of conformity, compliance, and accountability (for reviews, see, e.g., Cialdini & Trost, 1998; Lerner & Tetlock, 1999). In the present study, respondents in the expected evaluation group were informed (in bold letters) at the beginning of the study that, "The purpose of this study is to learn how capable and effective consumers are in making purchase decisions; we might use your choice later to

illustrate effective or ineffective consumer decisions." Just before each choice, respondents were reminded that, "As indicated, we might use your choice of [digital camera] to illustrate effective or ineffective consumer decisions."

Cognitive load. A great deal of research has investigated the impact of people's limited cognitive capacity on their decision strategies and use of cognitive short cuts or heuristics (e.g., Bettman, 1979; Simon, 1982). One of the factors that limits people's cognitive capacity is cognitive load, which can be manipulated experimentally by informing respondents of an upcoming recall task that requires them to memorize a certain number of words (e.g., Drolet & Luce, in press; Ward & Mann, 2000). For example, Ward and Mann showed that, under high cognitive load, people on a diet consume more calories, possibly because the cognitive load diminishes their ability to consider the consequences of over-eating. Drolet and Luce showed that cognitive load facilitates making difficult tradeoffs by disrupting people's ability to consider the negative emotional consequences of trading-off something of personal importance.

In the present study, respondents in the cognitive load group were informed that they would participate in two studies. In Study 1, they were told that: "Previous research has shown that it is difficult for consumers to compare products that differ on many features. Below is a list of features on which products can differ. We are trying to find out how many features consumers can keep in memory for a short time. Please study the list below for 2 minutes and try to memorize as many of the features as possible. You will be asked at the end of this study to write down all the features you remember. This is a hard task, but in prior studies, some people were able to recall all of the features." Respondents were then shown a list of 20 features, such as durability, color, texture, and speed. They then completed the questionnaire of Study 2, which was the same choice task as in the control version. At the end, they were asked to list as many of the 20 features as they could remember.

Articulating reasons under cognitive load. The notion of effect propensity suggests that, if one manipulation shifts the preferences of the Switchers group in a particular direction (e.g., anticipating regret leads most Switchers to prefer the high price/quality option), then it is less likely that an additional manipulation (combined with the first) will further operate in the same direction. That is, while each individual manipulation is likely to affect choices in the direction implied by effect propensity, that propensity

is reduced or might even reverse once (after one manipulation is applied) the distribution of Switchers' choices no longer favors the default choice in the control. Thus, the combination of two randomly selected conditions (or manipulations) may not produce a greater increase in the share of high price/quality options and risky options, compared to the case where just one of the two manipulations is applied. Accordingly, in Study 1 we included a condition in which respondents both had to recall 20 features and provide reasons.

Incidental exposure to choices of others. Exposure to the choices of others often increases the likelihood that a decision maker will make similar choices, though an explicit attempt to influence decisions can also lead to reactance (e.g., Brehm, 1966; Cialdini & Trost, 1998; Lerner & Tetlock, 1999; Tetlock, 1992). A tendency to choose similarly to others may reflect both the normative influence (e.g., the benefits associated with receiving the approval of others) and the information value (e.g., regarding true product quality) of the choices of others (e.g., Deutsch & Gerard, 1955).

Simonson, Nowlis, and Simonson (1993) examined the effect of an incidental exposure to the choices of others on consumer product preferences. Respondents were told that, due to cuts in research funds available to faculty, each questionnaire was designed for use by two respondents so as to save costs. Accordingly, following each choice problem, both Respondent 1 and "Respondent 2" could indicate which option was preferred. Respondents were told that, if they did not see any previous answers, they were Respondent 1, and if the choices of Respondent 1 had already been marked, they were Respondent 2. In all cases, the true subjects were Respondent 2, which made it possible to examine the impact of the manipulated choices and explanations of "Respondent 1." For example, the results indicated that, although subjects tended to choose similarly to Respondent 1 when that respondent did not provide a reason for the choice, they were less likely to select options that were chosen by Respondent 1 for idiosyncratic reasons (for example, Respondent 1 chose the Breyer's ice cream because it was kosher). Measures administered at the conclusion of that study showed that only two out of 113 subjects suspected that the purpose of the study was related to the effect of the choices of other respondents.

In the present research, this methodology provides a particularly powerful test of the prediction that it is easier to shift preferences toward high price/quality and risky options than toward low price/quality and low risk options. We expect that, if Respondent 1 chooses the high price/quality option or the risky option

(i.e., the options assumed to be favored by effect propensity), the real respondent should be more likely to also select that option, due to both the influence of the other respondent and effect propensity. Conversely, when Respondent 1 chooses the low price/quality or safe option, effect propensity and the influence of the other respondent's choice operate in opposite directions, making it more difficult to predict a priori the direction of the effect. Thus, in Study 1 we included two conditions in which respondents were exposed to the choices of "Respondent 1." That "respondent" either selected the higher-price/quality and risky options or the low price/quality and safe options (across problems within each questionnaire, Respondent 1 made choices of both types). The introductory instructions in these conditions included the following information (the first sentence in bold letters):

"Please note: Given limited budgets for graduate student research, each questionnaire is designed for use by two respondents, instead of the customary one questionnaire per respondent. This will reduce the costs of this study to us significantly (saving of paper and duplicating expenses). In the choice problems below, if you do not see any previous answers, you are Respondent 1. If the answers of Respondent 1 are already marked, you are Respondent 2." In all cases, the choices of Respondent 1 were already marked (in blue ink), and the real respondents were Respondent 2. The respondents received the questionnaires from the students who administered the study at the airport. None of the respondents questioned the practice of having two respondents per questionnaire or expressed any suspicions regarding the purpose of the study.

Choice problems. Respondents were given four choice problems. These problems included choices between (a) a Sony (digital) camera priced at $474, and a Fuji camera priced at $319 (see Appendix A); (b) a bike helmet ranked 2nd (out of 20 models) on safety and priced at $120, and a helmet ranked 8th on safety and priced at $45; (c) a front door lock with a 375 lb. holding force against break-ins and a price of $155, and a lock with 250 lb. holding force that cost $70; and (d) $50 for sure and a gamble that offered a 50% chance to get $300 and a 50% chance to lose $25 (see Appendix A).

