THE UNIVERSITY OF CHICAGO

Responses to Missed Opportunities:

The Effects of Phantom Decoys and Inaction Inertia on Consumer Choice

By

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August 2021

A paper submitted in partial fulfillment of the requirements for the

Master of Arts degree in the

Master of Arts Program in the Social Sciences

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Abstract

Two bodies of research – the phantom decoy literature and inaction inertia literature – focus on consumers' responses to missed opportunities. The current study integrates, and builds upon, these literatures to explore features of unavailable options that moderate consumer choice, and their potential implications for brands and retailers. We predicted that unavailable options that are known in advance, near (i.e. slightly more attractive than the target option) or are higher quality will benefit both the brand and store. Conversely, we hypothesized that unavailable options that are not known in advance, far (i.e. much more attractive than the target option) or are lower price would be detrimental to the brand but have little consequence to the store. Six hundred and twenty-five adult participants completed an online survey in which they were asked to choose between pairs of household products of different prices and quality ratings. Participants were randomly assigned to conditions that either included, or did not include, an unavailable decoy option. Characteristics of unavailable decoys (knowledge, proximity, or dominating attribute) and target type (lower price vs. higher price) were manipulated within subjects. Both knowledge and proximity moderated target choice when an unavailable decoy was present. However, the presence of missed opportunities had a negative effect on purchasing overall. This suggests that features of unavailable options may shift consumer preferences in favor of a given brand, but decrease overall sales, which may be detrimental to the retailer.

Responses to Missed Opportunities: The Effects of Phantom Decoys and Inaction Inertia on Consumer Choice

Imagine the following situation: You learn that your favorite clothing store is having a sale on select items. One of the items is a jacket you have been wanting that is now on sale for 30% off. You rush to the mall, only to find out that the sale ended yesterday, and all items have returned to regular price. Do you decide to purchase the jacket at full price, purchase a different jacket altogether, or leave without purchasing any jacket?

Consumers encounter missed opportunities like this every day. Missed opportunities can range from missing out on a temporary promotion (Zeelenberg & Van Putten, 2005), like the scenario above, to items simply being out of stock (Fitzsimons, 2000). Even when people know an option is unavailable, the unavailable choice can still influence how they evaluate available options and influence their final purchase decision (Doyle et al., 1999). Understanding how different aspects of missed opportunities may impact consumer choice is crucial for both brands and retailers. The present research examines factors from two literatures – the inaction inertia literature and phantom decoy literature – that have been shown to influence consumer choice when an opportunity is missed or unavailable. Specifically, we examined how factors such as prior knowledge of a decoy's unavailability, attractiveness of the missed opportunity, item characteristics, and missed promotions may impact brands and retailers separately.

In the decision-making literature, two bodies of work focus on consumers' responses to missed opportunities. The first focuses on the influence of the lack of availability of certain options within a choice set. Choice options that look real (i.e. available) but are unavailable when the decision is made are referred to as phantom decoys and have been shown to increase preference for the more similar available option (Farquhar & Pratkanis, 1993). Even previously

unconsidered unavailable options can increase the likelihood of a consumer purchasing one of the available options (Kramer & Carroll, 2009), highlighting the power of the phantom decoy effect. Simply being aware of unavailable options, even if they are not preferred items, can influence consumer choice. For example, imagine going to the store for a new pair of headphones. You have narrowed it down to a $20 lower quality pair and a $30 higher quality pair, then find out there is a $26 pair (equal in quality to the $30 pair) but it is out of stock. Even though you came to the store without any particular preference, the unavailable option can impact how you evaluate the attributes of the available options, increasing the likelihood of purchasing one over the other (e.g. the $30 pair, in the standard phantom decoy effect).

Another body of work relevant to people's reactions to missed opportunities instead focuses on the psychological phenomenon known as inaction inertia. According to the principle of inaction inertia, when an action opportunity is missed an individual will be less likely to take action when presented with other, similar action opportunities (van Putten, Zeelenberg, van Dijk, & Tykocinski, 2013). For example, if an individual misses out on a product promotion but later has the opportunity to purchase that same product at an inferior discount, they would likely reject the second offer, despite the fact that the inferior discount will still save them money compared to buying the product at full price (Zeelenberg & van Putten, 2005). As a result, they may either forego opportunities to purchase (Tykocinski, Pittman, & Tuttle 1995) or prefer a less similar option (Kumar, 2019; Tsiros, 2009). In the sections that follow, we will review these two literatures in more detail and identify features they explore within a missed opportunity context.

One feature frequently identified in the phantom decoy literature relates to the timing of consumers' awareness, or knowledge, of the phantom decoy's unavailability (i.e. prior to or only after making their decision) (Hedgcock, Rao, & Chen, 2016). For example, when consumers find

out an item they already selected is actually out of stock, meaning the unavailability of the decoy was unknown at the time of their decision, they may be less likely to select an alternative, inferior option (Ford et al., 2018). When consumers are aware of the missed opportunity before making their decision, they may be more willing to choose the inferior alternative (e.g. same product at a lesser discount). The influence of knowledge timing on the consumer is important because, when the unavailability of the decoy is known in advance, it can increase shares for the brand (Scarpi & Pizzi, 2013); however, when unavailability is unknown until after the choice is made, it can actually lead to brand switching (Fitzsimons, 2000; Diels & Wiebach, 2011). In other words, known and unknown decoys may impact brands and retailers in distinct ways. Awareness of a phantom decoy prior to, or after making a decision not only impacts the final purchase decision, it can also impact the decision process and experience. Knowing an option is unavailable outright is less likely to be personalized by the consumer than if they find out the option is unavailable after selecting it (Fitzsimons, 2000). In the latter case, the personal commitment to the phantom decoy option is higher, resulting in increased decision difficulty when the consumer must reevaluate the available options. Additionally, consumers tend to be less satisfied with their decision experience when they find out about an item's unavailability after selecting it. Dissatisfaction with this experience may impact their decision to purchase from that brand or retailer in the future.

Another aspect of the purchase situation identified as relevant in the phantom decoy literature relates to the degree of attractiveness of the missed opportunity compared to the available alternatives (Pettibone & Wedell, 2007), which is referred to as "proximity" in the current paper. "Close/Near" decoys are slightly more attractive than the target on its best dimension while "far" decoys are much more attractive than the target on its best dimension

(Pettibone & Wedell, 2007). For example, if the target option costs $25, an unavailable $20 option would be a near decoy, while an unavailable $15 option would be a far decoy. While both types of decoys can increase shares for the target option, near decoys may be slightly more effective in doing so, on average (Pettibone & Wedell, 2007). However, the influence of decoy proximity on choice of the target may depend on other features of the decoy. Scarpi and Pizzi (2013) found that awareness of a phantom decoy prior to or after making the purchase decision influenced the way in which decoy proximity affected consumers' purchase decisions. Study participants were asked to choose between three computers that varied in memory capacity and processing speed. This study also included a control group in which participants were only exposed to two choice options. Results showed that known phantoms were most effective at increasing purchases of the target when close (i.e. slightly more attractive). Conversely, unknown phantoms were most effective when far (i.e. significantly more attractive), but actually *decreased* purchase of the target in favor of the competitor option. In other words, in their study, knowledge influenced which product was favored (target or competitor), while proximity determined the magnitude of that shift. This suggests that, under certain conditions, decoy proximity can actually increase shares for the competitor, at the expense of the target option, rather than simply increasing or decreasing shares for the target option.

