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People are frequently faced with making a new choice decision after a preferred option becomes unavailable. Prior research on the attraction effect has demonstrated how the introduction of an option into a choice set increases the share of one of the original options. The authors examine the related but previously unaddressed issue of whether the unexpected exit of an option from a choice set returns the choice shares of the original options to the status quo. In a series of experiments, they observe that when an option turns out to be unselectable following a choice problem in which it was selectable, the choice shares of the remaining options are predictably different from those of a choice problem in which the option was unselectable from the start. They also observe that this attraction effect due to the disappearance of a decoy is likely a consequence of changes in the importance of decision criteria. They conclude with a discussion of the theoretical and managerial implications of the research.

Keywords: political choice, consumer choice, decoy effect, phantom decoy

Could Ralph Nader's Entrance and Exit Have Helped Al Gore? The Impact of Decoy Dynamics on Consumer Choice

•When Ralph Nader announced his intention to run for president of the United States in February of 2000, his entry into the race was greeted with considerable consternation by supporters of the presumptive Democratic Party nominee, Albert Gore Jr. They feared that Nader's presence on the ballot would likely tilt the electoral outcome in favor of Republican George W. Bush (Marinucci and Gledhill 2000). In November–December 2000, Bush won the presidential election by a margin of a little more than 500 votes in Florida. If Nader had

exited the race when pleaded with by the Democratic Party establishment, would Gore have won the presidency?

- In the travel market, hotel rooms are frequently advertised, but when consumers attempt to select them, they often find that their preferred option is unavailable.
- In the computer software market, firms frequently pre-announce new products (“vaporware”) that are often delayed and sometimes never introduced.

Each of these vignettes shares a common theme: A choice set may sometimes be enriched with an additional irrelevant alternative. This additional alternative may be irrelevant because even if an individual consumer (or voter) chooses it, it is unlikely to prevail in the marketplace (as in the case of Nader), or it may be a “phantom” alternative (also termed a “phantom decoy”), which is an alternative that may not actually be available for selection (e.g., disappearing hotel rooms or software that is never launched) (Highhouse 1996; Pratkanis and Farquhar 1992). The irrelevance of the additional alternative may not be apparent to consumers until they attempt to choose and then unexpectedly discover that the option was a chimera. That is, voters may first consider a choice set that includes three candidates, but by the time the electoral contest occurs, only two candidates may remain. Similarly, a choice set

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comprising multiple hotel rooms may eventually not include the preferred room because that room has become unavailable, or an attractive software program may never appear on the market.

The general topic of the impact of phantom options on the choice shares of real options has received considerable scrutiny (e.g., Highhouse 1996; Pettibone and Wedell 2000). Similar to the literature on the “attraction effect,” which shows that the introduction of an alternative into a choice set has predictable effects on choice shares of the elements of the original set (Huber, Payne, and Puto 1982; Huber and Puto 1983), the introduction of phantom options has also been shown to change the choice share of the original real options. Furthermore, in an application of the attraction effect in the political context, Pan, O’Curry, and Pitts (1995) provide empirical evidence indicating that Ross Perot’s entry into the 1992 presidential race helped the candidate (George H.W. Bush or Bill Clinton) who was perceived as being the most similar to Perot.

We examine a different but related class of problem. Specifically, we examine the effect of the unexpected elimination of an alternative on the choice shares of the original option. Do shares return to the original level that existed before the introduction of the third option, or does one of the original options benefit from the exit of the third option? If so, which of the original options benefits? In other words, to continue with the Nader–Gore analogy, would Nader’s entry and exit have helped Gore more than if he had never entered the race? (Note that because of the relative similarity of their political positions, according to the attraction effect, Nader’s entry should have helped Gore.) Conversely, this sequence of events could have benefited Bush, because if Nader had exited, voters loyal to Nader might have perceived Gore as being second best on attributes they considered important.¹

Although this issue is pertinent to the impact of third-party candidates in political choice, the role of irrelevant options in the travel and vacation markets, and software markets that feature vaporware, our issue generalizes to other settings as well. For example, this issue is discussed in the brand-switching literature (Hardie, Johnson, and Fader 1993; Heath et al. 2000), in which the evaluation of a new brand is dependent on the consumer’s reference point, which is likely formed by the brand previously chosen or deemed to be particularly attractive. In the case of sold-out movies and shows, in the selection of dating partners, in the selection of employees and jobs, in department stores in which advertised items may be out of stock, in the case of preannounced automobiles, and in the purchase of real estate, preferred options often become unavailable during the choice process (Highhouse 1996; Pratkanis and Farquhar 1992). Therefore, the role of this dynamic in consumer choice is of substantial practical interest.

We structure the remainder of this article as follows: To establish how our research question is closely associated

with the literature, we discuss the literature on the effects of decoys on choice. We then present a study that establishes the basic effect. We observe that when an option turns out to be unselectable following a choice problem in which it was selectable, the choice shares of the remaining options are different from those of a choice problem in which the option was unselectable from the start. We then replicate this finding in a host of different settings, using different types of decoys, and in situations in which an explicit initial choice is made and in which it is not. Finally, we examine different explanations for the observed effect and find support for the proposition that the presence of an unselectable decoy changes the weight of the choice criteria used in the decision problem and that the initial consideration of the decoy increases the use of a similarity heuristic in the final choice. We conclude with a discussion of the implications of our findings.

REVIEW OF LITERATURE

According to Luce’s (1959) regularity principle, the probability of choosing an item should not increase following the addition of another item to the choice set. That is, the addition of a third alternative to a set comprising two alternatives should not result in share gain for one of the original options. Yet Huber, Payne, and Puto (1982) and Huber and Puto (1983) demonstrate that under some conditions, the addition of a third alternative into a choice set can increase the share of one of the original alternatives. They termed this phenomenon the “attraction effect,” and it has subsequently received considerable empirical scrutiny in the marketing, consumer behavior, and decision-making literature (for a meta-analysis, see Heath and Chatterjee 1995).

The attraction effect may occur when a decoy is dominated by one option but not the other (i.e., in the case of an asymmetrically dominated decoy; Huber, Payne, and Puto 1982), such that a decoy makes one option a compromise between the decoy and the other option (i.e., in the case of a compromise decoy; Simonson 1989), or in the case of a nondominated decoy (see Huber and Puto 1983, Studies 1a and b). Most germane to our inquiry is the class of phantom decoys (Highhouse 1996; Pettibone and Wedell 2000; Pratkanis and Farquhar 1992). These decoys are termed phantoms because they are present in the choice set but cannot be selected because they are temporarily out of stock, are a new product yet to be launched, or are an old product that has been discontinued. In empirical studies of phantom decoys, participants are exposed to a choice set comprising several (normally three) options and are told that one of the options (the phantom decoy) is currently unavailable. Then, they make a choice from the impoverished choice set. The principal empirical finding from this stream of research is that a phantom decoy produces an attraction effect, similar to an available decoy (Doyle et al. 1999; Highhouse 1996; Pratkanis and Farquhar 1992).

