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Position-based Beliefs: The Center-Stage Effect

Ana Valenzuela

Baruch College, CUNY

Priya Raghubir

New York University

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Abstract

This paper examines the existence and consequences of consumers' position-based beliefs about product layouts. We propose that consumers believe that options placed in the center of a simultaneously presented array are the most popular. This belief translates into their choosing options placed in the center more often than those on the sides of a display: the Center-Stage Effect (Studies 1 and 5). Results are driven by inferences of product popularity rather than higher levels of attention to products in a given position (Studies 2 and 3). The preference for middle options is accentuated when people explicitly take into account other people's preferences, increasing the need to choose a popular option (Study 3), but attenuated when layout-based information is not diagnostic (Study 4). Increasing the accessibility of own preferences for the intrinsic attributes about the products reduces the use of position-based beliefs to make judgments and attenuates the center-stage effect (Studies 5). Theoretical implications for marketplace meta-cognitions, visual information processing, position effects, and the use of overall cognitive beliefs versus perceptual attention and memory-based individuating information to make judgments are discussed.

Position-based Beliefs: The Center-Stage Effect

This paper examines the existence and consequences of consumers' position-based beliefs about product layouts. Position-based beliefs belong to the larger genre of marketplace meta-cognition that refers to individuals' thinking about the rules that govern marketplace interactions (Wright, 2002). Marketplace meta-cognitions include consumers' implicit theories about how companies exert marketplace persuasion and influence, that is, consumers' sets of beliefs about marketers' general tactics in typical marketplace interactions (Friestad & Wright, 1994). We propose that consumers hold beliefs about the rules that marketers follow in their physical ordering of products within arrays and, accordingly, use the position of a product in an array as a source of information to construct product judgments, especially in the absence of alternative sources of information.

Overall, there are certain position rules that seem to govern the physical ordering of people, items, and things across contexts and domains. For example, in a print advertisement, consumers are used to seeing brand name information on the right and logos on the left (Janiszewski, 1990). Within a store, consumers expect products located in an end-of-aisle display to be on discount (Inman, McAlister & Hoyer, 1990). In a group task, observers believe that people seated in the center are the most accurate (Raghubir & Valenzuela, 2006) and influential (Taylor & Fiske, 1975). Given that research has found that people assign meaning to the position of an item in an array, in the absence of alternative information, an item's position could be used as a source of information and affect consumers' preferences and choices. However, prior research examining the effect of the physical position of products in an array has found inconsistent effects (Chandon et al., 2007, Christenfeld, 1995, Dreze, Hoch & Purk, 1994, Nisbett & Wilson, 1978, Shaw, 2000), and is divided as to why position effects occur. While

attention has been proposed to be the mediating route driving effects of position on choice (Nisbett & Wilson, 1978), evidence regarding this route is lacking, using both indirect measures of recall (Shaw, 2000; Taylor & Fiske, 1975) and direct measures of eye-tracking (Chandon et al., 2007). This has led researchers to argue that preferences for a specific position reflect a simple rule that people apply to minimize mental effort outside of their consciousness (Christenfeld, 1995).

This paper develops an understanding of when products placed in the center of an array will enjoy an advantage -- the "Center-Stage Effect," while at the same time understanding why they do so. We investigate the specific nature of the beliefs that consumers have about products placed in the center, and establish whether, when, and why these beliefs affect their judgments and choices. Specifically, we propose that consumers believe that marketers organize choice sets so as to represent consumers' preference structure, with the modal or most liked marketplace option being that in the middle. As a consequence, consumers infer that a product placed in the middle of an array is the most popular. A popular product is defined as one that is the most preferred by other consumers and has the highest market share in its category. When consumers' goals encourage the use of the "consensus heuristic," or the general judgment rule that other peoples' opinions are accurate (Chaiken, 1987), then popularity inferences of the product placed in the middle of an array translate into favorable attitude judgments and, thus, product preference (Chaiken & Maheswaran, 1994). Across a series of five experiments, we test our proposed belief-based model against the alternative attention-based model (where products placed in the center are more visually salient, attract more attention than others, and are, therefore, more likely to be chosen), and find support for the former.