Different product attributes have been examined in the phantom decoy literature. Often, quality and price are the two dimensions researchers choose to manipulate (Scarpi & Pizzi, 2013). Some research has included non-numeric attributes, such as brand name (Kim, Park, & Ryu, 2006), but typically, numerically indexed attributes have been shown to have the strongest effects on choice of the target option (Hadar, Daziger, & Hertwig, 2018). The type of product that is unavailable can also influence consumers' purchase decisions. Diels and Wiebach (2011)

examined people's reactions to finding out their preferred product was out of stock. In the experimental condition, participants were also informed that their preferred product had been on promotion. The researchers found that when the unavailable item was a promotional one, people were more likely to postpone purchasing (i.e. not purchase anything) rather than switching brands. On the other hand, for non-promoted items, people did tend to switch brands after being informed that their selected brand was out of stock. So, in addition to a product's attribute (e.g. price), changes to that attribute (e.g. missed discount) can impact purchasing behavior.

Like phantom decoys, inaction inertia involves missed opportunities and unavailable options. However, phantom decoys are typically out-of-stock, regular-priced items that are distinct from the available alternatives (Fitzsimons, 2000; Diels & Wiebach, 2011). In contrast, inaction inertia specifically highlights the impact of missed promotions or discounts (i.e. lower priced but otherwise identical unavailable options) on consumer choice. When consumers find out they have missed a price-promotion prior to purchasing, they may attempt to minimize the perceived value of the prior offer. Chatterjee and colleagues (2014) found that when a product was offered at full price following a promotion (vs. no prior promotion), consumers were less likely to buy it, even if they were able to use windfall money (e.g. recently acquired $25 from a lottery) to offset the cost. Instead, consumers preferred to pay for the item at an inferior discount, even if the discount was less than, or equal to, the windfall amount. Even though using windfall money would allow people to ultimately pay the same amount, or possibly less, than if they buy the item at the inferior discount, there seems to be a stronger reaction to what could be perceived as the "larger" loss of the missed promotion. In other words, there may be circumstances in which emotion (e.g. regret) and subjective perception, rather than maximizing value, drives consumers' purchasing decisions following a missed opportunity.

Inaction inertia may be a negative but unavoidable consequence of limited-time promotions (van Putten, Zeelenberg, & van Dijk, 2013). If consumers purchase less following a missed opportunity, or choose to switch to another brand, this can result in decreased profit for the company (Zeelenberg & Van Putten, 2005). However, inaction inertia also seems to conceptually contradict some of the implications from the phantom decoy literature, that an unavailable superior option can increase preference for the more similar available option (typically referred to as the "target"). The prior literature does not provide a clear answer to this apparent contradiction, which has seemingly gone unnoticed in prior work.

The answer may lay in the fact that research on inaction inertia and phantom decoys have used tests that are not directly comparable, differing on multiple contextual factors. Furthermore, decades of research in both the inaction inertia and phantom decoy literatures provide evidence that a variety of contextual factors, including, knowledge timing (Scarpi & Pizzi, 2013), proximity (Pettibone & Wedell, 2007), and type of opportunity (Diels & Wiebach, 2011) can influence the effect of a missed opportunity on consumer choice. Due to its practical implications and the number of potential factors that may influence consumer choice, this topic possesses an immense amount of research potential. For instance, whether the target option brand is the same or different brand as the decoy, whether the target is the higher versus lower priced option (i.e. "target type"), or whether a lower priced unavailable option is the same item on sale versus a different item. Additionally, to the best of our knowledge, few studies have explored potential differences in the impact of the phantom decoy effect for stores (e.g., on purchase vs. non-purchase) versus brands (on purchase of a specific brand).

Drawing upon previous research from both the inaction inertia and phantom decoy literatures, we have identified the features that seem most relevant for studying missed

opportunities, as well as features less represented in these literatures. The current study integrates these various factors to directly test the question of which of the following phantom decoy characteristics: knowledge, proximity, attribute type (price or quality), and target type, are most strongly associated with consumer choice and what is the nature of those relationships. We will examine the impacts for both the brand and retailer, identifying any areas where the impact diverges (e.g. which types of decoys may be more beneficial or detrimental for each).

Integrating well-documented findings in the phantom decoy literature, we predict that both proximity and knowledge will moderate the effects of unavailable options on consumer choice (e.g. Pettibone & Wedell, 2007; Evangelidis & Levabv, 2013; Scarpi & Pizzi, 2013; Hedgcock, Rao & Chen, 2016). Building upon these findings, we hypothesize that unavailable options that are known in advance, near (i.e. only slightly more attractive than the target option) or are higher quality will be beneficial to both the brand and store because these characteristics have been associated with increased shares of the target option in the phantom decoy literature (Pettibone & Wedell, 2007; Scarpi & Pizzi, 2013). Conversely, we hypothesize that unavailable options that were not identified as unavailable in advance, are far (i.e. much more attractive than the target option), or are lower price will increase the likelihood of the consumer selecting the competitor option, which would be detrimental to the brand but have little consequence for the store, consistent with the inaction inertia literature (Zeelenberg & van Putten, 2005; Diels & Wiebach, 2011; Scarpi & Pizzi, 2013).

Method

Participants

Six hundred and twenty-five adult participants (M = 39.43, SD = 12.35, 47% female), were recruited through Amazon Mechanical Turk (MTurk). Requirements for participation

included: being located in the United States, having an approval rating between 95-100% on Mturk, and having not participated in any of the previous pilot studies. No other specific criteria were required for participation. Based on pre-registered criteria (preregistration through Open Science Framework), 42 participants who did not complete the survey and 17 participants who did not pass the attention checks were excluded from our analyses. Our primary analyses included data from the remaining 566 participants.

Procedure

Participants completed a 22-trial online survey in which they were asked to choose which common household items (e.g. toaster, lamp, alarm clock, etc.) they would like to purchase out of different pairs of products. For each product, its price and quality rating (out of 100) was listed.