Results

As shown in Table A1, the share of the higher-price/quality and risky options across all nine conditions (including the condition where Respondent 1 chose the low price/safe options) was higher than in the control in 28 of 36 cases, and in only seven cases the conditions had a negative effect. Furthermore,

across the 28 instances of an increase in the share of the high price/quality and gamble options, the average increase was 19%,[1] whereas the average decrease (across the seven instances of decline in the high quality/gamble option share) was only 9%. Consistent with this effect magnitude difference, ten of the positive (increase) condition effects were statistically significant (using the raw, non-normalized differences and two-tailed tests) at the .01, .05, or .1 levels, whereas none of the negative effects were statistically significant. Also, while exposure to another respondent who chose the high price/quality or gamble options caused a statistically significant increase in the shares of these options in two of four problems ($p<.01$; $p<.05$), exposure to a respondent who chose the low quality or safe option had no statistically significant effects. It is noteworthy that, because the conditions included in Study 1 were designed to represent a diverse set of manipulations and were not selected based on any prior theories or hypotheses suggesting directional effects, we expected that most condition effects would not be statistically significant.

However, given that effect propensity was expected to favor the high price/quality and gamble options in most cases, we used a sign test to assess the statistical significance of the results. Since respondents made choices in all four categories but were assigned to just one condition, we applied the sign test to the signs of the average effect of each of the nine (between-subjects) conditions. The signs of all average effects relative to the control were positive, supporting the hypothesis that the share of the high quality/gamble options tends to be higher than in the control ($p < .001$).

Discussion and Follow-Up Studies

The results of Study 1 are consistent with the notion that the typical experimental control creates effect propensity favoring the high quality option in choices between price and quality and the risky option in choices between safe and risky options. In 28 out of 36 cases, across nine conceptually distinct manipulations, the share of the higher-price/quality and risky options increased by an average of 19%, compared to an average decline of 9% in the seven cases with negative sign effects. Of course, we are not proposing that effect propensity completely determines the sign or magnitude of the various conditions, each of which has its own idiosyncratic effect. However, as predicted, the pattern of results across a wide range of conceptually distinct conditions is consistent with the existence of effect propensity that favors the higher-price/quality product and the gamble.

As explained above, the two groups that were exposed to the choices of Respondent 1 are of particular interest, because they allow us to contrast the effect of the same manipulation that is applied either in the higher quality/higher risk or the lower quality/lower risk direction. The results indicate that, in all cases, exposure to Respondent 1 who had "chosen" the higher quality/risk option increased the likelihood of choosing the same option, whereas selections of the lower price/risk option by Respondent 1 tended to have no effect on the subjects' decisions.

The finding that cognitive load also tended to increase the share of the high quality/high risk options is noteworthy, because it is inconsistent with a possible alternative explanation whereby choosing a higher price option or a riskier alternative requires greater cognitive elaboration. That is, except for the cognitive load condition, all other manipulations could be seen as different ways of considering the options more thoroughly, which might increase the preference for higher-price/quality options and riskier alternatives. However, according to this alternative account, cognitive load, which limits the cognitive resources available for evaluating the choice problems, should have the opposite effect, which does not appear to be the case. We examine this alternative account further in Study 2.

A comparison of the results in the "cognitive load + reason articulation" group with the "reason articulation" group and the "cognitive load" group is consistent with the prediction that a combination of conditions, each of which increases the share of the higher quality/risk alternative, tends to produce an effect that is not stronger than each condition separately. We examined this prediction further in a follow-up study (with airport travelers) that included a modified version of the digital camera problem, a choice between a half gallon of a more expensive Häagen-Dazs ice cream and a less expensive Dreyer's ice cream, and a bet problem involving a choice between a safe gamble (50% chance to win $20 and 50% chance to win nothing) and a risky gamble (50% chance to win $100 and 50% chance to lose $25). The conditions tested included a control, anticipating regret, involvement, expected evaluation, rating, articulating reasons, involvement + articulating reasons, and rating + articulating reasons.

The share of the higher-quality (Sony) camera in the control was 35.5%, and its choice share was greater in all other conditions. The average (normalized) share increase across all seven conditions was 30%. In the two combination conditions (involvement + articulating reasons and rating + articulating

reasons), the average increase was 23%, again indicating that combining manipulations tends not to increase the share of the higher quality/risk option more than each component manipulation separately. In the ice cream problem, the results did not show an effect propensity, with four conditions (14%, on average) decreasing (relative to the control) the share of the higher-price/quality brand (Häagen-Dazs) and three conditions slightly (3%) increasing its share. In the bet problem, the share of the risky gamble was 45% in the control, and its share increased in five of the seven conditions, by an average of 15%; the share of the risky gamble declined by an average of 9% in two of the conditions. The two combined manipulation conditions had on average no effect on the share of the risky gamble.

A second follow-up study was designed to test a possible alternative explanation for the results whereby, compared to the control, other conditions tend to encourage making decisions that appear more rational, such as choosing an option with a higher expected value or a higher-quality brand. A second objective of this follow-up study was to again test the basic effect propensity proposition that most manipulations operate in the predicted direction. The respondents (airport travelers) were randomly assigned to one of the following conditions: high involvement, articulating reasons, anticipating regret, and exposure to the choices of others (using the same manipulation as in Study 1).

To test the rival explanation suggesting that the tested manipulations promote choices that appear more rational, in six of the 12 problems included in this study a rational decision maker could be expected to make particular choices. These problems included (a) two problems that examined the so-called “money illusion” (e.g., Shafir, Diamond, & Tversky, 1997); (b) two other problems related to the tendency to select greater variety when making simultaneous choices for several periods than when making one choice in each period (Simonson, 1990; see also, Read et al., 2001); (c) two problems that tested whether, relative to the control, other conditions decrease the tendency to prefer improving sequences (e.g., Loewenstein & Prelec, 1993; Ross & Simonson, 1991; Varey & Kahneman, 1992). Two additional problems tested whether effect propensity favoring gambles is observed also in the negative domain. For example, one problem involved a choice between two equally effective and safe medications, one associated with moderate discomfort and the other with a 25% chance of severe discomfort and a 75% chance of no

discomfort. Finally, four problems were similar to the problems tested in Study 1, involving choices between price and quality and between a sure gain and a gamble.

The results of this follow-up study were inconsistent with the rival explanation indicating that the various manipulations lead to more rational decisions. Specifically, choices consistent with money illusion were actually least pronounced in the control condition, and there was no consistent pattern with respect to the experience trend problems. However, the level of variety seeking was somewhat higher in the control than in most other conditions. The problems that were similar to those included in Study 1 showed a similar pattern of results. Finally, the results suggest that effect propensity favoring the gamble is also observed in the negative domain, though that result appears less robust.