Explanations for the Attraction Effect

Wedell and Pettibone (1996), Pettibone and Wedell (2000), Park and Kim (2005), and Wedell (1991), among others, have attempted to disentangle and classify the several explanations that have been offered for why the attraction effect occurs. In the interest of brevity, we focus on

¹Huber, Payne, and Puto (1982) examine the effect of adding a dominated option. In the Nader versus Gore contest, for some voters, Gore dominated Nader, while for others, Nader dominated Gore. In our studies, we examine both conditions. However, we assume away several complexities, including the role of other candidates (e.g., Pat Buchanan). The Nader analogy is intended to be illustrative of and not isomorphic with the phenomenon we investigate.

explanations that are particularly germane to our research question.

Weight shift. One class of explanation posits that the presence of a decoy may increase the relative weight given to the attribute on which the target is superior by drawing attention to that attribute and making it more salient. This enhanced weight may be a consequence of several underlying processes, including the perception that a larger cluster of options suggests that the attribute associated with that cluster is important or popular. Alternatively, the decoy could increase the relative weight on which the target is superior. For example, a decoy may increase the weight given to an attribute by increasing the frequency of options that score high on that attribute (Wedell and Pettibone 1996).

Ariely and Wallsten (1995) describe a related process, according to which the presence of multiple options that perform differently on a particular dimension allows decision makers to select the option that is dominant on that dimension. As a consequence, the dimension that is important for choosing between two similar options (the decoy and the target) assumes greater importance. In one of their experiments, they find that participants assigned a greater weight to the dimension that enabled them to select an option that dominated another option. Similarly, Mellers and Biagini (1994) argue that the similarity along one attribute magnifies differences on others. According to this logic, the dimension on which an option dominates would receive a greater weight.

When a phantom decoy is initially available, its presence may increase the importance of the attribute on which the phantom excels, thus generating an attraction effect for the most similar option after the phantom is revealed to be unavailable. Making a choice or deliberating over an option during the first stage when all options are considered likely changes the importance of the attributes associated with the various options. That is, consistent with self-perception theory (Bem 1967), people learn their attitudes by observing their own behavior. If people first choose a preferred option or consider it carefully, their subsequent attitudes will be influenced by observing their choices and preferences in the first decision. In this case, the initial decision process during which the phantom is considered can change the relative importance of attributes in the second decision, resulting in a bias toward the target. Conversely, if it is clear from the start of the deliberative process that one option in the considerations set is unavailable for choice, it is not likely to receive any further examination or to generate preference and thus will have no influence on attitudes.

Value shift. A second class of explanation suggests that the perceived value associated with the options can change as a result of the introduction of the decoy. Again, drawing on the work of Parducci (1974, 1995) and Huber, Payne, and Puto (1982), Pettibone and Wedell (2000, p. 303) observe that “the decoy either extends the range on one dimension or changes the stimulus rank [by changing the frequency of options on a particular dimension]. For example, the low value of [a decoy] on dimension 1 may increase the attractiveness of the dimension 1 value of [the target] because it now lies closer to the midrange of values and is no longer the lowest ranked in the set.” Such a

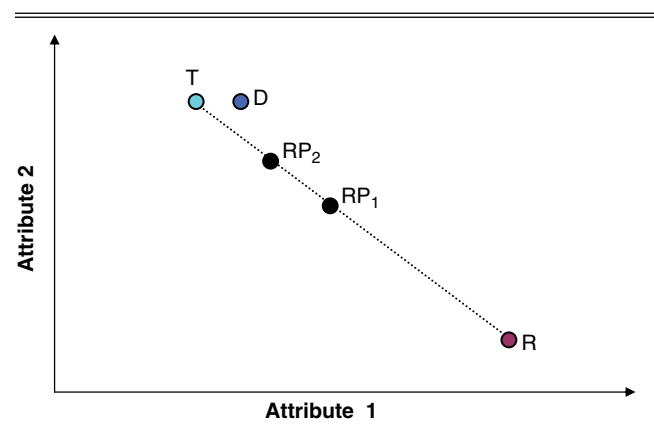
process may be operative when a phantom decoy exists in the choice set.

Loss aversion. Pettibone and Wedell (2000) also indicate that loss aversion may account for a shift in values associated with the options. If the decoy becomes the reference point for evaluation of both the target and the rival, in the case of an asymmetrically dominated decoy, the target represents a gain on both attributes, while the rival represents a gain on one attribute and a loss on the other. Because of loss aversion, the rival appears unattractive relative to the target. Alternatively, the reference point may be an average of the attribute values. If so, the original reference point that was used to evaluate the target and rival may be updated after the introduction of the decoy. As a result of this shift in the reference point, the target may appear more attractive (perhaps less expensive or of superior quality) than it did before the introduction of the decoy.

A pictorial description of this logic appears in Figure 1. Here, RP_1 is a plausible initial reference point against which both the target and the rival are evaluated. On Attribute 1, the target is at a relative disadvantage (i.e., choosing T represents a loss), and on Attribute 2, the target is at a relative advantage. After a decoy is introduced into the choice set, the reference point is likely to move toward RP_2 , closer to the decoy. As a result, the target will now appear to be less of a loss on Attribute 1 than it was before the introduction of the decoy, when the reference point was farther away from the target. On Attribute 2, the target represents less of a gain relative to the new reference point than relative to the old reference point. Because of loss aversion, the reduction in loss dominates the reduction in gain, making the target more attractive after the decoy has been considered and moves the reference point.

This line of thinking—that reference points may play a role in evaluations—is consistent with empirical findings in the brand choice and brand-switching literature. For example, Heath and colleagues (2000, p. 292) posit that “an initial choice ... may create an endowment-like effect whereby the attribute levels of the chosen brand serve as reference states against which levels of other brands are compared at future choices.” In their studies, they find (p. 303) that “consumers tend to use the attribute levels of ...

Figure 1
VALUE SHIFT DUE TO DECOY



commonly chosen alternatives as reference states.” Similarly, Hardie, Johnson, and Fader (1993, p. 379) find support for the claim that “brand choice is influenced by the position of brands relative to multiattribute reference points”; a stylized motivation for this assertion was the evaluation of a new brand of orange juice when the preferred brand was out of stock.

Emergent value. This class of explanation goes beyond the traditional (Anderson 1981) perspective of choice being a function of the attractiveness of options (their value) on certain dimensions and the importance of those dimensions (weight). Here, it is argued that choice or preference is a function of the weighted valuation of options and additional reasons that might “emerge” during the decision process. For example, the presence of a decoy may allow for the use of attribute-based heuristics, such as a decision rule that emphasizes the avoidance of poor alternatives; such a heuristic is easier to employ when a target (decoy) clearly dominates the decoy (target) on a particular attribute. Participants in Huber, Payne, and Puto’s (1982) study, as well as those in other studies, may have employed a strategy that is “sensitive to dominance” (Wedell 1991, p. 780).