We pretested item pairings via a separate online survey on MTurk to determine price and quality pairings for each item that resulted in participants being similarly likely to select one item or the other. Potential prices were determined by online research of these items from popular retailers such as Target, Amazon, and Walmart. After finalizing item pairs, we generated a third more attractive item (lower price or higher quality) to serve as the unavailable decoy. Because the decoy was always objectively better than one of the items in the original pair, it was considered to dominate the "target" item. The item that the decoy dominated on a designated focal dimension (price or quality) was the target option. In line with the prior literature, we were particularly interested in the effect of the unavailable option on choices of the target option. Using JavaScript (Mozilla, n.d.), specific phantom decoy parameters were randomly assigned to each item's pair of products.

Participants were randomly assigned, between-subjects, to one of three conditions: same-brand decoy, other-brand decoy or a no-decoy control condition. In the control condition, no decoy was presented, and people chose between the two primary options. In the same-brand decoy condition, the unavailable decoy was the same brand as the target item. In the other-brand decoy condition, the unavailable decoy was a different brand than the target item. The brand names were fictious (not corresponding to existing brands) and consisted of random combinations of three letters. In all trials, participants were also given the option to not buy any item. Figure 1 provides an example of a trial in one of the treatment conditions.

For the 12 focal trials, the unavailable decoy dominated one of the available choice options. Eight of the 12 trials were presented similarly to studies in the phantom decoy literature. In these trials, we manipulated the attribute that was dominated, knowledge about the missed opportunity, attractiveness of the missed opportunity (i.e. proximity), and target type. Knowledge about the missed opportunity refers to whether participants knew about the decoy option prior to, or after, making their purchase decision. In "known" trials, the decoy's price and quality rating was shown, but the decoy was not included in the answer choices. In "unknown" trials, the decoy was included in the answer choices. Participants who selected the decoy option were directed to another page (e.g., Figure 1) where they were informed that their selection was no longer available. Then they were given an opportunity to select a different item or not buy anything. Proximity refers to the difference in attractiveness between the decoy and target on the attribute of interest. When proximity was "far," the decoy was either $10 cheaper *or* had an 8-point higher quality rating than the target option. When proximity was "near" the decoy was either $5 cheaper *or* had a 4-point higher quality rating than the target option. Lastly, we randomized target type,

that is, whether the target was the cheaper lower quality option or the more expensive higher quality option in the choice set.

In the other four focal trials, modeled after inaction inertia studies, prior to making their decision, participants were informed that they missed an opportunity to buy an item at the discounted price listed, but they could still purchase it at regular price or select a different product instead. The only manipulations for these trials was price proximity and target type.

The following product is no longer available:
Brand RPA: $44.99, Quality rating = 83

Consider the remaining products below.

Based on your evaluation of the produces, which **toaster**, if any, would you purchase?

- **Brand QPQ**: $38.99, Quality rating = 76
- **Brand YLM**: $49.99. Quality rating = 83
- Not buy any of these options

Figure 1. Example of a known phantom decoy trial in which the decoy (Brand RPA) dominates the target option (Brand YLM) on the price attribute. They have the same quality rating, but the decoy is cheaper.

There were 10 other trials, that were included as controls, to make the task more realistic, and as attention checks. Four internal control trials were included in which the unavailable decoy item was identical to one of the available choice options. In another four of the trials, the options were similar to the unknown decoy trials, but all options were available. These trials were included to make the task more realistic and to reduce the likelihood that participants would assume that the dominating option is always unavailable. The survey also included two attention check trials, in which the "decoy" option is superior in both price and quality and available to be chosen. Choices of one of the clearly inferior options would suggest a

lack of attention or random responding. The six trials in which the decoy was available were not included in any analyses.

Statistical Analysis

Consistent with most prior phantom decoy research, we first conducted a series of chi-square tests and logistic regression analyses to test the relationship between each decoy feature (knowledge, proximity, or attribute) and choice (target item, non-target item/competitor, or not to buy). We also conducted secondary chi-square analyses that incorporated target type (whether the target was the cheaper or more expensive item) to examine how the relationships between decoy features and choice compare depending on the relative price of the target option compared to the competitor option. Additionally, we created mixed effects logistic regression models to more fully explore the relationships among decoy features as predictors of target choice. This allowed us to account for repeated measures and examine all of these features at the same time, which allowed us to examine potential interactions between them. One set of models focused on the brand-purchase outcome that was most relevant to the brand (choice of target item vs. choice of other item or not purchasing) and another focused on any-purchase outcomes that were most relevant to the store (choice of either target or competitor item vs. no purchase).

Results

Phantom Decoy Chi-Square Analyses

Averaging across all types of decoys from the phantom decoy trials, the target option was chosen approximately 39% of the time and the competitor was chosen 36% of the time. Note that since the target versus competitor characteristics were fully randomized across trials, this yields a +3% estimate of the overall phantom decoy effect (or +4% in relative preference, 52% vs. 48% among those making a purchase). An index of preference for the target option (positive values)

or the competitor option (negative values) was constructed to test against the null hypothesis of no preference (average index = 0). The preference for the target option ($M = 0.17$, $SD = 2.10$) was not statistically significant $t(376) = 1.55$, $p = 0.12$, indicating minimal effects of the presence of phantom decoys on target choice. Excluding participants who did not initially select the decoy in the unknown trials (and therefore never knew the decoy was unavailable), we find a larger effect (44% target vs. 31% competitor). However, this estimate is subject to selection bias, as those choosing the unavailable decoy may have systematically different preferences (i.e., lower weight given to the attribute that both the target and decoy are stronger on) than those who did not. These results are consistent with small average phantom decoy effects (i.e., a small benefit to the brand dominated by the unavailable decoy), and we will explore the differences based on contextual factors in the subsequent analyses.

When looking solely at whether or not participants chose to buy any item (i.e. the store perspective), the option to buy was chosen 75% of the time, both overall and when the non-decoy purchasers were excluded. In the control condition, which did not include phantom decoys, the option to buy was chosen 87% of the time. The average number of purchases made when phantom decoys were present ($M = 5.35$, $SD = 2.02$) was lower than when no phantom decoy was present ($M = 6.19.$, $SD = 1.58$), $t(463) = -5.39$, $p < 0.001$. This suggests that overall, encountering unavailable options does meaningfully reduce purchasing.

Knowledge

A chi-square test examining the relationship between knowledge of decoy (known or unknown) and choice (target, competitor, or non-purchase) revealed a significant moderating relationship $X^2 (2, N = 377) = 7.07$, $p = .03$. Table 1 shows choice selection proportions based on decoy knowledge and target type. While the target option was chosen more frequently than either

the competitor or choosing not to buy when the unavailability of the decoy was known in advance (40% selected target, 34% selected competitor, and 26% selected not buy), the preference for the target was equal to the preference for the competitor when the unavailability of the decoy was not known prior to making the initial choice (38% selected target, 38% selected competitor, and 24% selected not buy). In other words, we find the benefit to the target, predicted by the phantom decoy effect, only when the unavailability of the decoy is known in advance.