Study 2

A more thorough evaluation of options or merely thinking more about a problem could have a systematic effect on the choices that people make. For example, because a gamble often requires more processing (e.g., computing expected value) than a sure gain, one might expect that those who evaluate options more carefully will be more likely to select a gamble that offers a significantly higher expected value. Similarly, since a price advantage is certain whereas an advantage based on a brand name is often uncertain, less involved subjects may be more likely to adopt a simple "choose the cheapest" heuristic.

With the exception of the cognitive load condition, all of the task manipulations in Study 1 can be seen as different ways of considering the options more thoroughly than in the control task. In particular, anticipating regret, articulating reasons, rating each option, higher involvement, expecting to be evaluated, and even exposure to the choices of others might produce greater elaboration and more thorough decision processes than in the control task. Accordingly, to test this alternative explanation, Study 2 manipulated participants' opportunity to evaluate the options thoroughly. In particular, Study 2 was designed to contrast directly the impact of high versus low time pressure on choices between high quality and high risk alternatives. In addition, we again examined the effect of cognitive load on choices.

Prior research has shown that time pressure can affect decision-making in different ways, including accelerating decision processes, focusing attention on the most important attributes and on negative information, and leading to more noncompensatory decision processes (e.g., Ben Zur & Breznitz, 1981;

Dhar & Nowlis, 1999; Payne et al., 1993; Wright, 1974). In the context of choices between price and quality and between safer and riskier bets, it is not clear that one can make an a priori prediction regarding the effect of time pressure. On the one hand, the findings of Ben Zur and Breznitz (1981; see also Payne et al., 1993; Wright, 1974) suggest that time pressure makes decision makers more averse to negative outcomes and uncertainty. On the other hand, under time pressure, decision makers may not consider as closely the potential negative consequences of a decision error, which might promote selection of more risky alternatives (e.g., Dhar & Nowlis, 1999).

However, the alternative explanation for the results of Study 1, which suggests that the common underlying factor of the different manipulations is more careful information processing, leads to a clear prediction. According to this account, time pressure is expected to increase the share of low price/quality and safer options, whereas telling decision makers that they have plenty of time and should evaluate the information carefully should have the opposite effect. In contrast, our expectation is that, regardless of the other effects of high or low time pressure and of cognitive load, effect propensity favors the high quality and riskier options. In other words, we expect most manipulations, including low and high time pressure as well as cognitive load, to either increase the share of high quality/riskier alternatives in most choice problems or have a nonsignificant effect. We included one other condition in which respondents listed the advantage of each option, rated their confidence in that advantage, and then chose between the options.[2]

Method

The respondents were 273 Stanford University students, who received $5 for their participation. They were randomly assigned to one of five tasks, including the control, cognitive load, time pressure, extended decision time, and the confidence evaluation task. The cognitive load task was similar to the corresponding condition of Study 1. In the first part, respondents were given 2.5 minutes to memorize 25 words (e.g., clock, luggage, dog), followed by the choice task (and, at the end, a recall task). In the time pressure condition, respondents were told in the introductory instructions that, “For each problem, you will only have 12 seconds to mark your choice. The experimenter will tell you to turn the page when the 12 seconds have passed.” They were reminded at the top of each page of the 12-second limit, and the experimenter told the respondents when to turn to the next page.

In the extended decision time condition, respondents were told in the introductory instructions to, "Please take your time and do not rush into making a decision. Previous studies have shown that making decisions often takes up to ninety seconds. For each problem, you will therefore have a total of 90 seconds to mark your choice. The experimenter will tell you to turn the page when the 90 seconds have passed." Respondents were reminded at the top of each page that they had "plenty of time (90 seconds)" to make their decision, so they should take their time. Finally, in the "confidence evaluation" condition, subjects first identified the advantage of each option and then rated their level of confidence about that advantage.

Respondents made choices in eight problems (examples of these problems are included in Appendix B). Based on prior work indicating that time pressure tends to increase the weight of probability relative to payoff (e.g., Ben Zur & Breznitz, 1981), we included two versions of the Lottery and Raffle problems, with different probabilities of winning and, correspondingly, a different sure gain. In addition, one problem involved a choice between a sure loss and a gamble and three problems involved choices between low price/quality and high price/quality options.

Results and Discussion

As shown in Table A2, in 25 out of 32 cases, the experimental conditions increased the share of the high quality and riskier alternatives compared to their share in the control, and in only six cases did the share of the high quality/riskier alternatives decline. Furthermore, on average, all four conditions increased the share of the higher-price/quality option and the gamble (using a sign test for the average effect of the four conditions, p=.06), with an overall (normalized) effect across all four conditions of +16%. It is also noteworthy that, although there were some differences between no and high time pressure in specific problems (e.g., the sure loss problem), on average, both had rather similar effects on choice (+16% vs. +22%). In the confidence evaluation condition, the share of the high quality/risky options increased by an average of 17% (even though subjects were less confident about these options' advantages).

Overall, the results of Study 2 do not support the rival explanation whereby conditions that involve more thinking or information processing increase the share of the high price/quality and risky options. For example, the finding that neither cognitive load nor time pressure decrease the choice shares of these options is inconsistent with this rival account. In fact, both no time pressure and severe time pressure

tended to increase the choice share of the high quality and risky options. Next, in Studies 3 and 4, we examine the impact of shifting the distribution of choices in the reference state on effect propensity.

Study 3

We proposed that the rather consistent pattern of effects observed in Studies 1 and 2 is due to the fact that most Switchers select the lower price/quality and the safer options in the reference state (i.e., the control condition), which leaves these options less room to grow in response to any manipulation. This explanation for effect propensity suggests that if the distribution of Switchers' choices in the reference state can be shifted in the direction of the high quality/risky options, then effect propensity should be eliminated and perhaps even reversed. We examine this prediction in Studies 3 and 4.

In Study 3, we shift the Switchers' choices in the direction of the high quality and risky options by framing these options as the status quo (e.g., Samuelson & Zeckhauser, 1988). Assuming the status quo manipulation is successful and Switchers' choices in the control are more evenly balanced between the price and quality options and between the safe and risky options, we expect the magnitude of effect propensity favoring the high quality and risky options to be reduced or even reversed.