Other heuristic-based explanations include how the introduction of a nondominated decoy could increase the choice share of the target by making it appear to be a compromise between two extreme options (Simonson 1989). In part because respondents consider the compromise choice a selection less likely to be criticized by others, this heuristic is more readily publicly defensible on the grounds that it is not the worst choice on any attribute. Such a justification process can also be at play when a dominating decoy turns out to be a phantom. The target appears to be less attractive than the phantom, and therefore preferences for the target are lower when a phantom is included in the choice set. Participants may be unable to justify the choice of the (inferior) target, though Pettibone and Wedell (2000) find no support for such an emergent value explanation.

Another plausible heuristic, the similarity heuristic, relies on categorizing options perceived as being similar (and eliminating options perceived as not being similar) and subsequently choosing one from that set according to some criterion (e.g., dominance on a particular attribute) (Tversky 1972). When a decoy turns out to be a phantom, Pettibone and Wedell (2000) speculate that the observed attraction effect may be due to a similarity substitution mechanism (Tversky 1972). Because the preferred (phantom) is unavailable, the most similar option (the target) is selected. This notion of similarity being influenced by the presence of a decoy is consistent with Dhar and Glazer (1996).

Other explanations. Two other streams of literature are pertinent to our phenomenon. First, the literature on sequential decisions has investigated the impact of adding alternatives to a choice set (Kahn, Moore, and Glazer 1987). When participants choose between brands of cola (Pepsi or Coke) and then choose among options within the brand category (diet, regular, caffeine-free), they are initially biased toward choosing a group of similar alternatives rather than a lone alternative. Brenner, Rottenstreich, and Sood (1999) identify conditions under which participants exhibit a bias toward choosing a lone alternative rather than a group of similar alternatives. However, participants in

these studies were aware of an impending second decision. This awareness may have motivated them to act strategically in their first choice. For example, participants might have biased their first decision to increase variety in their subsequent decision (Kahn, Moore, and Glazer 1987). In our context, participants are unaware that their preferred option will become unavailable. Thus, strategic considerations cannot play a role in the initial decision. In addition, although the phantom may be preferred because of its presence in the cluster, after it becomes unavailable, it is unlikely that the target will still benefit from a cluster effect, because with the disappearance of the phantom decoy, the cluster does not exist anymore. (In our experimental setting, the decoy, and thus the cluster, remains “available” visually even after it exits the choice set. So, an attraction effect with the exit of a decoy will need to be strong enough to overcome the positive lone alternative effect to reveal itself.) Therefore, this literature is likely not germane to our phenomenon.

Second, according to status quo bias, people tend to stick with a previously chosen option when faced with the opportunity to choose again (Samuelson and Zeckhauser 1988). In our context, people make a new decision in the second period after their preferred option becomes unavailable. Thus, the status quo bias cannot explain our phenomenon. (To the extent that a weak form of the status quo bias may be occurring [sticking with a criterion on which the original choice dominated], this phenomenon is indistinguishable from the weight change explanation we offer subsequently.) Furthermore, the status quo bias may be a consequence of the endowment effect, which in turn is a consequence of loss aversion (Kahneman, Knetsch, and Thaler 1991). As we discussed previously, loss aversion is implicated in the value change argument (Pettibone and Wedell 2000), and we empirically examine the potential impact of loss aversion on phantom-induced effects.

Summary

The existing empirical evidence and conceptual arguments about the role of available and phantom decoys on generating an attraction effect provide a rich basis for examining how the disappearance of an available decoy might affect the choice shares of the remaining alternatives. First, it is possible that an available decoy will increase the weight of an attribute by increasing the frequency of options that score high on that attribute (Wedell and Pettibone 1996) or because the phantom excels on that attribute (Farquhar and Pratkanis 1987). Following a choice process that considers this increased weight, a subsequent choice process, after the decoy turns out to be a phantom, will still emphasize that attribute and therefore will yield an attraction effect.

Second, the consideration of the decoy in the initial choice stage may change the subjective value of the two focal options by shifting the reference point against which the target and the rival will be evaluated. As we discussed previously, because the decoy is located closer to the target, its presence may shift the reference point toward the target, resulting in the target becoming less of a loss on the horizontal attribute and less of a gain on the vertical attribute. Because of loss aversion, the target may become more

attractive relative to the rival.² Alternatively, consideration of the decoy in the initial choice stage may change the value of the two focal options by changing the perceptual distance between them (Dhar and Glazer 1996). Specifically, the addition of a decoy that is closer to the target may increase the perceptual distance between the target and the rival on both dimensions, and as a result, the target will become a larger loss on the horizontal attribute, though it will appear as a larger gain on the vertical attribute, yielding a repulsion effect due to loss aversion.

Third, it is possible that the disappearance of the decoy from the choice set may leave the target relatively unattractive because it represents a loss relative to the phantom. A heuristic that precludes the selection of "second best" might be invoked, and this should increase the share of the rival, generating a repulsion effect.

Fourth, a similarity-substitution process might favor an attraction effect because the unavailability of the decoy might make a similar target appear relatively attractive. Such a similarity-substitution process is difficult to disentangle from a weight shift story (the similarity of the options might lead participants to overweight the attribute on which the options are similarly superior) or a value shift story (the similarity of options might allow for loss aversion to play a greater role). Therefore, similarity substitution is best conceived of as a first step in either weight or value shift (Ariely and Wallsten 1995).

We now turn to a description of our empirical efforts designed to examine the core phenomenon and assess support for the various explanations that might be at play. In the pilot study, we examine the impact of the disappearance of a decoy on the choice share of the remaining options and whether the postdisappearance shares are dissimilar to choice shares when the decoy is unavailable from the start. In subsequent studies, we examine the robustness of the effect we observe in the pilot by varying decoy locations, stimuli contexts, and whether an explicit choice is necessary. In a final study, we shed some light on the underlying process that might account for the effect.

EMPIRICAL TESTING

We describe several studies that employ multiple stimuli to examine whether and how the unavailability of an option affects the choice shares of the remaining options. The structure of the experiments is a between-subjects design (Figure 2). In one condition (the control condition), three options were described, and participants were informed that the phantom (P_c) was unavailable for selection; they were then asked to choose between the target (T_c) and the rival (R_c). In the second condition (the experimental condition), participants first chose from a set that included an available decoy (D), a target (T), and a rival (R), whose attribute values were identical to the corresponding options in the control condition. After the initial choice, participants were informed that the decoy was unavailable for selection and were asked to choose again. Our chief empirical compari-

Figure 2
STUDY DESIGN

A: Control	B: Experimental	
	First Choice	Second Choice
P_c	D	P_e
T_c	T	T_e
R_c	R	R_e

Notes: P = phantom decoy, T = target, R = rival, and D = available decoy. Subscripts c and e refer to the control and experimental groups, respectively.

son is the difference between the share of the target in the experimental condition, in which the phantom decoy was identified and then became unavailable after the initial choice was made (T_e), and the share of the target in the control condition, in which the phantom decoy was identified but was unavailable from the start (T_c). If the disappearance of the decoy yields an attraction effect, we should observe that $T_e > T_c$. If $T_e < T_c$, this would be evidence for a repulsion effect, and if $T_e = T_c$, this would be evidence that the initial choice (when D, T, and R were available) did not affect final preferences. This comparison between the control condition and the experimental condition enabled us to examine the effect of the disappearance/exit of the decoy on subsequent choice and the underlying cognitive processes, while holding everything else constant. This comparison is consistent with the political and marketing situations we are interested in, in which the decoy is usually identified but is unavailable (rather than simply not presented).