Knowledge and Target Type

Secondary analyses revealed that the statistically significant relationships between prior knowledge and choice of the target persisted when the target was the more expensive option X^2 (2, N = 377) = 10.12, p =.01, with more choices of the high price/high quality target when unavailability was known in advance (46%, or +18% vs. competitor) compared to not known in advance (41%, or +5% vs. competitor). A chi-square test did not reveal a significant relationship between prior knowledge and choice of the target when the target was the cheaper option X^2 (2, N = 377) = 0.27, p = .88. In other words, choices of the low price/low quality target were similar (and not advantaged) whether unavailability was known in advance (35%, or -4% vs. competitor) compared to not known in advance (34%, or -6% vs. competitor).

Table 1. Proportions of choice selection by decoy knowledge and target type

		Choice		
Target Type	Decoy Type	Competitor	Not Buy	Target
Combined *	Known	34%	26%	40%
	Unknown	38%	24%	38%
Low-priced	Known	39%	26%	35%
	Unknown	40%	26%	34%

High-priced *	Known	28%	26%	46%
	Unknown	36%	23%	41%

Note. Summary of six different decoy and decoy/target type conditions. Each row adds up to 100%.
* Chi-square test revealed a significant relationship ($p < .05$) between knowledge and target choice.

Proximity

A chi-square test examining the relationship between decoy proximity (near or far) and choice (target, competitor or non-purchase) revealed a significant relationship between these variables X^2 (2, N = 377) = 32.22, $p < .001$. Table 2 shows choice selection proportions based on decoy proximity and target type. When the difference between the decoy and the target's desirable attribute was near (e.g. more similar in value), the target was chosen 6% more often than when the target was far (42% vs. 36%). Likewise, the preference for target over competitor was higher when the decoy was near (+1%) than when the decoy was far (+5%). While the option not to buy was chosen least often regardless of target proximity, when the target was near, participants were more likely to choose not to buy than when the decoy was far (30% vs. 21%).

Proximity and Target Type

Secondary analysis revealed that the statistically significant relationship between decoy proximity and choice of the target persisted both when the target was the cheaper option X^2 (2, N = 377) = 14.29, p = .001 and when the target was the more expensive option X^2 (2, N = 377) = 18.23, $p < .001$. When the target was the more expensive option, the target was option was chosen more frequently than either the competitor or choosing not to buy, more so when the decoy was near. However, when the target was the cheaper option, the *competitor* was chosen more frequently than the target option or choosing not to buy, and it was preferred over the target more when the decoy was far.

Table 2. Proportions of choice selection by decoy proximity and target type

Target Type	Decoy Type	Choice		
		Competitor	Not Buy	Target
Combined ***	Far	35%	30%	36%
	Near	37%	21%	42%
Low-priced ***	Far	39%	30%	31%
	Near	41%	22%	37%
High-priced ***	Far	31%	29%	40%
	Near	33%	19%	47%

Note. Summary of six different decoy and decoy/target type conditions. Each row adds up to 100%.
*** Chi-square test revealed a significant relationship (p = .001) between proximity and target choice.

Attribute

A chi-square test did not reveal a significant relationship between decoy attribute (i.e. whether the decoy was superior on price or quality) and choice X^2 (2, N = 377) = 2.71, p = .26. In other words, the frequency at which each of the three choice options was selected did not differ by decoy attribute type. Table 3 shows choice selection proportions based on decoy attribute and target type.

Attribute and Target Type

Secondary attribute analyses revealed a significant relationship between attribute and choice of target when the target was the more expensive option X^2 (2, N = 377) = 8.28, p = .02, such that preference for the target option over the competitor was higher when the decoy was higher in quality (+17%) rather than price (+6%). Analyses did not reveal a significant relationship between decoy attribute and choice of target when the target was the cheaper option X^2 (2, N = 377) = 1.38, p =. 50. The combined results of primary and secondary attribute analyses hints at a more nuanced relationship between these specific attributes and choice of target.

Table 3. Proportions of choice selection by decoy attribute and target type

Target Type	Decoy Type	Choice		
		Competitor	Not Buy	Target
Combined	Price	37%	25%	38%
	Quality	35%	25%	40%
Low-priced	Price	39%	27%	34%
	Quality	40%	25%	35%
High-priced *	Price	36%	23%	42%
	Quality	29%	26%	46%

Note. Summary of six different decoy and decoy/target type conditions. Each row adds up to 100%.
* Chi-square test revealed a significant relationship ($p < .05$) between attribute and target choice.

Inaction Inertia Chi-Square Analyses

In the inaction inertia trials, the target option was chosen approximately 42% of the time and the competitor was chosen approximately 33% of the time. An index of preference for the target option (positive values) or the competitor option (negative values) was constructed to test against the null hypothesis of no preference (average index = 0). The preference for the target option ($M = 0.35$, $SD = 1.45$) was significant, $t(376) = -44.65$, $p < 0.001$, suggesting the presence of unavailable discounts does favor the target option over the competitor. Overall, participants selected the option to buy something 75% of the time when a promotion had been missed compared to 90% of the time in the control condition, which did not include a missed discount. The decreased average number of purchases made when a promotion was missed ($M = 2.49$, $SD = 1.00$) compared to when there was no missed discount ($M = 2.96$, $SD = 0.59$) was significant, $t(548) = -7.10$, $p < 0.001$, suggesting that the presence of missed discounts reduces overall purchasing.

Proximity

Chi-square analyses examining the relationship between decoy price proximity (e.g., small missed discount is near vs. large missed discount is far) and choice of the target revealed a significant relationship X^2 (2, N = 377) = 35.21, p < .001. Table 4 shows choice selection proportions based on discount size/proximity and target type. The target option was chosen more frequently than either the competitor or choosing not to buy regardless of price proximity being near or far. However, when the decoy was near (i.e. smaller discount), the target was selected more often (49% vs. 36%, or +13%) than when the decoy was far (i.e. larger discount), and participants were less likely to not buy (19% vs. 31%, -12%). This suggests that near price decoys have a stronger effect on choice of target than far price decoys in the inaction inertia trials.

Proximity and Target Type

Secondary analysis revealed that the statistically significant relationship between decoy price proximity (size of discount) and choice of the target persisted both when the target was the cheaper option X^2 (2, N = 377) = 18.77, p < .001 and when it was the more expensive option X^2 (2, N = 377) = 19.41, p < .001. When the decoy was far, the frequency of choice of the target and competitor options were similar, both for cheaper and more expensive targets (approximately 36%). When the decoy was near, the target was chosen more often than the competitor, with larger differences when the target was the expensive option than when the target was the cheaper option.