Method

As indicated earlier, the condition in which respondents are "inadvertently" exposed to the choices of another respondent provides a particularly effective test of effect propensity, because it allows us to contrast the effect of exposure to a Respondent 1 who chose the low price/safe alternative with the effect of exposure to a choice of the high quality/risky alternative. Accordingly, in Study 3 we focused on the comparison between these conditions and the control.

The respondents were 298 Stanford University students, who were randomly assigned to one of six conditions, in a 3 (task: control, and two versions of exposure to Respondent 1's choices) x 2 (whether or not the high quality/risky option was the status quo) between-subjects design. Each respondent made six choices. The choice problems were designed such that they would enable us to implement the status quo manipulation, including four choices between a higher-quality/price brand and a lower-quality/price brand and four choices between a sure outcome and a gamble. Appendix C presents the standard and status quo versions of one problem of each kind.

In the status quo version of all six problems, the high quality/risky alternative was either the initial or the expected choice. In the product choice problems (printer, cordless phone, and suitcase), the respondents were asked to assume that they initially decided to purchase one (the higher-price/quality) brand and then noticed another (lower-price/quality) brand that had the same features. For example, in the suitcase problem, the decision maker first decided to purchase one brand based on the Macy's Department Store catalog, but at the store noticed another (cheaper) brand with the same features.

In the sure outcome versus gamble problems, the decision maker first selected the gamble and was then given a second option of a sure outcome. For example, in the "Let's make a Deal" problem, respondents were asked to assume that there was a $3,000 prize behind one of three doors. After they selected a door and placed their choice in a sealed envelope, the game host offered them the option to trade their choice for $325 in cash. The respondents had to decide whether to stay with their door selection or switch to the sure $325. In the standard (non-status quo) version, respondents were simply asked to choose between selecting a door and $325 in cash. Another problem, similar to the "medications" problem described earlier, involved a choice between a medication that always produced moderate discomfort and an equally effective and safe medication that might produce either severe discomfort or no discomfort at all.

Results

We expected that the asymmetry between the effect of exposure to Respondent 1 who chose the high quality/risky option and Respondent 1 who chose the low price/safe option would be reduced if the high quality/risky alternative were the status quo. An examination of the status quo manipulation indicated that it failed in the cordless phone problem (i.e., the Panasonic phone had a lower choice share when it was the status quo). We also realized that in the "medications" problem we mistakenly applied the status quo manipulation to the medication that was always associated with moderate discomfort, instead of the gamble (i.e., the medication that produced severe or no discomfort). Thus, consistent with the findings of Study 1, in both versions, exposure to Respondent 1 who chose the gamble increased the choice share of that option (by 21-23%), whereas Respondent 1 who chose the sure moderate discomfort had virtually no effect on choice shares (7%, normalized).

Table A3 presents the results pertaining to the remaining four problems, including two product choices (printer and suitcase) and two choices between a sure gain and a gamble ("Study participation" and "Let's make a deal"). We first examined the impact of Respondent 1's choices in the standard (no status quo) version of the problems. Consistent with the findings of Study 1 and an effect propensity favoring the high quality/risky option, in three out of the four problems (printer, suitcase, and study), exposure to Respondent 1 who chose the high quality/risky alternative increased that option's share; conversely, exposure to Respondent 1 who chose the low price/safe alternative either increased the high quality option's share (suitcase problem) or had a very small effect (printer and study problems). However, in the "Let's Make a Deal" problem, exposure to Respondent 1 who chose the safe alternative ($325) significantly decreased the share of the risky option (i.e., keeping the door bet).

Next, we examined the prediction that the increase in the share of the high quality/risky alternative when Respondent 1 chose that alternative would be smaller in the status quo version of the problems. The results in all four problems were consistent with this prediction, with an average (normalized) increase of 10% in the standard version, compared to –12% in the status quo version ($t=3.5$, $p<.05$). Finally, we examined whether the asymmetry between the effect of exposure to Respondent 1 who chose the high quality/risky option and Respondent 1 who chose the low price/safe option was smaller in the status quo version. In the standard version, exposure to Respondent 1 who chose the high price/quality or gamble option increased the (normalized) share of that option by 24% on average, whereas exposure to choices of the low price/safe option decreased the share of that option by an average of 5% (see Table A3). Conversely, in the status quo version, exposure to choices of the high quality/ risky option *decreased* the share of that option by 5%, compared to a decrease of 18% when Respondent 1 chose the low price/safe alternative ($t=2.15$, $p<.05$).

Overall, consistent with the notion that the distribution of Switchers' choices in the reference state determines the existence and direction of effect propensity, Study 3 showed that a status quo manipulation applied to the reference state reverses the pattern of effects on choice. In the status quo version of the problems, exposure to Respondent 1 who chose the high quality/risky alternatives did not enhance

preference for that option, whereas exposure to choices of the low price/safe alternatives tended to increase the preference for these options.

Study 4

The distribution of Switcher's choices can be shifted in the direction of the high quality/price (or low quality/price) option (hereafter, HQ or LQ option) by introducing an asymmetrically dominated/inferior option. Huber et al. (1982) showed the attraction (or asymmetric dominance) effect whereby the addition of an option that is dominated by one of two options increases the choice share of the (asymmetrically) dominating option. Huber and Puto (1983) further showed that the added option does not need to be strictly dominated, and the attraction effect occurs also when the added option appears inferior relative to one of the existing alternatives. In one illustration of this effect, Simonson and Tversky (1992) showed that consumers are more likely to exchange $6 for an elegant Cross pen when they also have the option of exchanging $6 for a less attractive pen. A review of many studies of the asymmetric dominance effect in the context of consumer decision making further indicates that this effect is most pronounced when the dominated/inferior option is dominated by the HQ option in the set (see Heath & Chatterjee, 1995).

The inclusion of an option that is inferior relative to the HQ (or risky) alternative is expected to cause most Switchers to select the HQ option. Specifically, prior research indicates that asymmetrically dominating or relatively superior (hereafter, dominating) options are perceived as more attractive and easier to justify, and they tend to be selected by people who are uncertain about their preferences and have difficulty making a choice (e.g., Simonson, 1989; see also Dhar & Simonson, 2003). We can therefore assume that, in choice sets with asymmetrically dominating HQ options, Switchers, who do not have strong preferences between the LQ and HQ options, tend to favor the latter. In other words, in choice sets with asymmetrically dominating HQ options, individuals most likely to choose that option will have already done so in the control. Therefore, effect propensity is expected to operate "against" such options, such that asymmetrically dominating alternatives (including HQ options) are less likely to gain share.