Studies 1-3 show that consumers ***i)*** believe that the central position is the best, ***ii)*** believe

that products placed in the center are the most popular, ***iii)*** evaluate products in the center more favorably, and ***iv)*** choose products in the center more often than chance levels. Studies 3-5 show that the preference for the central position is stronger when ***v)*** consumers consider the preferences of others (versus themselves) in their decision, ***vi)*** the contextual cue of position is perceived to be informative (versus uninformative) of marketplace tactics, and ***vii)*** attitudes towards the products are less (versus more) accessible.

The next section reviews the extant literature on the direction and underlying reasons for position effects, and concludes with a set of hypotheses. The five studies are then described. The general discussion concludes with theoretical implications for the antecedents of position effects, and discusses managerial implications for product managers and online retailers.[1] We conclude with study limitations and areas for future research.

Position Effects

Which Position has an Advantage?

A position advantage is defined as a more favorable evaluation, a higher choice likelihood and/or higher sales of a product occupying a specific position in an array. Extant findings are inconsistent supporting an advantage for the last option presented (Nisbett & Wilson, 1978), for items at the end of a display (Inman et al., 1990), for items placed in the middle (Christensen, 1995; Shaw, 2000), for both extreme and/ or middle positions contingent on the product category (Dreze, Hoch & Purk, 1994), as well as no position advantage (Chandon et

[1] Online product displays (e.g www.TravelSmith.com) are an especially relevant context for the current research as online stores typically allocate one shelf "facing" for each product, and, thus, make shelf space allocation irrelevant. They also facilitate visual processing by providing small and easily examinable electronic shelves, which one encounters head on (Breugelmans, Campo & Gijsbrechts, 2007).

al., 2007). Differences in procedures and contexts across these studies, that is, whether presentation of items was sequential or simultaneous, cannot account for these inconsistent results, suggesting the need for a deeper understanding of why these effects occur.[2] However, prior research on position effects has proposed two different routes explaining preference for one position over the other: attention-related and belief-related. These are discussed below.

Attention-based Mechanism

The literature suggesting that position affects are due to differential levels of attention paid to objects in different positions argues that the salience of a position affects the attention allocated to it, which in turn affects preferences for it. Salience is defined as the aspect of a stimulus that makes it stand apart from other stimuli due to its inherent characteristics or its context (McArthur & Post, 1977). Salience of an object makes it more likely to be attended to, recalled, and used to form attitudes in an information aggregation task (Fiske & Taylor, 1989).

Given the literature on salience effects, it is plausible that an object that is at the center of an array will be more salient, receive more attention, and, for this reason, be preferred. Nisbett and Wilson (1978) explained their results for the stockings study in terms of higher attention paid to the last option presented in a sequence (see also Schuman & Presser, 1996). However, research examining that higher attention leads to more favorable evaluations has found little or no evidence for it using simultaneous presentation of stimuli.

The earliest exploration was in a person perception domain using a recall task where the

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[2] One difference between Nisbett and Wilson's (1978) finding, that the last position is preferred, and Christensen's (1995) finding, that the middle position is preferred, is that options were presented sequentially in the former and simultaneously in the latter. However, in the Inman et al. (1990) study, as well as the Dreze et al. (1994) and the Chandon et al. (2007) studies, options were presented simultaneously. Thus, sequential versus simultaneous presentation cannot completely explain differences in preferences for different positions.

person in the middle, though found to be more influential in a group task, was not recalled more than others (Taylor & Fiske, 1975). In the domain of product perception, Shaw (2000) ruled out an attention-driven mechanism driving the preference for the central position by showing no difference in the number of graphic items recalled from posters in the left, center and right position within a three-poster collage. However, it is plausible that the indirect test of recall is not powerful enough to diagnose whether attention has been differentially paid to stimuli at the time of making a choice. Given the limitation of the recall task, Chandon et al. (2007) directly tested the mechanism of attention using eye-tracking methodology, and found no evidence that higher attention to specific positions led to more favorable evaluations and choices. Whereas the center of a display was more likely to be noticed the resulting visual lift did not carry through to product consideration and choice, which did not show a robust position effect.