The largest proportion differences were observed when the decoy was near and was more expensive: target (52%), competitor (31%), and not buy (17%). In comparison, when the target was cheaper, the non-target options, though still selected less than the target, were selected at

slightly higher frequencies: target (45%), competitor (34%), and not buy (21%). Overall, primary and secondary analyses of proximity in the inaction inertia trials indicate that the highest frequency of selecting the target option and the lowest frequency of not purchasing occurred when the decoy price discount was small (i.e., near), particularly when the target was the expensive option. By contrast, the highest rate of non-purchasing occurred when the decoy constituted a large discount on a low-priced target.

Table 4. Proportions of choice selection by price proximity and target type

		Choice		
Target Type	Decoy Type	Competitor	Not Buy	Target
Combined ***	Far	34%	31%	36%
	Near	32%	19%	49%
Low-price ***	Far	31%	35%	35%
	Near	34%	21%	45%
High-price ***	Far	37%	26%	36%
	Near	31%	17%	52%

Note. Summary of six different decoy and decoy/target type conditions. Each row adds up to 100%. *** Chi-square test revealed a significant relationship ($p < .001$) between price proximity and target choice.

Logistic Regression Analyses

Individual Predictors for Brand

Generalized linear mixed models were created with likelihood of target choice as the outcome variable, and prior knowledge, decoy proximity, decoy attribute, and target type as predictors. These models examined consumer choices that were best for the brand, that is, selecting the target option. The models revealed statistically significant main effects for

proximity, (b = 0.30, 95% CI = [0.14, 0.45], z = -4.6, $p < 0.001$) and target type, (b = -0.43, 95% CI = [-0.48, -0.14], z = -5.53, $p < 0.001$), such that, participants were more likely to choose the target option when the decoy was near and when the target was the more expensive option. No significant main effects were found for prior knowledge, (b = -0.12, 95% CI = [-0.27, 0.03], z = -1.58, p = 0.14) or decoy attribute (price vs. quality), (b = 0.12, 95% CI = [-0.04, 0.27], z = 1.48, p = 0.12), although the results were consistent with meaningful, but small, main effects of advantages of prior knowledge and quality decoys for the target (based on previous chi-square analyses).

Interaction Effects for Brand

The interaction between prior knowledge and proximity was marginally significant, (b = -0.53, 95% CI = [-1.16, 0.09], z = -1.68, p = 0.09). Knowledge had marginally more of an impact on target choice when the decoy was near, such that, when decoys were known in advance, participants were approximately 17% more likely to choose the target option when the decoy was near instead of far. In contrast, this difference was approximately 3% when decoys were not known prior to making the initial choice. The model did not reveal any significant interaction effects between decoy attribute and any other predictor, or target type and any other predictor. Overall, these models reveal that target type and proximity, independently and in combination with knowledge, moderated the effects of an unavailable option on choice of the target option. These results suggest that choices of the target are highest when the unavailable option is known in advance and near (more similar to the target), and when the target is the higher-priced option.

Individual Predictors for Store

A second set of generalized linear mixed models were created with likelihood of purchase of any item as the outcome variable, and prior knowledge, decoy proximity, decoy

attribute, and target type as predictors. These models examined consumer choices that were primarily of interest to the store. The models revealed a statistically significant main effect of proximity ($b = 0.75$, 95% $CI = [0.53, 0.96]$, $z = 6.87$, $p < 0.001$), such that, participants were more likely to make a purchase when the decoy was near as opposed to far. No significant effects were found for knowledge ($b = 0.15$, 95% $CI = [-0.06, 0.36]$, $z = 1.40$, $p = 0.16$), attribute ($b = -0.01$, 95% $CI = [-0.22, 0.20]$, $z = -0.11$, $p = 0.92$), or target type ($b = -0.17$, 95% $CI = [-0.38, 0.04]$, $z = -1.61$, $p = 0.11$), although the results were consistent with meaningful but small effects of prior knowledge and target type (based on previous chi-square analyses).

Interaction Effects for Store

A marginally significant interaction was found between attribute and target type ($b = 0.80$, 95% $CI = [-0.04, 1.65]$, $z = 1.86$, $p = 0.06$), such that, for price decoys, participants were more likely to make a purchase if the target was the more expensive, higher quality option. For quality decoys, participants were more likely to make a purchase if the target was the cheaper, lower quality option. In other words, purchases were lower if the unavailable option was even better than the target on the target's superior attribute. This model did not reveal any statistically significant interaction effects between knowledge and any other predictor, nor between proximity and any other predictor. Overall, these results suggest that proximity, and the combination of attribute and target type, predicted likelihood of making a purchase that may be beneficial to the store.

Discussion

It is inevitable that consumers will face missed promotions or unavailable options. Whether failing to take advantage of a promotion or realizing an item is out of stock after already at the store, consumers will not be able to purchase their desired product every time. Consumer

choice following a missed opportunity has clear financial implications for both brands and retailers at the time of purchase, as well as potential long-term financial impacts. For this reason, it is crucial for brands and retailers to understand the mechanisms of consumer choice when opportunities are missed in order to increase likelihood of purchasing specific items rather than deferring a purchase.

The present study investigated how different characteristics of purchasing decisions, in instances of missed discounts and stock-outs, influence consumer choice. Previous research on inaction inertia (e.g. Zeelenberg & van Putten, 2005; Ford et al., 2018) and phantom decoys (e.g. Pettibone & Wedell, 2007; Scarpi & Pizzi, 2013; Hedgcok, Rao, & Chen, 2016) has examined a number of factors that may influence how consumers respond to learning that a product is unavailable or no longer available in a previous form (e.g. expired discount). We hypothesized that, consistent with what the prior literature suggests, phantom decoys that are known in advance, near, or higher quality would be more strongly associated with purchasing the target option; phantom decoys that are unknown, far, or lower priced were hypothesized to be more strongly associated with purchasing the competitor option. Overall, we found that the presence of missed opportunities had a negative effect on total purchasing, but there was evidence of a phantom decoy effect under certain conditions. With the exception of decoy-advantaged attribute, we did find associations between target choice and both knowledge and proximity. An examination of target type in addition to decoy feature revealed more complex relationships between decoy characteristics and target choice. In the following paragraphs, we will discuss general findings regarding the influence of phantom decoys and inaction inertia on consumer choice, then we will discuss decoy characteristics individually.