Method

Study 4 employed a 2 (set configuration: HQ or LQ option is asymmetrically dominating) X 3 (Condition: Control; Respondent 1 chooses the HQ option or the LQ option) between-subjects design. Each

of the 212 students who participated in the study made choices in four categories: Microwave oven, cordless phone, personal computer, and speakers (see the two versions of the PC problem in Appendix D). The manipulation of Respondent 1's choices was the same as in the previous studies.

Results

The choice results are presented in Table A4. Since most Switchers are assumed to select the asymmetrically dominating option in the control, the impact of exposure to Respondent 1's choices should favor the non-dominating option, which has greater growth potential among Switchers. To examine whether the results support this prediction, consider first the effect of Respondent 1's choices on the share of the high quality/price (HQ) option when it is asymmetrically dominating. As can be seen by comparing the effects of exposure to Respondent 1 who chose the HQ alternative with the effect of exposure to Respondent 1 who chose the LQ alternative, in all four problems the (absolute value) decline in the latter case is greater than the change in the former case (using a sign test, p=.06). In other words, the HQ dominating option tends to lose greater share when another respondent chooses the LQ option than it gains (or even loses) when the other respondent chooses the HQ option. On average, exposure to Respondent 1 who chose the LQ option decreased the share of the HQ option by 13%, whereas Respondent 1 who chose the HQ option increased the HQ option share by only 7%. This pattern reverses the direction of effect propensity observed in Studies 1 and 2.

Consider next the effect of Respondent 1's choices when the HQ option is not dominating. In that case, we expect effect propensity to favor the HQ option, because most Switchers select the (dominating) LQ option in the control. Indeed, an examination of results in Table A4 shows that the positive effect of seeing Respondent 1 choose the HQ option on that option's share was larger (in absolute terms) in each of the four problems than the impact of seeing Respondent 1 choose the LQ option. On average, the increase in the share of the (non-dominating) HQ alternative was 51% when Respondent 1 chose that option, compared to an average loss of only 3% when respondent 1 chose the LQ alternative. These results are consistent with a pronounced effect propensity favoring the HQ option.

A comparison of the results (Table A4) pertaining to the effects on choices of the LQ and the HQ options shows the basic effect propensity favoring the HQ option, as shown in Studies 1 and 2. Specifically,

pooling across the Respondent 1 and set configuration conditions, the LQ option *lost*, on average, 18.5% (=(-30-7)/2), whereas the HQ option *gained* an average of 10.5%. Finally, aside from the main effect whereby the LQ option is more likely to lose share in all conditions, the pattern of effects on the LQ option's share corresponds to that observed for the HQ option. In particular, the dominating LQ option lost an average of 54% when Respondent 1 chose the HQ alternative, and it also lost 6% share, on average, when Respondent 1 chose the LQ option. Overall, the results of Study 4 demonstrate that the distribution of Switchers' choices in the reference state determines the direction of effect propensity. In particular, we showed that effect propensity favoring the HQ option is reversed when that option is asymmetrically dominating in the control.

General Discussion

Research on choice, judgment, and other topics typically focuses on the characteristics of the condition being tested, and theories are presented to support predictions regarding the effect of that condition. Such focalism on the condition rather than on the reference state is natural, because conditions tend to vary from one study to the next whereas reference states often do not. The implicit assumption has been that the control is neutral, and the direction and magnitude of observed condition effects depend on each condition, which can be derived from the applicable theories. That is, unless there is a pronounced ceiling/floor effect in the control (e.g., 80% of the subjects select one of two available options), each condition has an about equal opportunity to have an effect on choice patterns.

This assumption, however, does not hold if we make the reasonable assumption that, in many cases, people's preferences between options are segmented rather than uniformly distributed. As illustrated in Figure 1, decision makers can often be roughly classified as those who are likely to select a particular option under most conditions and Switchers, whose choices are most sensitive to the particular conditions. Given such a distribution of preferences, the more relevant ceiling effect refers to the preferences of the Switchers, not the entire sample population. That is, if the great majority of Switchers select Option A in the reference state, then the likelihood that any other condition will further increase the share of that option is low, whereas Option B has much room to grow and is likely to gain share in response to most conditions. In other words, the distribution of Switchers' choices in the control can create effect

propensity that favors a particular option. Of course, as long as more than one option has room to grow, any randomly selected condition might operate in more than one direction.

Summary of Key Findings

The pattern of results observed in our studies supports the existence of effect propensity in two important domains: choices between safe and risky options and choices between higher-price/quality and lower-price/quality options. Our research strategy involved three components: (a) testing whether the application of a wide range of conceptually independent or even contradictory manipulations tends to produce a pattern of effects that is consistent with the predicted effect propensity, (b) examining alternative explanations, and (c) testing conditions that are expected to change the direction and magnitude of effect propensity. As shown in Study 1 and the follow-up studies, a clear majority of manipulations increase the choice share of the riskier and the higher-quality options, consistent with the assumption that most likely switchers tend to select the safe and the low price/quality options in the typical experimental control. Of course, other factors moderate the impact of manipulations on preferences. For example, we did not observe the expected effect propensity (in a follow-up to Study 1) in choices between a more expensive Häagen-Dazs ice cream and a less expensive Dreyer's ice cream. Based on earlier studies of ice cream choices (e.g., Drolet et al., 2000), we speculate that the lower quality ice cream option is not the default option. Thus, if about 50% of likely switchers selected the lower price ice cream brand in the control, then effect propensity did not play a significant role in determining the direction of condition effects.

Given the wide range of conditions applied in Study 1 and the follow-up studies, any potential alternative explanation for this pattern necessarily has to be rather generic and not specific to a particular condition. One such generic rival explanation is that the various manipulations (e.g., anticipating regret, providing reasons, high task importance) involve more thinking and cognitive elaboration, which might promote preferences for gambles (with higher expected values) and higher price/quality options. However, the results of Study 2 were inconsistent with this rival explanation. Specifically, contrary to that account, extended decision time, time pressure, and cognitive load manipulations tended to increase the shares of the riskier and higher price/quality options. Also, the results showed that respondents in the non-control conditions were not more likely to choose in accordance with normative rules.