PILOT STUDY

In this study, we examine support for our basic prediction that exposure to a selectable decoy influences choice shares even after the decoy becomes unavailable. In light of our opening vignette, which yielded the speculation that Ralph Nader's entry and exit would likely have helped Al Gore's electoral prospects more so than if he had never entered, the stimuli we employed in this study described unidentified presidential candidates. Because we conducted the study during a period in which there was considerable political advertising, we used a relatively sterile stimulus to prevent existing political preferences from influencing participants' judgments. We conducted pretesting to select the attributes on which the target and rival were described and

²The distinction between value shift and weight shift we make here is a nuanced one. While loss aversion may seem to suggest a weight shift, the explanation based on value shift is different from the weight shift explanation, in that value shift implies a change in attribute values that may be overweighted (if the change is a loss), while weight shift implies no change in attribute values and only changes in weights.

to ensure that the descriptions were clear to prospective student participants.

Participants and Procedure

One hundred thirteen undergraduate students enrolled in introductory marketing classes participated in the study in exchange for course credit. We created choice sets comprising three options: a target, a rival, and a decoy. The focal manipulation involved when the participant learned that the decoy was unavailable. In one condition (control), participants were provided with information about the three options, but they were told that one option (the phantom decoy) was unavailable for choice. (We rotated the order of presentation of the decoy to be either first or last to eliminate the possibility that participants would choose the first available option. Order of decoy presentation was not significant.) This condition provided a baseline for shares of the target and the rival. In the other (experimental) condition, all three options were initially available for selection. After making a selection, participants were asked to imagine that it was a week later and the decoy had now become unavailable; they were then asked to choose again between the target and the rival. Our chief task is to compare the share of the target between the two conditions in which the phantom is unavailable for selection.

The stimulus asked participants to imagine responding to a newspaper poll about presidential candidates. The three candidates were reported to have been rated by other students with beliefs similar to those of the participants on the two attributes of “economic policy” and “international policy,” and this rating information was provided to the participants. In the control condition, participants were told that the newspaper was interested in only two of the three candidates (the target and the rival) on whom the newspaper was doing a special interest story. The focal dependent variable was a choice item. Participants were asked to indicate for whom they would vote. In the experimental condition, participants were first asked to choose among all three candidates. Then, they were asked to imagine that it was a week later and to choose between only the two candidates on whom the newspaper was preparing a special interest story. The explanations for the unavailability of the decoy were designed to ensure that participants did not make negative attributions regarding the unavailability of the phantom decoy. Postexperimental debriefing of participants indicated that the unavailability of the phantom decoy did not generate any negative attributions (for a sample of the stimulus used in the experimental condition, see the Web Appendix at <http://www.marketingpower.com/jmrjune09>).

The choice set comprised a candidate who performed relatively well on economic policy and another candidate who performed relatively well on international policy. We manipulated the location of the decoy so that it (1) dominated the target on two dimensions or (2) outperformed the target on one dimension.

Results

We first analyzed choice probabilities as a function of whether the decoy was initially unavailable for selection or whether the decoy became unavailable for selection (“timing of unavailability”), the “location of the decoy,” and their interaction. A binary logistic regression showed that the

timing of the unavailability of the decoy was significant ($p < .05$), while decoy location and the interaction of location with timing of unavailability were not significant ($p > .5$). The share of the target was significantly higher after participants were exposed to a choice set that included all three options and then the decoy became unavailable than when participants were exposed to a choice set in which the decoy was unavailable from the start. In Table 1, we present the choice share data in the control condition and in both stages of the experimental condition to shed light on the switching pattern between the two stages.

The overall pattern of results suggests that the target’s share is 20 percentage points higher when a decoy disappears than when it cannot be selected in the first place (i.e., 39% versus 19%; Pearson $\chi^2_{(1)} = 5.693$, $p < .02$). Substantively, the entry and exit of a decoy produced an attraction effect relative to an immediately unavailable alternative; this is a novel empirical finding. This finding suggests that Ralph Nader’s exit could have helped Al Gore more than if he had remained a shadow candidate who had never formally entered the presidential race.

When the decoy was available, 72% of the participants chose the decoy in the first stage, 28% picked the rival option, and nobody chose the dominated target. When the decoy became unavailable, 54% who had originally selected the decoy migrated to the target, and the remaining 46% migrated to the rival. In contrast, none of the participants who had originally selected the rival migrated to the target when the decoy became unavailable. Therefore, the choice of the target in the second stage in the experimental condition was largely due to switching from initial choices of the decoy. (By being dominated, the target made the decoy more attractive, and in turn, the decoy increased the choice of the target after it exited. Another potential implication of this finding is that if we assume that Nader dominated Gore in some voter’s minds, his exit would have been less helpful had Gore entered the race after his exit because Nader would never have had the opportunity to dominate Gore, and thus fewer voters would have chosen Nader in the first place.)

This pilot study establishes that the disappearance of a decoy can yield an attraction effect. However, this effect was generated by employing a dominating decoy. Such a procedure is common in the phantom decoy literature, but the original attraction effect is based on the introduction of a dominated decoy. Therefore, demonstrating our result with such a dominated decoy would be desirable. We turn to that task in Study 1.

Table 1
CHOICE SHARES IN PILOT STUDY

	<i>Decoy Unavailable for Selection Initially (Control Condition)</i>	<i>Decoy Available for Selection Initially and Unavailable Subsequently (Experimental Condition)</i>	
	<i>Choice</i>	<i>Choice 1</i>	<i>Choice 2</i>
Target’s share	19%	0%	39%
Rival’s share	81%	28%	61%
Decoy’s share	N.A.	72%	N.A.

Notes: N.A. = not applicable.

STUDY 1

Participants and Procedure

In this study, the decoy we employ was asymmetrically dominated; that is, the decoy was strictly inferior to the target but not the rival. The experimental approach was similar to that employed in the pilot study, except the stimuli we used described unidentified brands of beer, a stimulus popular in this literature because it is relatively familiar to students (see Mishra, Umesh, and Stem 1993; Simonson 1989). Options differed in price and quality ratings. The target had better quality than the rival (74 versus 63) but was also more expensive (\$6.50 versus \$4.40). The decoy (quality rating = 71) was outperformed by the target on quality but had the same price (i.e., \$6.50). It was superior to the rival on quality but not on price.

Student participants were asked to imagine that they had gone to a store to purchase beer for a weekend barbecue. They were given price per six-pack and average quality ratings from a blind taste test for three unidentified brands of beer (Brands 1, 2, and 3). In the experimental condition ($n = 30$), participants first selected from a set of three options and were then asked to imagine visiting the store a week later, on which occasion they were asked to imagine that one of three options had accidentally not been ordered by the store and therefore was unavailable for selection. They were asked to choose again. In the control condition ($n = 31$), participants were provided information on the three brands of beer and were immediately told that one of three options had accidentally not been ordered by the store and therefore was unavailable for selection. They were then asked to choose.