Overall, the target option was selected more often than the competitor in phantom decoy trials. Consistent with previous literature (Pettibone & Wedell, 2007; Scarpi & Pizzi, 2013) we also found evidence that certain decoy characteristics were associated with higher choice rates of the target compared to others. However, when comparing the treatment and control conditions, we found that people were more likely to choose not to buy anything when a phantom decoy was present than when it was not. This would suggest that unavailable options may have a negative impact on retailers by decreasing sales overall. However, for a given brand, a more similar unavailable option may be able to shift consumer preferences in favor of their brand at the expense of the competitor.

In the inaction inertia trials, we found that the presence of missed discounts was associated with a decrease in overall purchasing consistent with some of the prior inaction inertia literature (e.g. Tykocinski, Pittman, & Tuttle 1995; van Putten, Zeelenberg, van Dijk, & Tykocinski, 2013). However, instead of finding evidence of brand switching (e.g. competitor being favored over target), which can result after a discount is missed (Zeelenberg & van Putten, 2005), we found that the target option was chosen more often than the competitor. While this finding is inconsistent with some of the inaction inertia literature, perhaps it reveals conditions in which the inaction inertia effect is diminished, such as the presence of a choice set. Typically, in inaction inertia studies (e.g. Ford et al., 2018; Tykocinski & Pittman, 2001), participants are simply asked about the likelihood that they would accept the inferior discount. Perhaps simply providing alternatives (van Putten, Zeelenberg, & van Dijk, 2008) or framing the unavailable discount as an alternative rather than highlighting it as a missed discount (e.g. just presenting the price rather than saying the item is now 20% off instead of 40% off) encourages people to purchase something rather than defer purchasing.

On the other hand, it is possible that we did not find evidence of increased brand switching when a missed discount was present (vs. absent) because of the wording we used in the inaction inertia trials. Typically, inaction inertia studies have participants read lengthier, more detailed choice scenarios (e.g. Tykocinski & Pittman, 2001). In our study, the phrasing in the inaction inertia trials was similar to that of our phantom decoy trials. Specifically, we did not ask participants to imagine a specific scenario, we simply told them that an item they were interested in was no longer available. It is possible that the way questions or scenarios are framed in inaction inertia studies may affect people's responses. For example, perhaps greater detail evokes more of an emotional response in the participant, which may be more representative of actual consumer experiences. Emotion, such as regret, has been shown to influence purchase experience and decision outcomes (Chen, Tsai, & Chuang, 2010). However, it is also possible that more detailed scenarios are more leading, creating a demand effect by suggesting to respondents how they are expected to feel about the hypothetical situation. We will later discuss future research in this area that might help reconcile the inconsistencies between our findings and traditional inaction inertia literature.

Knowledge

We will now look at the impact of phantom decoys on choice of target versus competitor. As predicted, we found a significant relationship between prior knowledge and target choice, such that, the target was chosen more frequently when the decoy was known rather than unknown. These results are consistent with prior research (e.g. Hedgcock, Rao, & Chen, 2016; Scarpi & Pizzi, 2013) in that it appeared preferences shifted to the competitor when the unavailability of the decoy was not known in advance. This suggests that known decoys may be more beneficial for the brand than unknown decoys. When the target was more expensive, we

found that both decoys known in advance and those not known in advance were associated with higher choice rates of the target option. When the target was cheaper, knowledge was not associated with target choice at all. These results indicate a more complex relationship between knowledge and target choice, that involves not only choice context but also the characteristics of the options themselves.

Proximity

As hypothesized, the relationship between proximity and choice was also significant, with the target option being more likely to be chosen when the decoy attribute was near (more similar to the target). Similar to previous findings (Ford et al., 2018; Pettibone & Wedell, 2007), there was less of a difference in choice rates between the target and competitor when the decoy was far (less similar to the target). One reason near decoys might be more effective could relate to how people compare them to the target and competitor individually. People are more likely to select the option that minimizes their perceived loss (Pettibone & Wedell, 2007). When decoys are near, the difference between the unavailable item's price or quality rating and target's is less extreme than if the decoy is far, therefore, the "loss" seems smaller if they choose the target instead of the competitor.

Interestingly, when target type is considered, very different effects are observed for the more expensive versus cheaper target. When the target was the cheaper option, the competitor was chosen more often than the target, particularly for the far decoy; when the target was the more expensive option, the target was chosen more often than the competitor, particularly for the near decoy. The findings regarding cheaper targets seem somewhat contradictory to the logic presented by Pettibone and Wedell (2007) because, when the target is the cheaper option, the decoy would be less expensive than both the competitor and target, but closer in price to the

target overall. Therefore, we would expect to see higher choice rates for the target, not the competitor, when the target is cheaper.

One possible explanation for the shift from target to competitor when the target was the cheaper option may be related to range and attribute weight. Sometimes, especially when the importance of an attribute is uncertain, people will give more weight to the attribute with the greatest range of values (Fischer, 1995). When the target is the cheaper option (increasing the observed price range among options), participants may give more consideration to the price attribute when making their choice, even to the point of relying on price as a quality indicator rather than the provided quality ratings. Due to the common association between lower price and poorer quality (Hadar, Danziger, & Hertwig, 2018), people may then be more likely to choose the competitor (which would be the most expensive out of the three options). When the attribute of interest is quality, the range of values for the quality attribute is higher, which may increase its perceived importance. Because high quality was always paired with high price, when the target was the cheaper option, the competitor would have the highest quality rating of the three options. Overall, our results suggest that near proximity decoys may be more beneficial than far proximity decoys for the brand; however, the relative prices of the available options must be taken into account as they may actually result in higher choice rates for the competitor, particularly when decoys are far.

Attribute

Results from our analysis of the attribute on which the decoy was superior to the target did not support our hypothesis of a general relationship between attribute and choice. However, when target type was considered, we did see a relationship between these variables. One possible explanation for the former null finding has to do with the concepts of attribute prominence (i.e.

which attribute is perceived as most important) and dominance relationships (e.g. the unavailable decoy dominates the target). When dominance relationships exist among available options in a choice set (or among available and unavailable options, in the case of phantom decoys), the influence of attribute prominence lessens (Evangelidis & Levav, 2013). So, even if participants came in with strong opinions about which attribute they valued more, the choice was set up in such a way that they may have been more likely to value the attribute of interest, even if it was one that they would usually give less weight to when the choice set is structure differently. However, it is also possible that there *is* a relationship between attribute and choice, but it is more context specific than we accounted for (Hadar, Danziger, & Hertwig, 2018; Huber, Payne, & Puto, 2014), which is possible considering that when target type was considered, we found a significant relationship.