To summarize, the empirical support for higher levels of attention improving position preferences is weak. This is not surprising as research on vision effects using simultaneous presentation predicts that an item left of center (versus the center) is most noticeable (Ducrot & Pynte, 2002), and consumer psychologists have shown that attention to items on the right or left of a display are contingent on whether they are visual or verbal stimuli (Janiszewski, 1990). Given the weak theory and evidence for an attention-driven mechanism explaining position effects for simultaneous presentation, we next examine the role of cognitive beliefs driving preference and choices for a given position.

Inference-based Mechanism

Various streams of literature, in contexts ranging from people perception and survey methods to product perception, all suggest that people draw inferences from the position an

object or person occupies based on their pre-existing beliefs. Specifically, McArthur and Post (1977) speculated that Taylor and Fiske's (1975) findings, that people placed in the middle, facing onlookers, were perceived to be more causal to a group's outcome, could be due to cultural norms and beliefs: In the real world people facing an audience are more prominent than those with their backs to an audience and those who sit at the center of a table are typically the most important individuals at the table. Following up on McArthur and Post's (1977) speculation, Raghubir and Valenzuela (2006) showed that players assigned at random to one of eight positions in a semi-circular horizontal array in the television show "*The Weakest Link*," were more likely to win the game when they started off in one of the two central positions. Raghubir and Valenzuela (2006) argued that this was due to people's beliefs, based on learned associations, that important people are expected to sit in the middle (*e.g.*, the CEO in a group interviewer panel). They proposed that if people believe that those in the center are better than those in non-central positions, then, they may substitute this belief instead of spending the resources to process individuating information about each of the candidates. In other words, prior beliefs would dictate how attention was allocated to the different positions. Follow-up studies demonstrated that study participants who held the belief that "important people sit in the middle" attended less to the errors of those in central positions that they did to the errors of others participants. Thus, counter-intuitively, it was the lack of attention paid to the individuating information about people in the center that led to their enjoying an advantage: they were the "Center of Inattention" (Raghubir & Valenzuela, 2006). However, this effect, while contingent on pre-existing beliefs about the meaning of position, still invoked attention, albeit, the lack thereof, as a key mediator for position effects.

Position-based inferences due to simple conversation norms where respondents believe

that the researcher has constructed a response scale in a manner that reflects population frequencies have also been proposed in the survey methods literature (Grice 1975, for a review see Sudman, Bradburn & Schwarz, 1986). For example, people believe that the most common option is in the middle of the set, and even when they do not choose the middle option, their responses to later questions reflect this belief (Menon, Raghubir, and Schwarz 1995).

In this paper, we propose that consumers have marketplace metacognitions such that they believe that retailers order products such that items in the center are the most popular (Wright, 2002, i.e., chosen by most consumers). As such, items placed in the center are inferred to be the most popular. In line with this reasoning, Christensen (1995) proposed that the central position advantage in choice could reflect a simple rule that people unconsciously apply to minimize mental effort. Using a similar argument, Inman et al. (1990) reasoned that the reason for the sales increase for a product on display at the end of the aisle was that consumers inferred that it had a price cut based on their beliefs that displays are usually associated with price cuts. In this sense, Inman et al's (1990) findings and reasoning are consistent with those of Christenfeld (1995), despite the fact that Inman et al. found a position advantage for extreme positions, and Christensen found it for central positions. It is plausible that consumers have different rules for products placed in different positions in an array, leading to different positions enjoying an advantage depending on product category characteristics as shown by Dreze et al (1994). If consumers have shared beliefs that marketers place products with shared characteristics in specific positions, then they may use the fact that a product occupies a particular position to make inferences about its characteristics, specifically, inferring popularity from the fact that the product was in the center.

To summarize, prior research has ***i)*** not found a consistent preference for a specific

position in an array; ***ii)*** not supported that higher levels of attention improve the favorability of preferences; but ***iii)*** provided evidence that people have beliefs reflecting the meaning of being in a given position. The implications of this research for this paper are presented next.

The Center-Stage Effect

If consumers infer that products placed in the middle of an array are those chosen by the majority of other consumers and are, therefore, popular, then in the absence of alternate memory or context-based information regarding the alternatives, they may use the inference of popularity as a cue to construct their own preferences (Feldman & Lynch, 1988). Chaiken and Maheswaran (1994) have, in fact, shown that when people have low motivation or ability to evaluate individuating information about an attitude object, they use the "consensus heuristic," or the belief that a product is good if other people like it, to construct their attitudes. This suggests:

H1: Consumers prefer an option placed in the center to an option placed at either extreme of a set of horizontally ordered alternatives presented simultaneously.