Studies 3 and 4 demonstrated that the direction of effect propensity can be reversed by shifting the distribution of choices in the reference state. In Study 3, we used a status quo manipulation to shift Switchers' choices to the high price/quality and the risky options. As expected, this manipulation changed the direction of the effect of exposure to another respondent's choice. In Study 4, we used asymmetric dominance to shift the Switchers' choices in the reference state to the higher quality/riskier options.

Prior research has shown that asymmetric dominance has the greatest effect on respondents who have the most difficulty choosing between the options (e.g., Simonson, 1989). Thus, asymmetric dominance is an effective way to shift the Switchers' preferences between options. As expected, when the high quality/risky options were dominating, they lost greater share as a result of exposure to another respondent who chose the low price/safe option than they gained when the other respondent chose the high quality/risky alternative. These results support our underlying assumption that the distribution of Switchers' preferences in the reference state determined the direction of effect propensity.

The Meaning and Implications of Effect Propensity for Theory Tests and Selection of Controls

As indicated, effect propensity is a different concept than the standard interpretation of a ceiling (or floor) effect, though it can be seen as a ceiling effect within the group of likely switchers. Effect propensity reduces to a standard ceiling effect if the distribution of preferences is uniform (e.g., can be represented by a straight horizontal line in Figure 1) or if the great majority of choosers are likely switchers. Furthermore, the overall share of an option and its share within the Switchers group are not independent and are likely to be positively correlated. Thus, for example, if the higher-price/quality has an overall share of 80% in the reference state, it is also likely to have a relatively high share of the Switchers group, and it is therefore unlikely that most conditions will further increase its share. However, effect propensity indicates that, unless one considers specifically the distribution of choices and a possible ceiling effect among likely switchers, theories about condition effects might be falsely supported or rejected.

In particular, effect propensity implies that, for a given decision problem and reference state, certain hypotheses and related theories are in a privileged position whereas other hypotheses and theories are disadvantaged. For example, theories that predict an increase in the share of a higher-price/quality

alternative relative to a lower-price/quality alternative will often have a significantly better chance of being supported than theories that predict the opposite effect. Since the validity of theories is usually determined based on the statistically significant results of empirical tests, one must consider the factors that systematically affect the likelihood that certain significant empirical results will or will not be obtained.

Probably the most important such factor is the selection of a reference state to be used as the control, a decision that is often far from obvious and rather arbitrary. Indeed, one could conceivably use different reference states in studies of choices between a sure gain and a gamble or between lower- and higher-price/quality options. For example, to the extent that many people have a default choice or are primed to select a particular option, though they would consider one or more alternatives, one could justify using a status quo manipulation that favors that default option (as was done in Study 3). If that frame is adopted as the reference state, different theories are likely to be supported or rejected. Thus, effect propensity further reinforces the notion that the validity or falsity of hypotheses and theories depends on the reference state used to test them. Thus, researchers must carefully consider and explain the criteria they use in selecting a particular control. For example, in the context of consumer choice, an easy to justify control might be one that represents, as closely as possible, the common marketplace conditions.

This analysis also highlights the importance of estimating the choice distribution of likely switchers in the reference state (i.e., the control). In the present investigation, we relied on previous research and conceptual arguments to predict the distribution of Switchers' choices in the control. An alternative approach, which is based on the assumption that effect propensity exists whenever the choices of likely switchers are divided unevenly between options, is to apply a wide range of manipulations to a decision problem and empirically identify the direction to which most conditions gravitate. To apply such an approach, the researcher might list many potential manipulations and select a random sample from that list. If effect propensity is observed, one can infer the distribution of Switchers' choices in the reference state. For example, if many conceptually distinct manipulations rather consistently decrease the share of the middle (compromise) option in a choice set, we could reasonably infer that most Switchers select the compromise option in the control (see Dhar & Simonson, 2003).

With such an approach, it is important to use a diverse set of conditions, if possible, including manipulations that could be expected based on prior theories to produce different effects. For example, in the present research we tested both time pressure and extended time, cognitive load and providing reasons, and exposure to others who choose a gamble or a sure gain. Although the magnitude of the effects will vary to some degree, consistent with the prior theories, the overall observed pattern of the signs and magnitudes of the effects across such a diverse set of manipulations can provide clear evidence of effect propensity and the degree to which likely switchers favor a particular option. Of course, even when effect propensity appears to play a significant role, it is highly unlikely that all manipulations will operate in the same direction or that the effect will be observed in all problems. Indeed, any specific problem might have certain idiosyncratic characteristics that counteract effect propensity (e.g., as in the ice cream choice).

A question that naturally arises in cases where a pronounced effect propensity exists is whether individual effects that operate in the same direction as the observed effect propensity are invalid or reached the threshold for statistical significance thanks to that contributing factor. For example, is the finding that anticipating the possibility of regret increases the likelihood of choosing a higher-price/quality brand (Simonson, 1992) invalid? The answer, we believe, is that this conclusion regarding the effect of anticipating regret is valid, assuming the reference state used in that study (which was similar to the control condition in many choice studies) was valid. It is quite possible, however, that the conclusion would not hold if the reference state were actual consumer purchase decisions regarding major appliances or if consumers' initial inclination was to select the better-known brand. It is also noteworthy that, in the original 1992 article, the tendency to switch to the better-known alternative after considering the possibility of regret was interpreted as an indication that thinking about regret tends to increase the share of default options. This interpretation seems less plausible when one considers the pattern of results observed in the present research regarding the effects of many different conditions on preferences between lower-price/quality and higher-price/quality options.[3] As this revision of the explanation illustrates, examining the pattern of effects across a wide range of related or even unrelated conditions may often shed new light on the interpretation of individual experimental results.

Furthermore, one might gain insights into the robustness of effects by assessing the sensitivity of the research findings to different reference states, consistent with the principle of triangulation (e.g., Campbell & Fiske, 1959; Lynch, 1982). In some cases, research findings hold with different reference states and conditions. For example, the conclusion that a higher-price/quality option is more likely to benefit from a "sale" than a lower-price/quality alternative has been observed with both scanner data of actual consumer purchase decisions (e.g., Blattberg & Wisniewski, 1989; but see Srinivasan and Sethuraman, 1999) and with hypothetical decisions of student subjects (e.g., Heath et al., 1999; Nowlis & Simonson, 2000). The correspondence between hypothetical questionnaire-based choices and the marketplace behavior at issue suggests that effect propensity in choices between low and high price/quality options observed in laboratory studies also applies to influences on actual purchase decisions.