When targets were the more expensive option, both price and quality decoys were associated with higher choice rates of the target option than the competitor. Although dominance relationships are a possible explanation as to why we did not see an overall association between attribute and choice, perhaps when target type is specified, this concept could provide an explanation for the association we do see. Whether a person sees price or quality as the most important attribute would depend on which attribute dominates the target. For quality decoys, more expensive targets will always have higher quality ratings than the competitor. For price decoys, which would increase focus on the price attribute, people might consider price as an indicator of quality (e.g. high price equals high quality) (Hadar, Danziger, & Hertwig, 2018). Even though quality ratings are listed, people's preference for the more expensive item may be a reflection of this association contributing to their evaluation of the items. It is worth exploring

the nuances of the relationship between attribute and target choice, as the present analysis only scratches the surface.

Inaction Inertia

In the inaction inertia trials, we also found an association between price proximity and choice, such that, people chose the target more frequently than the competitor, specifically when the discount was smaller (aka close) rather than larger (aka far). This relationship was consistent, regardless of targets being the cheaper or more expensive options. These results align with findings from Tykocinski, Pittman, and Tuttle (1995), who found that inaction inertia effects were observed when missed discounts were large, but some people were still willing to purchase the target option if the missed discount was small. Like these researchers, our results suggest that missing a discount may not always produce inaction inertia. This is evidenced by the fact that we found combinations of discount size and target price that favored the choice of the target over the competitor, contrary to inaction inertia findings of greater brand-switching when a deal has been missed (e.g. Zeelenberg & van Putten, 2005).

Predictors for Brands

Creating generalized linear mixed models allowed us to explore decoy characteristics as predictors of target choice for the brand and for the store separately. Regarding brands, results revealed that choices of the target were more likely when the decoy was near or when the target was more expensive. This is consistent with previous research regarding proximity decoys (Pettibone & Wedell, 2007) as well as our chi-squared results, which revealed relationships between proximity and target choice and expensive targets (regardless of decoy feature) and target choice. We also found a marginally significant interaction effect between knowledge and proximity. Aligning with findings from Scarpi and Pizzi (2013), our results indicated that decoys

that were close and whose unavailability was known in advance were associated with higher likelihood of choosing the target option compared to decoys that were unknown and far. It is interesting to note that even though our study included proximity manipulations of two attributes (price or quality), compared to only manipulating one attribute in the previous literature, we produced similar results. This is not surprising considering the fact that we did not find a relationship between attribute type and choice of target in our analyses. Overall, our models were consistent with our findings from our chi-squared analyses, which indicated that near proximity decoys, unknown decoys, and/or the target being more expensive are optimal for brands because they favor the target option over the competitor. This suggests that not only are these particular characteristics associated with higher choice rates of the target, they are also *predictors* of likelihood of target choice.

Predictors for Stores

Regarding decoy characteristics that may be optimal for stores, our generalized linear mixed models revealed participants were more likely to make a purchase when decoys were near. Decoy attribute and target type were not predictors of purchasing independently; however, they did have a marginally significant interaction effect. Specifically, higher quality decoys increased purchasing when the target was the cheaper lower quality option, while price decoys increased purchasing when the target was the more expensive higher quality option. Although the association between price decoys and expensive target option aligned with our chi-square results, which indicated that price decoys were associated with higher choice rates of the target when the target was more expensive, the association between quality decoys and cheaper target option did not. Our chi-square results did not reveal any significant relationships between attribute (price or quality) and target choice when the target was the cheaper option. Perhaps the

reason for this difference is that we conducted separate chi-square analyses for each target type (cheaper and more expensive), to test for relationships between attribute and target choice. The generalized linear mixed model was able to account for both target types together.

Despite proximity being a predictor of target choice, we did not find any significant interaction effects between proximity and any other predictor. Perhaps one reason for this is that, in our study, proximity included both price and quality decoys. Perhaps interactions do exist between proximity and knowledge (like for brands) or proximity and target type that effect overall purchasing, but these interactions are specific to each attribute. In other words, price proximity might interact with these features differently than quality proximity does to effect overall purchasing. For example, as previously mentioned, Scarpi and Pizzi (2013) manipulated the proximity of one attribute only and found interaction effects between proximity and knowledge. The combination of two different attributes in the proximity predictor may be making it difficult to determine more nuanced interaction effects, particularly when considering overall purchasing (target and competitor) rather than purchase of the target option. The primary difference between predictors for brands and stores was that knowledge was a predictor of target choice for brands only. It is unclear why knowledge was not a predictor for general purchasing, especially because the target option is included in general purchasing. Taken together, our findings revealed that near proximity decoys, as well as specific combinations of target type and attribute, are predictors of likelihood of purchasing over not purchasing.

A few limitations should be noted when considering the results of this study, the first regarding its external validity. The current study only included 22 items, all from the same general category (household products) that ranged from $29.49 to $59.95. It is possible that the results may be different depending on the types of products, if the products came from multiple

categories, or if the price range was higher or lower. We decided to use household products because we felt the would be the most relatable product category for the widest range of potential participants and would be the easiest for participants to imagine themselves buying. However, looking at more expensive products or products that are purchased less frequently may yield different results.

The variations in decoy proximity for price and quality ratings may have also influenced results. In the current study, near decoys were always $5 cheaper or had a 4-point higher quality rating; far decoys were always $10 cheaper or had an 8-point higher quality rating. While these combinations were pretested to ensure they met our criteria, it is possible that having additional proximity decoys, whose difference from the target varies, might produce different results. Future studies should continue to explore additional proximity ranges to determine if there is a point at which near decoys do not increase shares of the target more than far decoys (Pettibone & Wedell (2007) and if so, if this relationship varies by product category or product price range. Future research may also consider exploring different attributes and combinations of attributes (e.g. number of online reviews, customer satisfaction ratings, etc.), to determine if certain attributes are more strongly associated with choice of the target. This could be done independently and in combination with proximity.

Additionally, like many other studies in the inaction inertia (e.g. Tykocinski & Pittman, 2001; Zelenberg & van Putten, 2005) and phantom decoy literature (e.g. Fitzimons, 2000; Diels & Wiebach, 2011), this was a scenario-based study. Participants were only given quantitative information (price and quality) about the products, and the product "brand" was an unfamiliar combination of letters. Including a familiar brand name has been shown to weaken phantom decoy effects (Kim, Park, & Ryu, 2006). Real-life purchase decisions are much more complex.

They involve past experience with products (e.g. how often this product is on sale), their attributes, and non-numeric information (e.g. written customer reviews), which make it harder to recognize dominance (Hadar, Danziger, & Hertwig, 2018). Most individuals also like to see the product, even if it is just a picture of it, before purchasing and will consider more than two product attributes when deciding between products. Therefore, these results may not be generalizable to some real-world purchase decisions. Some studies have managed to demonstrate phantom decoy effects in real, in-store contexts (Doyle et al., 1999). To the extent possible, future research should examine if other significant findings from survey and lab-based phantom decoy studies also translate to real-world purchase decisions.