Results

The choice share of the target was 68% in the control condition and 87% in the experimental condition ($p < .05$). The disappearance of the dominated decoy yielded a substantial and statistically significant increase in the share of the target. Furthermore, in line with our expectations, in the experimental condition, no participant picked the dominated decoy when it was available, and when it was revealed to be unavailable, one participant migrated from the rival to the target, raising the share of the target from 85% to 87%.

Replication

We replicated our findings using a decoy that made the target a compromise. This decoy had a quality rating of 82, which was superior to that of the target but was even more expensive (\$8.05) than the target. For this decoy, the choice share of the target was 61% in the control condition ($n = 30$) and 87% in the experimental condition ($n = 31$) ($p < .005$). Furthermore, in the experimental condition, when all three options were available, the choice shares were 74% for the target, 13% for the compromise decoy, and 13% for the rival. When it was revealed that the decoy was unavailable, all those who had initially chosen the decoy migrated to the target, raising its share to 87%. Table 2 summarizes this choice pattern.

The results of these two studies (the main study and the replication) suggest that the findings from our pilot study are robust to decoy location and the nature of the product

Table 2
CHOICE SHARES IN STUDY 1

	<i>Decoy Unavailable for Selection Initially (Control Condition)</i>	<i>Decoy Available for Selection Initially and Unavailable Subsequently (Experimental Condition)</i>	
	<i>Choice</i>	<i>Choice 1</i>	<i>Choice 2</i>
Target's share	61%	74%	87%
Rival's share	39%	13%	13%
Decoy's share	N.A.	13%	N.A.

Notes: N.A. = not applicable.

stimuli (political choice versus beer). Furthermore, we observe the effect when the product stimuli are described on price and quality and when we employ nonprice attributes, as we did in the pilot study. To investigate further whether the nature of attributes influences the occurrence of the effect, we conducted Study 2 in which we employed five different stimuli that were described on a variety of different price and nonprice attributes to validate further the effect of the disappearance of the decoy on the choice share of the target.

STUDY 2

Participants and Procedure

We exposed participants to five focal stimuli, which were described on two attributes as follows: (1) health plans on the dimensions of "maximum coverage" and "copay," (2) cruises on the dimensions of "incidence of disease" and "price," (3) housing on the dimensions of "crime rate" and "number of bedrooms," (4) automobiles on the dimensions of "safety" and "lease terms," and (5) health plans on the dimensions of "maximum coverage" and "percentage of doctors participating." Furthermore, we created individual-specific stimuli to enhance the likelihood that participants would be indifferent between the target and the rival. To accomplish this goal, in a pretest, we provided participants information on two attributes for one of the options and one attribute for another option for each of the stimuli. We then asked them to enter a value for the second attribute of the second option that would make them indifferent between the two options. For example, in one setting, we provided participants information on two housing options (Options 1 and 2) on two attributes ("crime rate per 1000" and "cost"). Option 1 was rated 15 on crime rate, and Option 2 was rated 7. Furthermore, Option 1 cost \$620. We then asked participants to indicate the dollar amount for Option 2 that would make the two options equivalent. In this manner, we identified attribute values for all participants that should have made them roughly indifferent between the target and the rival. These same participants were then exposed to these values associated with the target and the rival when they completed the choice experiment two weeks later. Furthermore, all decoys outperformed the target on one or both dimensions, and the target never outperformed the decoy. Again, the specific attribute values associated with the decoy were personalized for the participants according to the values generated from the pretest that revealed values of indifference between the target and the rival.

We conducted the main study on personal computers. Forty-eight undergraduate students were exposed to five

hypothetical settings, in which they were asked to make choices with either two or three options available for choice, as in Study 1. To manipulate decoy availability, in one condition (control), we provided participants with information about the three options but told them that one option (the phantom decoy) was unavailable for choice. In another condition (experimental), all three options were initially available for selection, but after making a selection, participants were told that the phantom had now become unavailable; we then asked them to make a second choice.

Results

Using a random-effects mixed binary logistic regression, with timing of unavailability (decoy is unavailable initially or unavailable following the first choice task) as a between-subjects factor and type of stimulus as a within-subject factor, we find that the only significant effect on choice share of the target is that of the timing of unavailability ($p < .05$). Across the five stimuli, participants selected the target 34% of the time when the decoy was unavailable from the start and 50% of the time when the decoy had been initially available but was subsequently unavailable.³ The average increase of 16% is similar to the increases we observed in Study 1. The results are statistically similar, though weaker, when we analyze the five scenarios separately. Choices for the target in the control condition relative to the experimental condition increased from 26% to 45% for health plans (maximum coverage and copay), from 37% to 48% for cruises, from 16% to 38% for houses, from 32% to 45% for cars, and from 21% to 52% for health plans (maximum coverage and percentage of participating doctors). The effect of the within-subject factor of type of stimulus was not significant, indicating that the attraction effect due to the disappearance of a decoy is likely to generalize beyond a trade-off between price and quality attributes.

Furthermore, in the experimental condition, aggregating across all five stimuli, 57% of the choices were for the decoy when the decoy was available, 37% were for the rival, and only 7% were for the dominated target. When the decoy disappeared, 59% of the original choices migrated to the target, and the remainder (41%) migrated to the rival. In contrast, only 21% of the original choices for the rival migrated to the target when the decoy disappeared (all switches occurred in the housing context). Therefore, similar to the pilot study, the choice for the target in the second stage in the experimental condition was largely due to switching from initial choices for the decoy. Table 3 summarizes this choice pattern.

Discussion

In the studies we have reported so far, participants in the experimental condition were asked to make an explicit choice among three options before the decoy disappeared, while participants in the control condition were told immediately that the decoy was unavailable. In all cases, we find that choice share of the target is greater when participants learn that the decoy is unavailable after first making a

³We measured the time participants expended while making their choices, yielding the following results: In the control condition, participants picked the rival faster than the target (12.30 versus 10.47 seconds, one-tailed $p < .05$); in the experimental condition, there was no difference (7.59 versus 8.32 seconds, $p > .25$). Apparently, the choice of the target became easier and faster in the experimental condition.

Table 3
CHOICE SHARES IN STUDY 2

	<i>Decoy Unavailable for Selection Initially (Control Condition)</i>	<i>Decoy Available for Selection Initially and Unavailable Subsequently (Experimental Condition)</i>	
	<i>Choice</i>	<i>Choice 1</i>	<i>Choice 2</i>
Target's share	34%	7%	50%
Rival's share	66%	37%	50%
Decoy's share	N.A.	57%	N.A.

Notes: N.A. = not applicable.

choice. However, it is unclear whether the effect would disappear in the absence of such an explicit choice, a possibility we examine next.

STUDY 3

In their studies of the phantom decoy, Pettibone and Wedell (2000) provide participants three options, allow them to examine the information, and then inform them that one of the options is unavailable for selection. The subsequent attraction effect they observe is perhaps driven by an implicit or internal choice (Highhouse 1996). In our studies, we consistently find that the choice share of the target is higher in the experimental condition than in the control condition, possibly because participants make an explicit choice in the experimental condition. To determine whether participants who do not make an explicit choice in the experimental condition also display the attraction effect, we conducted a study in which we manipulated participants' task in the first period.