In conclusion, this research highlights the importance of considering the distribution of choices of likely switchers in the reference state (or control) as a potentially key determinant of the direction of effects and their statistical significance. Thus, researchers need to consider and explicitly account for their selection of reference states. Furthermore, if prior research indicates that other manipulations applied to the same basic problem have produced similar effects, researchers should present evidence that observed effects reflect primarily the impact of the underlying constructs being studied rather than effect propensity.

Footnotes

[1] To separate effect propensity from ordinary ceiling/floor effects, the share changes reported in Table A1, as well as all subsequently reported choice share changes, were "normalized" such that share gains/losses relative to a reference (control) share of higher/lower than 50% receive proportionally greater weight than share gains/losses relative to a control share of less/more than 50%. For example, if an option's share in the control is 30% and its share increases to 40% in a certain condition, the normalized share change is +14% (=+10%/.7); if that option's share declines from 30% to 20%, the share change is -33% (=-10%/.3).

[2] More information about the reasons for including this condition can be obtained from the authors.

[3] As pointed out in the original article (Simonson, 1992, page 117), an alternative explanation for the results, which could not be ruled out, is that thinking about regret favors the higher price/quality brand because that option is associated with a lower perceived *likelihood* (rather than magnitude) of regret.

Table A1: *Study 1: Condition Effect on the Share of the Higher Quality (HQ) / Gamble Option Relative to the "Control"*

Condition / Problem	Digital Camera	Bet	Bike Helmet	Front Door Lock	Average Condition Effect
Share of the HQ /Gamble Option in the Control	28%	39%	60%	61%	
High Involvement	+22%	+13%	+28%	–10%	+13%
Rating	+19%	–18%	+20%	+18%	+10%
Articulating Reasons	+26%	+5%	+23%	+3%	+14%
Anticipating Regret	+25%	+20%	–7%	–8%	+8%
Being Evaluated	–7%	+23%	+23%	–3%	+7%
Cognitive Load	+7%	+23%	+38%	+21%	+22%
Cognitive Load + Articulating Reasons	+15%	+23%	+23%	+3%	+16%
Other's Choice = High price-quality / Gamble	+26%	+30%	+10%	+15%	+20%
Others' Choice = Low price-quality / Sure gain	0%	-10%	+8%	+13%	+3%
Average Change Vs. Control	+15%	+12%	+18%	+6%	+13%

* All percent changes are normalized (weighed) relative to the option's share in the control. For example, if the share of the high quality (HQ) option in the control is 40% and its share increases to 50% in a certain condition, the normalized share change is +17% (=+10%/.6); conversely, if the HQ option's share declines from 40% to 30%, the share change is -25% (=-10%/.4).

Table A2

Study 2: Condition Effect on the Share of Higher Quality (HQ) / Gamble Options (vs. Control)

Condition / Problem	Camera	DVD Player	Mobile Phone	Lott. 1	Lott. 2	Raff. 1	Raff. 2	Loss Bet	Average Condition Effect
Share of HQ /Gamble Option in the Control	39%	47%	38%	45%	61%	43%	47%	49%	
Cognitive Load	+16%	+26%	-24%	+36%	+26%	+14%	-4%	+2%	+12%
Time Pressure	+31%	+30%	+2%	+53%	+33%	+18%	-4%	+12%	+22%
Extended Time	0%	+15%	+10%	+24%	+38%	+49%	+21 %	-31%	+16%
Confidence Evaluation	-8%	+25%	+19%	+36%	+23%	+30%	-4%	+6%	+17%
Average Change Vs. Control	+10%	+24%	+2%	+37%	+30%	+28%	+2%	-3%	+16 %

Table A3

Study 3: The Effect of Status Quo and Exposure to Choices of Others on the Share of the Higher Quality/Price and Gamble Options (Relative to the "Control")

Problem	Printer		Suitcase		Study Participation		Let's Make a Deal		Average Condition Effect	
Version/ Condition	Stan-dard	S-Q	Stan-dard	S-Q	Stan-dard	S-Q	Stan-dard	S-Q	Stan-dard	S-Q
Share of the HQ /Gamble Option in the Control	39%	45%	25%	43%	38%	59%	64%	77%	42%	56%
Other's Choice = High price-quality / Gamble	+30%	+11%	+12%	-21%	+29%	-7%	+25%	-4%	+24%	-5%
Other's Choice = Low price-quality / Sure gain	+2%	+4%	+12%	-49%	-5%	-3%	-27%	-22%	-5%	-18%
Average Change Vs. Control	+16%	+8%	+12%	-35%	+12%	-5%	-1%	-13%	+10%	-12%

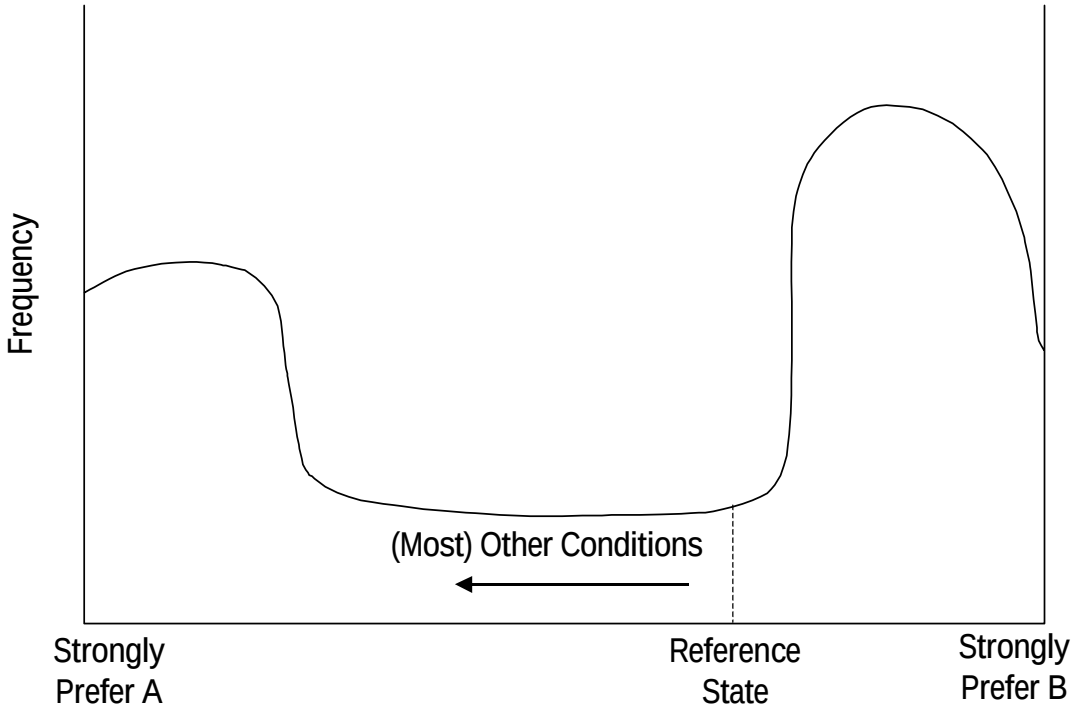
Table A4

The Effect of Another Respondent's Choices On Choices of Asymmetrically Dominating and Non-Dominating High Quality (HQ) and Low Quality (LQ) Options