H2: Consumers believe that an option placed in the center is more popular than one placed at either extreme of a set of horizontally ordered alternatives presented simultaneously.

H3: Consumers beliefs regarding popularity mediate their preferences for options placed in the center.

Study 1 tests for the existence of a center-stage effect (H1). Study 2 rules out the mediating role of attention for the center-stage effect. Study 3 examines the mediating role of popularity on the center-stage effects (H1-H3).

Factors Moderating the Center-Stage Effect

The proposed marketplace meta-cognition belief-based inference mechanism suggests that the center-stage effect should be contingent on the use of alternate sources of information to make a judgment. One such source of information is the intrinsic appeal of the product itself: When pre-existing attitudes are available, relevant and easily retrieved, then attitudes are less likely to be constructed on the basis of contextual cues, such as position (Feldman & Lynch, 1988). Attitude relevance depends on the decision context and on consumers' assessment of what type of judgment is suitable to make the decision at hand. If the importance of the preference of others is less salient, contextual spatial cues may be less likely to be used to assess product popularity. Analogously, when pre-existing attitudes about products are more accessible, and/or when position is not diagnostic, the center-stage effect should attenuate. This implies that the center-stage effect should be stronger when: **i)** the context encourages inferences of popularity, **ii)** choosing popular items is consistent with purchase goals, and **iii)** pre-existing attitudes are less accessible, as, for example, when they have not been elicited prior to making choices as compared to when they have been elicited prior to choice. Formally:

H4: The preference for items in the center is greater the more people consider the preferences for others (versus themselves).

H5: The preference for items in the center is greater the more informative the order-of-presentation is believed to be.

H6: The preference for items in the center is greater when choices are elicited prior to (versus subsequent to) individual preferences.

Studies 3, 4 and 5 test H4-H6.

Position Effects: Summary of Empirical Approach

Five studies examine H1-H6, with each study replicating prior effects prior to extending them. Similarities in the approach are provided in the "overall methodology" section below.

Overall Methodology

Study participants. Experimental participants were students enrolled in an introductory business class who participated for partial course credit (Study 1 = 48, Study 2 = 58, Study 3 = 151, Study 4 = 44, and Study 5 = 179).

Design and procedure. An identical set of varieties of items in the same product category and with the same brand name was presented across different conditions in each study, with their order of presentation manipulated, such that every option was presented in each of the available positions. Analyses are in terms of the position (*e.g.*, 1^{st} - 3^{rd},1^{st} - 5^{th}) that the variety occupies in the array incorporating other experimental manipulations as between-subjects' factors. For categorical variables (choice, rank, recall likelihood), we tabulate responses across experimental conditions and report an overall χ^2 and cell percentages. For continuous variables (e.g., interval scaled purchase intentions, popularity inferences, etc.), we conduct a repeated-measures ANOVA, where the position factor is the repeated measure and report the overall F statistic as well as the quadratic F contrast. The quadratic contrast captures whether the pattern of the means follows the inverse U-shape pattern predicted by H1 and H2 with central positions evaluated more favorably as compared to extreme positions.

In all studies where judgments were elicited (Studies 2-5) versus behavior recorded, we

assessed study participants' level of motivation while answering the questionnaire, as well as their judgments of how realistic the scenario was (1 = Not at all/ 7 = Very) at the end of the questionnaire. For all studies the means were at or above the scale midpoint for both motivation (M = 4.95, 3.87, 4.52 and 4.85, for studies 2-5 respectively) and task realism (M = 5.24, 4.21, 5.20 and 4.65, for studies 2-5 respectively). The studies are now described.

Study 1: The Center-Stage Effect

The goal of this study was to test the center-stage effect (H1): the prediction that people prefer the middle option in an array to options at the extremes of the array.

Method. Participants were told that as a token of appreciation for their participation they were going to receive a packet of chewing gum. They could choose from three varieties: Spearmint (S), Peppermint (P) and Winterfrost (W) that were presented in three different orders. Participants' choice was unobtrusively recorded.