Participants and Procedure

The stimuli and associated attributes are similar to those in the pilot study. We provided participants information on anonymous presidential candidates rated on economic and international policy. In the control condition, the decoy was unavailable from the start. In one experimental condition (CHOICE), participants made a choice among all three options and then discovered that the decoy was unavailable. In another experimental condition (PONDER), participants examined all three options and were asked to consider their preferences but did not make a choice; subsequently, they discovered that the decoy was unavailable. We counterbalanced the option that was dominated by the decoy, and the effect was not significant. We randomly distributed 118 participants among the three conditions, with cell sizes ranging from 37 to 43.

Results

The choice share of the target did not differ between the CHOICE ($n = 43$) and the PONDER ($n = 37$) experimental conditions (60% versus 54%, $p = .56$). When combined, the average choice share of the target across the two experimental conditions was significantly higher than it was in the control condition ($n = 38$) (58% > 39%, $p < .05$). Therefore, we observe the effects of decoy disappearance whether the participants make an explicit or implicit choice. Furthermore, in the experimental condition, when the dominating decoy was available, 67% of the participants

chose the decoy, 26% picked the rival, and only 7% chose the target. Of those who chose the decoy when it was available, 79% picked the target when the decoy disappeared, and the remaining 21% picked the rival. In contrast, none of the participants who picked the rival in the first stage migrated to the target in the second stage. Therefore, similar to the pilot study and Study 2, the choice of the target in the second stage in the experimental condition was largely due to switching from initial choices of the decoy. Table 4 summarizes this choice pattern.

Discussion

The general result from all our studies is consistent. When a decoy that is initially available for selection becomes unavailable in a subsequent period, the share of the target increases. This effect is robust to product context (political candidates, beer, health care, travel and vacation, housing, and automobiles) and for different types of decoy (dominating, compromise, and asymmetrically dominated). Furthermore, initial consideration of the options is seemingly necessary, though an implicit choice is sufficient to generate the effect. Apparently, the presence and serious consideration of the decoy in the experimental condition shifts people's preferences toward the target.

Although our principal finding that the decoy's disappearance from the consideration set benefits the target more so than if it was a phantom from the start has been validated, there are multiple processes that may be responsible for this shift in preference. Therefore, we report on a final study in which we directly measure the cognitive processes that may underlie the observed effect. Specifically, in Study 4, we aim to assess whether the weight shift, the similarity heuristic, or a shift in the reference point from which options are evaluated accounts for the effect.

STUDY 4

As we suggested previously, one process argument underlying our phenomenon is that the additional alternative (the decoy) increases attention toward and, thus, the weight associated with the attribute on which both the decoy and the target perform well.⁴ Because of the increased attention to the attribute on which the phantom

⁴Although the specific mechanism may be different among different types of decoys (e.g., dominated versus dominating decoys), we believe that the decoy increases the attention toward the attribute on which the target performs better. We leave the topic of possible subtle differences in processes for decoys that are located in different positions relative to the target to further research.

Table 4
CHOICE SHARES IN STUDY 3

	<i>Decoy Unavailable for Selection Initially (Control Condition)</i>	<i>Decoy Available for Selection Initially and Unavailable Subsequently (Experimental Condition)</i>	
	<i>Choice</i>	<i>Choice 1</i>	<i>Choice 2</i>
Target's share	39%	7%	58%
Rival's share	61%	26%	42%
Decoy's share	N.A.	67%	N.A.

Notes: N.A. = not applicable.

and the target excel, after the decoy becomes unselectable, people will select the target because it performs well on the attribute that has become important as a result of the attention given to that attribute when the decoy was available for selection. This process is consistent with the notion that people tend to pick the target after a similar decoy (which was the original desired choice) disappears (i.e., they may have used a similarity heuristic or the "betweenness relationship" [Tversky and Simonson 1993] in picking the target).

A second plausible mechanism is that the presence of the decoy moves the reference point against which alternatives are evaluated toward the decoy, making the target appear more attractive. We examine these possibilities here.

Participants and Procedure

The stimuli (beer) and associated attributes were similar to those we employed in Study 1. Options differed in price and quality ratings. The decoy outperformed the target on the price attribute (\$6.00 versus \$6.50 per six-pack) but had the same quality rating (74), while the rival had a relatively low quality rating (63) but had an attractive price (\$4.40 per six-pack). In a pretest ($n = 33$), 42% of the respondents picked the target, and 58% picked the rival, a share distribution that is statistically not different from a fifty-fifty split ($z = .87, p = .20$). The only factor we manipulated was whether the decoy was available for selection initially and then became unavailable for selection (the experimental condition) versus whether the decoy was unavailable for selection initially (the control condition), as in Study 1.

In addition to providing choice data, participants responded to several dependent variables, including process measures on (1) whether "price (quality) was an important factor in my final choice" (11-point scales anchored by "strongly agree" and "strongly disagree"), which assessed whether the weight associated with attributes had shifted, and (2) the perceived price level and perceived quality level of the target and rival (11-point scales anchored by "very low" and "very high"), which assessed whether the perceived values of the attributes had changed because of the availability of the decoy. We also assessed how similar the final choice was to the decoy that was unavailable for selection (11-point scale anchored by "not similar at all" and "very similar") and how easy it was for participants to justify their choice to the experimenter (1 = "not easily," and 11 = "very easily"). We counterbalanced the order in which these process-related dependent measures appeared in the questionnaire. One hundred nine undergraduate students enrolled in introductory marketing classes participated in the study in exchange for course credit. We assigned 54 participants to the control condition and 55 to the experimental condition.

Results

Consistent with the findings of Study 1, the timing of the unavailability of the decoy affected the choice of the target. A logistic regression showed that the effect of the timing of unavailability on choice was significant ($p < .05$). The proportion of respondents who picked the target increased from 45% in the control condition (which is statistically similar to the proportion we observed in the pretest) to 64% in the experimental condition. This 19% difference in share

is reassuringly similar to the share increase of 20% we observed in Study 1. Furthermore, the target's share increase in the experimental condition is attributable exclusively to migration from the decoy. When the dominating decoy was available, 76% of the participants chose the decoy, 20% picked the rival, and only 4% chose the target. When the decoy disappeared, 79% of those who selected the decoy in the initial stage subsequently chose the target. In contrast, none of the 11 participants who picked the rival in the first stage migrated to the target in the second stage. Table 5 summarizes this choice pattern.

Process results. If the reference point shifts in the direction of the target after the decoy has been considered in the initial stage, the price of the target should be perceived as relatively less expensive than before the availability of the decoy. That is, \$6.50 should be viewed as less expensive than the average of the prices of all three options (\$5.63) relative to when it is compared with the average of just the target and the decoy (\$5.45). Similarly, perceptions of the quality of the target should decline following the consideration of the decoy. Corresponding changes should be observed for the perceptions of price and quality of the rival.