Choice Problem	Choice of Respondent 1	Change in Share of Dominating HQ Option	Change in Share of Non-Dom. HQ Option	Change in Share of Dominating LQ Option	Change in Share of Non-Dom. LQ Option
Micro. Oven	HQ	+14%	+49%	-54%	-37%
	LQ	-29%	-18%	-8%	+26%
Phone	HQ	+28%	+61%	-57%	-41%
	LQ	-39%	+2%	+4%	+10%
PC	HQ	-4%	+31%	-44%	+3%
	LQ	-19%	+1%	-9%	-14%
Speakers	HQ	-8%	+63%	-63%	-21%
	LQ	-14%	+2%	-14%	+15%
Average Effect of Resp. 1's Choice	HQ	+7%	+51%	-54%	-24%
	LQ	-13%	-3%	-6%	+9%
Average Effect of Resp. 1		-3%	+24%	-30%	-7%

FIGURE 1

A Simple Illustration of Effect Propensity with a Continuous Distribution of Preferences



Appendix A

Two of the Problems included in Study 1

Digital Camera

Imagine that you are going to a "Best Buy" store to buy a digital camera. The two camera brands that you are considering, by Sony and Fuji, have similar features, including 1,600 x 1,200 resolution, 4X optical zoom, and 4MB memory.

	Camera A	Camera B
Brand	Sony	Fuji
Price	$474	$319

Which of the two cameras would you buy (A or B)? _____

Bets

Imagine that you need to choose between the options described below.

Option A	Option B
You get $50 for sure	You have 50% chance to get $300 You have 50% chance to lose $25

Which of the two options would you prefer (A or B)? _____

Appendix B:

Examples of Problems included in Study 2 (control version)

DVD Player

Imagine that you are going to the store to buy a new DVD player. You are considering two models with similar features; they differ only in price and country of origin.

	DVD Player A	DVD Player B
Designed & Built in	Japan	Cambodia
Price	$245	$129

Which of the two DVD players would you buy (A or B)? _____

Lottery (1)

Imagine that when visiting a local shopping mall, you are asked by a representative of a national marketing research organization to participate in a study they are conducting. Assume that you decide to participate. As a compensation for your participation, they offer you the two options below.

Option A: You get $4

Option B: You will enter a lottery, supervised by an independent and credible accounting firm, in which there will be several winners, each receiving $140. You are also informed that there is between 3% and 25% chance that you will be a winner, depending on the number of study participants.

Which of the two options would you prefer (A or B)? _____

Bets

Imagine that you need to choose one of the bet options described below.

Option A	Option B
You lose $35 for sure	You have 50% chance to lose nothing You have 50% chance to lose $95

Which of the two options would you prefer (A or B)? _____

Raffle (1)

Imagine that you have decided to enter a raffle that offers a choice between the options below.

Option A	Option B
45% chance to win a dinner at a 4-star restaurant 55% chance to win nothing	A dinner at a 2-star restaurant for sure

Which of the two options would you prefer (A or B)? _____

Appendix C

Examples of Problems included in Study 3 (Status Quo Version)

Study Participation

Imagine that you are participating in a study at the business school. When you signed up to participate in the study, you were informed that, in exchange for your participation in the study, you will enter a lottery in which you have 25% chance to receive $150 and 75% chance to receive nothing.

At the conclusion of the study, you enter the lottery and draw a ticket. Before opening the ticket to see if you have won, the experimenter tells you that you also have another option – you can receive $15 in cash in exchange for participating in the study, if you return the unopened lottery ticket.

Would you stay with the lottery or switch to the $15? (Circle one)

Respondent 1:	Stay with Lottery	Switch to $15
Respondent 2:	Stay with Lottery	Switch to $15

Inkjet Printer

Imagine that you are shopping at Office Max for an Inkjet printer.
At the store, you see a model by Hewlett Packard (HP). This printer has 1200x1200 dpi, prints color at 5 pages per minute and black and white at 10 pages per minute. The price of this model is $99.95.
You have decided to buy this Hewlett Packard printer.
Then you see another printer with the same specifications. This printer is by Lexmark, and also has 1200x1200 dpi, prints color at 5 pages per minute and black and white at 10 pages per minute. The price of this model is $74.90.

Would you buy the Hewlett Packard model you intended to get, or would you switch to the Lexmark? (Circle one)

Respondent 1:	Stay with Hewlett Packard	Switch to Lexmark
Respondent 2:	Stay with Hewlett Packard	Switch to Lexmark

Appendix D

Study 4: An Example of the Two Versions of a Choice Set With Asymmetric Dominance

(Version A) Personal Computer

Imagine that you are going to the store to buy a personal computer. The options you are considering are by the same brand and include Intel Pentium 4 processors; they differ only in terms of storage capacity and price.

	Computer A	Computer B	Computer C
Storage Capacity	60 GB	30 GB	20 GB
Price	$1,015	$600	$593

Which option would you choose? (Circle one)

Respondent 1: Computer A Computer B Computer C

Respondent 2: Computer A Computer B Computer C

(Version B) Personal Computer

Imagine that you are going to the store to buy a personal computer. The options you are considering are by the same brand and include Intel Pentium 4 processors; they differ only in terms of storage capacity and price.

	Computer A	Computer B	Computer C
Storage Capacity	30 GB	60 GB	45 GB
Price	$600	$1,015	$999

Which option would you choose? (Circle one)

Respondent 1: Computer A Computer B Computer C

Respondent 2: Computer A Computer B Computer C

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