Finally, as previously mentioned, the phrasing and amount of information we presented to participants in the inaction inertia trials may explain why we did not find a shift in preference from the target option to the competitor, even though we did find other inaction inertia effects (e.g. increased non-purchasing). While some inaction inertia studies that did include more detailed scenarios also found that missing a discount did not always result in purchase deferral (Zeelenberg & van Putten, 2005), it would be interesting to intentionally explore how the materials used in inaction inertia studies may influence observations of this phenomenon. One way this could be done is by attempting to replicate the results of an inaction inertia study (e.g. Tykocinski & Pittman, 2001), with the only change being the level of detail in the scenario participants read. If inaction inertia effects are weaker or no longer present, it would suggest that the framing of the scenarios used in traditional inaction inertia literature may be a confounding variable. This may not necessarily be counterproductive. In real life, we do not make purchases based on a few concrete facts (Hadar, Danziger, & Hertwig, 2018). Situation context and emotional response can also influence our decisions (Chen, Tsai, & Chuang, 2010). However, it

would be important to be aware of the influence of scenario descriptions in this research, both to qualify findings and perhaps even to leverage them to gain additional insight into contextual factors that may influence inaction inertia.

Our findings contribute to our understanding of how phantom decoys influence purchase decisions following a missed opportunity. Despite the fact that missed opportunities may decrease overall sales, which is detrimental to retailers, specific aspects of the unavailable options may influence consumers' preferences in these circumstances in a way that benefits or harms the brand. Decoy characteristics including knowledge, proximity, and, in some cases, price or quality attributes, are associated with higher purchase rates of the dominated target option, making them optimal for brands. A closer examination of each feature and selection rates for different options, as well as a consideration of the target option's price, reveals complex interactions between decoy characteristics that can influence consumer choice. These nuances are important for stakeholders to consider when deciding how to frame options that become unavailable, whether as a result of a missed discount or stock-out, in order to encourage consumers to purchase desired products.

References

Chatterjee, S., Jiraporn, N., Heath, T. B., Ierlan, M., & Pitman, G. A. (2014). How consumers value transactions that entail using windfall money to offset missed price discounts. *European Journal of Marketing, 48*(5/6), 1113-1132.c

Chen, W., Tsai, D., & Chuang, H. (2010). Effects of missing a price promotion after purchasing on perceived price unfairness, negative emotions, and behavioral responses. *Social Behavior and Personality, 38*(4), 495-508.

Diels, J. L., & Wiebach, N. (2011). Customer reactions in Out-of-Stock situations: Do promotion-induced phantom positions alleviate the similarity substitution hypothesis? SFB 649 Discussion Paper, No. 2011-021, Humboldt University of Berlin, Collaborative Research Center 649-Economic Risk, Berlin.

Doyle, J. R., O'Connor, D. J., Reynolds, G. M., & Bottomley, P.A. (1999). The robustness of the asymmetrically dominated effect: Buying frames, phantom alternatives, and in-store purchases. *Psychology & Marketing, 16*(3), 225-243.

Evangelidis, I., & Levav, J. (2013). Prominence versus dominance: How relationships between alternatives drive decision strategy and choice. *Journal of Marketing Research, 50*(6), 753-766.

Farquhar, P. H., & Pratkanis, A. R. (1993). Decision structuring with phantom alternatives. *Management Science, 39*(10), 1214-1226. https://doi.org/10.1287/mnsc.39.10.1214

Fischer, G. W. (1995). Range sensitivity of attribute weight in multiattribute value models. *Organizational Behavior and Human Decision Processes, 62*(3), 252-266.

Fitzsimons, G.J. (2000). Consumer response to stockouts. *Journal of Consumer Research, 27*, 429-266.

Ford, W., Andrews, D., Sivaraman, A., & Krishnamurthy, P. (2018). Not all missed opportunities cast the same shadow: Voluntary action reduces the "sting" of missed sales promotions. *Journal of Consumer Behavior, 19*, 57-67.

Hadar, L., Danziger, S., & Hertwig, R. (2018). The attraction effect in experience-based decisions. Journal of Behavioral Decision Making, 31(3), 461-468.

Hedgcock, W. M., Rao, R.S, & Chen, H. (2016) Choosing to choose: The Effects of decoys and prior choice on deferral. *Management Science 62*(10), 2952-2976. https://doi.org/10.1287/mnsc.2015.2289

Huber, J., Payne, J. W., & Puto, C. P. (2014). Let's be honest about the attraction effect. *Journal of Marketing Research, 51*(4), 520-525.

Kim, J., Park, J., & Ryu, G. (2006). Decoy effects and brands. *Advances in Consumer Research, 33*(1), 683-687.

Kramer, T., & Carroll, R. (2009). The effects of incidental out-of-stock options on preferences. *Market Lett, 20*, 197-208.

Kumar, P. (2019). The impact of trivial attributes on inaction inertia. *Journal of Experimental Psychology: Applied, 25*(4), 733–743.

Mozilla. (n.d.). *JavaScript*. MDN Web Docs. Retrieved July 27, 2021, from https://developer.mozilla.org/en-US/docs/Web/JavaScript

Pettibone, J. C., & Wedell, D. H. (2007). Testing alternative explanations of phantom decoy effects. *Journal of Behavioral Decision Making, 20*, 323-341.

Scarpi, D., & Pizzi, G. (2013). The impact of phantom decoys on choices and perceptions. *Journal of Behavioral Decision Making*, *26*(5), 451-461.

Tsiros, M. (2009). Releasing the regret lock: Consumer response to new alternatives after a sale. *Journal of Consumer Research, 35*(6), 1039-1059.

Tykocinski, O.E., & Pittman, T. S. (2001). Product aversion following a missed opportunity: Price contrast or avoidance of anticipated regret? *Basic and Applied Social Psychology, 23*(3), 149-156.

Tykocinski, O.E., Pittman, T. S., & Tuttle, E. E. (1995). Inaction inertia: Forgoing future benefits as a result of an initial failure to act. *Journal of Personality and Social Psychology, 68*, 793-803.

van Putten, M., Zeelenberg, M., & van Dijk, E. (2013). How consumers deal with missed discounts: Transaction decoupling, action orientation and inaction inertia. *Journal of Economic Psychology, 38*, 104-110.

van Putten, M., Zeelenberg, M., & van Dijk, E. (2008). Multiple options in the past and present: The impact on inaction inertia. *Journal of Behavioral Decision Making, 21*, 519-531.

van Putten, M., Zeelenberg, M., van Dijk, E., & Tykocinski O. E. (2013). Inaction inertia. *European Review of Social Psychology, 24*(1), 123-156.

Zeelenberg, M., & van Putten, M. (2005). The dark side of discounts: An inaction inertia perspective on the post-promotion dip. *Psychology & Marketing, 22*(8), 611-622.