The data indicate that when the two conditions were compared, the perceived expensiveness of the target was not significantly different ($6.91 = 7.36$; $t_{(107)} = 1.52$, $p > .10$), and neither was the perceived expensiveness of the rival ($3.28 = 3.35$; $t_{(106)} = .23$, $p > .50$). Directionally, the perceived expensiveness of the target increased marginally (one-tailed $p < .065$) after the introduction of the decoy, a result that is completely at odds with the reference point shift generating a change in perceived value explanation. Similarly, quality perceptions for the target ($7.24 < 7.84$; $t_{(107)} = 2.14$, $p < .05$) were in a direction opposite to that predicted by a value shift explanation, while quality perceptions for the rival remained statistically similar (4.20 versus 3.93 ; $t_{(107)} = .81$, $p > .4$). Therefore, the evidence suggests that the value associated with the attributes either did not change or changed in a direction that should have created a repulsion effect. However, it is possible that a different reference point was invoked in each instance to determine overall utility. Participants may have used the target as the reference point for the rival, and vice versa, in responding to the perceived expensiveness and quality questions. Therefore, we cannot conclusively rule out loss aversion as an explanation for our results.

To assess whether the weight associated with the attributes differed depending on whether the decoy had previ-

ously been available for selection, we computed the difference between the two measures that indicate how important a factor price and quality were in participants' final choice. (The two measures were negatively correlated [$r = -.667$, $p < .001$], thus eliminating any concerns that a positive price-quality effect [Rao and Monroe 1989] might contaminate our results.) In the control condition, the difference between the importance of price and quality was not significantly different from zero ($.37$ versus 0 ; $t_{(107)} = .55$, $p = .58$ [a positive value indicates that price was more important than quality]) and was not significantly different from the value observed in the pretest ($.37$ versus $.39$; $t_{(85)} = .003$, $p > .97$). This observed equivalence in importance leads us to conclude that when a decoy was simply not presented (in the pretest) or was immediately known to be unavailable (in the control condition), the weights attached to the attributes were roughly the same. However, when participants reselected after the removal of the decoy (in the experimental condition), we observe that the importance attached to quality was higher than that attached to price ($-1.53 < 0$; $t_{(107)} = 2.27$, $p < .05$). In other words, when participants chose between two options after having chosen among three, the weights associated with the attributes were different from when they chose between only two options. More important, the weight attached to the quality attribute was significantly higher, presumably because both the target and the decoy performed well on the quality attribute. Finally, we compared the responses of participants who had originally picked the decoy and then switched to the target ($n = 33$) with the responses of those who had originally picked the decoy and then switched to the rival ($n = 9$). The weight score was significantly different between these two groups (-4.61 versus 2.11 ; $t_{(40)} = 4.94$, $p < .0001$). Participants migrating to the target weighted quality much higher than price, and vice versa. This evidence, coupled with the absence of a corresponding shift in perceived value, provides preliminary support to the weight shift explanation.

A one-factor analysis of variance (ANOVA) revealed that the effect of the timing of the unavailability of the decoy on similarity judgments was also significant ($F_{(1, 107)} = 3.77$, $p < .05$). Participants perceived their final choice as more similar to the now-unavailable decoy in the experimental condition than in the control condition ($7.16 > 6.00$, $p < .05$). This perception is consistent with the greater weight attached to the quality attribute. Finally, an ANOVA revealed that the effect of the timing of unavailability on postchoice justification was also significant ($p < .01$). Participants found it easier to justify their choice in the experimental condition than in the control condition ($9.07 > 7.89$).

Mediation analysis. In light of the significant differences in weight shift, similarity judgment, and ease of justification, we performed a mediation analysis to assess whether these variables mediated the effect of decoy unavailability on choice (Baron and Kenny 1986). We added weight shift, similarity judgment, and ease of justification to the logistic regression model as covariates; the effects of the first two covariates were significant ($p < .05$), while ease of justification was not ($p = .30$). Furthermore, the effect of timing of unavailability lost its significance ($p > .70$). Weight shift alone also mediates the relationship (the covariate was significant, $p < .001$; the timing of unavailability lost signifi-

Table 5
CHOICE SHARES IN STUDY 4

	<i>Decoy Unavailable for Selection Initially (Control Condition)</i>	<i>Decoy Available for Selection Initially and Unavailable Subsequently (Experimental Condition)</i>	
	<i>Choice</i>	<i>Choice 1</i>	<i>Choice 2</i>
Target's share	45%	4%	64%
Rival's share	55%	20%	36%
Decoy's share	N.A.	76%	N.A.

Notes: N.A. = not applicable.

cance, $p > .25$). Adding the value shift measures in the regression does not change the results at all. Therefore, we conclude that both weight shift and similarity judgment completely mediate the effect of the timing of unavailability on choice. The positive signs of the coefficients are also as we predicted because they indicate that an increase in the importance of quality (relative to price) and in the perception of similarity increases the tendency to choose the target. Overall, the results provide preliminary support for the weight shift explanation and the related similarity story. The observed overweighting of quality over price is consistent with Hardie, Johnson, and Fader's (1993) observation that loss aversion is stronger for quality than for price and Luce, Payne, and Bettman's (1999) argument of greater emotional impact of changes to quality than to price.

Discussion

Our principal conclusion based on this study is that an increase in the weight associated with the attribute on which both the target and the decoy dominated, as well as an associated classification of the decoy and target as similar, leads to greater choice of the target. To revert to the Nader/Gore illustration, the entry of Ralph Nader might have resulted in an increase in attention to (an increase in weight associated with) attributes on which Nader and Gore perform well. Had the decoy (Nader) exited after attention had been drawn to the attribute in question, the target (Gore) might have benefited.

We also considered the possibility that a postchoice justification process resulted in participants identifying attribute importance as the reason for their decision. However, this is unlikely. Although the weight shift measures moved in a direction consistent with postchoice justification, the perceived expensiveness of the target increased after the introduction of the decoy, a result inconsistent with postchoice justification. Other value shift measures did not change between manipulations. Any postchoice justification should have exerted a similar influence on all process measures. Thus, although it is impossible to rule out postchoice justification, we believe that weight shift is likely to be the antecedent rather than the consequence of people's choice in the current study. In addition, assessing weights a priori may have risked contaminating the study's focal measures.

GENERAL DISCUSSION

The research we report in this article examines the positive impact of the entry and exit of a decoy on the choice share of a target, a phenomenon that may be observed in several marketing settings, ranging from the introduction of vaporware to the disappearance of vacation options on travel Web sites. Our empirical results are consistent with a weight shift explanation for the observed attraction effect. Furthermore, our results are consistent with a related finding in the brand-switching literature, according to which a recent choice may create a point of reference that influences subsequent choice.