Results. The chewing gum variety placed in the middle was chosen half the time (24/48), while the one on the left was chosen 29.17% of the time (14/48) and the one on the right chosen 20.83% of the time (10/48; $\chi^2 = 6.50$, $p < .05$). Thus, choices favor the middle position, supporting the "center-stage" effect: Hypothesis 1.

Study 2: Assessing Attention as a Mediator of the Center-Stage Effect

The goal of this study was to replicate study 1 results using a different procedure, context and measures (size of the choice set increased from three to five, product category changed from chewing gum to pretzels, preference was measured using a rank task vs. choice), as well as to examine whether the center-stage effect can be explained in terms of greater attention paid to the middle item (operationalized using a surprise recall task).

Method. Participants were told to imagine the following scenario:

"*You are shopping for a BYO (bring your own drink) party where guests will bring their own drinks, but you need to pick up snacks and starters for everyone. Cost is not an issue as everyone is going to equally share the overall costs of the party. You simply need to make a choice of one item*."

They were shown five different pretzel varieties (butter checkers, tiny twists, cheddar cheese, honey mustard, and braided twists) of the same brand (Rold Gold) and told that they were all priced at $2.19 (to control for any price inference effects; Inman et al., 1990). Participants were asked to rank-order their preferences. A surprise recall task administered at the end of the questionnaire measured unaided recall as a surrogate for attention (Taylor & Fiske, 1975): Participants were asked to recall the names of as many varieties as they could.

Results. Participants ranked the variety in the center as their first preference 30% of the time (vs. 14%, 22%, 23%, and 11% for varieties in the 1st, 2nd, 4th and 5th positions respectively, $\chi^2_4 = 7.00$, $p < 0.05$**).** Only the preference for the item in the center is significantly different from chance probability (20%, binomial $p < .05$). There were no differences in the percentage of times a variety was recalled as a function of its position (59.7%, 62.1%, 53.4%, 53.4% and 51.7% for 1st – 5th position, n.s.). In other words, although the variety in the middle position is recalled as often as the one in the middle position, it is chosen more often.

Therefore, the difference in choice behavior by position cannot be explained by differences in recall. These results replicate those of Shaw (2000) and show that preferences for central positions cannot be explained in terms of higher attention paid to those positions, using recall as a proxy for the level of attention paid. We now examine whether popularity inferences can explain the center-stage effect.

Study 3: The Mediating Role of Popularity Inferences on the Center-Stage Effect

Study 3 was designed with three goals in mind: *i)* to examine whether consumers infer that the middle option is more popular and whether these inferences mediate preferences for the middle option (H2 and H3); *ii)* to examine a more powerful set of measures (beyond unaided recall) to rule out the alternative explanation that attention (versus popularity inferences) leads to the center-stage effect; *iii)* to test H4, that is, examine whether the center-stage effect is greater when people are making purchases for others with unknown preferences, a context which should encourage the use of popularity as a factor influencing choices. We expected that popularity inferences would mediate preferences when choices were for an unknown other to a greater extent than they would mediate preferences for one's self. This was tested using moderated mediation where separate mediation analyses are conducted in the two conditions (Baron and Kenny, 1986). We also examine the mediating role of attention to rule out the alternative explanation that higher attention to the middle position, rather than a popularity inference, is the reason why center-options are preferred.

Method. We used the same scenario as in Study 2 with a richer set of dependent measures elicited in the following order: choice, attention, popularity, and recall.[3] Unrelated tasks were administered in between the different sets of dependent measures as filler tasks to erase short-term memory and reduce consistency pressures and order effects.

We introduced a between-subjects manipulation of the amount of consideration given to

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[3] We ran a parallel study (n = 136) that fully counterbalanced the order of the three groups of dependent variables (preference, attention, and popularity inferences) across study conditions, and presented these as three different studies to reduce consistency pressures. We used a single order-of-presentation. The item in the center was perceived to be the most popular and was preferred the most, with popularity inferences perfectly mediating preference. Order-of-elicitation of measures did not exert main or interaction effects, suggesting that these results cannot be attributed to response consistency effects between measures.

others' preferences instead of one's own preferences. In the "others' preferences" condition, respondents were told "You are shopping for a party where guests need to bring a snack that everyone will like". In the "own preference" condition, participants were told "You are shopping for a party where guests need to bring a snack that is their personal favorite". Before making their choices, respondents were asked to "Think about why or why not each of the varieties will be liked by other people" (others' preferences) or "Think about why you like or dislike each of the flavors above" (own preferences) to strengthen the manipulation.