Theoretical Implications

We offer two important theoretical advances. Our first advance pertains to the dynamic component of our study. Thus far, the literature has examined the effect of introducing a new alternative on the choice share of the original

alternatives. We assess the consequences of the unexpected removal of an option from a choice set on the choice shares of the remaining elements of the consideration set. The evidence suggests that the target (i.e., the most similar remaining option) benefits when the decoy becomes unavailable for selection after an initial decision. Second, we offer evidence that the increased weight associated with an attribute influences choice. This weight increase likely occurs because the initial choice process leads to increased weight being assigned to the attribute on which the first choice performed well. Furthermore, an initial choice (implicit or explicit) can enhance the use of the similarity heuristic, which also leads to an increased choice share of the option that is more similar to the decoy. We also obtained some preliminary evidence against some plausible rival explanations—for example, the value shift explanation, according to which the value attached to options changes because the reference point of comparison shifts when a new (third) option is considered (Chen and Rao 2002).

Substantive Implications

Would Ralph Nader's exit following his entry have helped Gore more than had he not entered at all? Our evidence suggests that it would have. The entry of a decoy generates attention to options that perform well on attributes on which the decoy performs well. Should the decoy subsequently become unavailable, the remaining most-similar option enjoys a substantial share increment relative to when the decoy was unavailable for selection because of its performance on an attribute that has become important. (Note that the double-digit percentage share increases are nontrivial in most political contests.)

This finding is of value in a range of settings, including political choice, in which candidates enter and leave the fray because of various reasons, including the outcomes of primary elections and instant runoff voting. In consumer and product markets as well, options that were available at one time may not subsequently be available but may still influence choice. For example, in the selection of travel and vacation options, an alternative may disappear from the choice set while a consumer is deliberating between options or even after the consumer makes a choice, as occasionally happens for purchases over the Internet. Similarly, firms may "preannounce" the launch of a new product (e.g., software, automobiles) and provide detailed attribute and price information, only subsequently to announce a delay in its launch, effectively making the product unavailable. Consumers may then choose an alternative similar to the now-unavailable option, which may be higher priced and of higher quality. Therefore, our research not only provides insight into consumer decision making but also provides prescriptions for firms that may want to strategically use this insight to influence consumers' choice.

Limitations and Further Research

Boundary conditions. We employed a multitude of stimuli and settings in our experiments but recognize certain important boundary conditions. For example, we asked participants to imagine a weeklong delay between treatments. This is a far cry from actually experiencing a weeklong delay between choices. Whether the effect will be observed following a real temporal delay is likely to be contingent on

many factors, including whether respondents recognize important contextual elements of their initial choice during the subsequent choice task (Amir and Levav 2008). Introducing a time delay–based experiment (Chen and Rao 2002) would be one way to examine this possibility.

Inference about the unavailability of an option. In many real-world situations, the disappearance of an option is not inference neutral. A sold-out decoy will likely attract favorable attributions, while a political candidate who abandons a race may attract negative attributions. It is unclear how these attributions will influence choice shares of the remaining options. Our results speak only to the case in which the attributions made regarding the unavailability of the decoy are relatively neutral. Future studies should consider the interaction between favorable and unfavorable inferences regarding the unavailability of an item on the choice shares of the remaining items.

Absence of a consistent phantom-induced attraction effect. Although we replicate prior findings on a phantom-induced attraction effect (Highhouse 1996) in Studies 1 and 3, in the other studies, the choice share of the target in the control condition was below that of the rival. There are several possible reasons for this choice pattern. First, the attribute values chosen may have created an overall preference for the rival. Both studies tested only the manipulation of interest (immediate unavailability versus unavailability after selection). Neither study had a control condition with only the target and the rival available for selection. Therefore, it is not possible to know whether the mere presence of the phantom increased, decreased, or had no effect on the other alternatives. Second, because the decoy dominated the target on the horizontal attribute, the weight assigned to that attribute may have increased in the control condition (Ariely and Wallsten 1995).⁵ This speculation that weight shift and dominance should reinforce each other for a decoy that outperforms the target on the attribute on which the target excels is supported by results from a study we do not report here. In that study, we coupled the control condition with such a decoy and found that weight shifted toward the attribute on which the decoy dominated ($p < .005$) and that the choice of the target increased relative to the pretest, yielding an attraction effect ($p < .05$). This potential interaction effect between weight shift and decoy location further limits the possibility that our results are due to postchoice justification because justification should not vary by decoy location. Third, as the results of the “ponder” condition in Study 3 indicate, the phantom-induced attraction effect may occur only in conditions in which participants considered the alternatives before finding out that the phantom was unavailable. This explanation is consistent with instructions given to participants in phantom decoy studies of both Highhouse (1996) and Pettibone and Wedell (2000).

Respondents and stimuli. As is the tradition in research on the attraction effect, the respondents were student par-

ticipants. This is an issue that is likely to be particularly relevant to studies that employ fictional presidential candidates as stimuli. Students are perhaps less aware of presidential politics than average voters. Therefore, it is reassuring that the results are replicated in a host of other settings, including beer (a product that is relatively familiar to students), houses, and cruises, among others. In addition, our stimuli included a variety of attributes, including price and quality. If decoying an option that dominates on quality is more effective than decoying an option that dominates on price (Heath and Chatterjee 1995), our choice of multiple attributes that include variables other than price should allay fears that our results do not generalize.

Rival explanations. There is considerable emerging literature that choice is a complex process. Particularly in the domain of political choice, Kaplan, Freedman, and Iacoboni (2007) use cognitive neuroscience methods (functional magnetic resonance imaging) to show that voters committed to one or the other political party have strong (negative) emotional reactions when exposed to photographs of the presidential candidate from the opposing party. Voting for an actual presidential candidate is a considerably more complex phenomenon than selecting from among hypothetical candidates with limited information about their policy positions.

A notable alternative outcome would have resulted in increased share for the rival after the decoy disappeared (i.e., a repulsion effect). Such a repulsion effect could occur because the unavailability of the alternative that is dominant on an important attribute leads to regret and unwillingness to compromise on a key attribute (Min, West, and Huber 2006). It would be worthwhile in further research to disentangle when the unavailable option creates an attraction effect and when that effect may be reversed.

In addition, our test of the value shift explanation (based on loss aversion) is based on participants' judgments of attributes. If loss aversion occurs during choice and not during judgment, our ability to assess the impact of loss aversion is limited.

Finally, the results could have occurred from an interaction between cognitive and emotional processes (Luce, Bettman, and Payne 2001). Trade-offs between options that are attractive, but for different reasons, take an emotional toll on participants and thus are aversive, while choice sets that include an option that allows participants to avoid such aversive processes may be less emotionally taxing. If this is true, decoys may provide participants the possibility of reducing the emotional toll associated with a trade-off (Hedgcock and Rao 2009).

Conclusion

We demonstrate that the removal of an alternative from a choice set has predictable consequences for the share of the remaining alternatives. This effect is particularly relevant to markets in which options may be introduced and removed quickly and at low cost, such as electronic markets for vacation and travel options and possibly political markets. The underlying process of weight redistribution across the attributes implicated in choice and enhanced sensitivity to options around the initial choice provides a potential explanation for our effect and for extant demonstrations of the attraction effect.

⁵The results from an unreported study support this speculation. We coupled the control condition with a decoy that outperformed the target on the attribute on which the target excelled and observed an interaction between weight shift and decoy location. Because justification should not vary by decoy location, this interaction suggests that our results are not due to postchoice justification.

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