Participants were asked to rank order their preference for each variety, note their reasons for choice, provide purchase intentions ("1=Definitely will not purchase" and "7=Definitely will purchase"), and judgments of liking for each item ("1 = Not at all"/ "7 = Very Much"). Exploratory factor analyses showed that liking and intentions for each product loaded on to the same factor in both conditions (variance explained = 87.82% and 92.87% for other and self respectively; factor loadings > .89 for each item on each factor.) Given this structure, the two measures were combined into an "evaluation index" for each of the five products ($r > .72$ for all five products).

After completing an unrelated task, participants answered an ostensibly unrelated "attention questionnaire." Participants were given the following instructions:

> "Packaging is an important component of the product design process and managers are constantly attempting to improve their packaging. Circle the package that you think is the most likely to be the first one noticed. This is the packaging that you think stands out the most, to which your eye was first drawn when you looked at the category, and the one you noticed the most."

To maintain the cover story, participants were asked to rate the overall attractiveness of

each of the packages (1=Not at all attractive/ 7 = Very attractive), and then asked how attention getting each of the package designs were (1=Not at all/ 7 = Very attention-getting).

After another filler task, respondents completed the popularity-inferences questionnaire that used three measures. Popularity ratings were elicited using a seven-point interval scale ("1=Not at all popular," and "7=Very popular"). We also elicited estimates of *i)* relative market share, and *ii)* estimates of what percentage of space should be allocated to each item (total = 100% for both). Participants were told:

> "Assume you are managing a store and need to stock a range of products that are commonly purchased by students. You need to allocate shelf space on the basis of each product's popularity. That is, items that are likely to be chosen by the most people should get more space allocation than items that are chosen by only a few people. Decide what percentage of your shelf space you will allocate to each variety (_%)."

An exploratory factor analysis across the three popularity measures revealed a five factor solution (Variance explained = 81.09%, factor loadings > .75), such that the measure of share allocation, rating of popularity, and the estimate of market share for each variety loaded onto a single factor for each of the five positions. Therefore, the three measures were aggregated to form a popularity index for each position (αs = .68. .71, .66, .74, and .70 for positions 1-5). For all ratings measures we report the overall F statistic, as well as the quadratic F contrast.

Finally, after completing a third filler task, respondents were administered a surprise recall task as in Study 2. The free recall was coded in terms of whether or not the product in a given position was recalled, with a subset also coded for the order in which the different positions were recalled (*e.g.*, if the first item recalled was in the middle position, it was coded as a 3, but if it was in the first position it was coded as a 1). We also used the 5-point VVIQ response scale to

ask participants to rate how clearly they were able to visualize each of the different packages given only the name of the package (Marks, 1972).[4]

Results. Results, by measure, are presented in Table 1 and described below.

-- Insert Table 1 about here. –

RANK. A cross-tabulation of the first two choices by position (center/ all others) by condition (self/ other) revealed a significant interaction ($\chi^2 = 4.77$, $p < .05$). Whereas 40 out of 74 (54.54%, binomial $p < .01$ versus chance percentage of 40%) of respondents in the condition where they were making a choice for others chose the product placed in the middle position, only 36.36% (28/77, n.s. versus 40% chance likelihood) did so in the condition where they had to choose their personal favorite. Thus, asking respondents to consider their personal preferences successfully attenuated the center-stage effect while the effect was replicated in the condition where respondents considered others' preferences.

PURCHASE INTENTIONS AND LIKING INDEX. A 5-level repeated measures ANOVA using self/other as a between subjects factor revealed a significant effect of condition (F (1,149) = 6.08, $p < .05$, $\eta^2 = .04$), with no other significant effects. Given the main effect of condition, we examined whether evaluations of the product differed for each individual position. The manipulation of self/ other affected judgments for the central position (M = 8.97 vs. 7.68 for other versus self respectively, $t_{149} = 2.16$, $p < .05$), but not the remaining four positions (t_{149} = 1.07, 1.80, .21, and 1.12 for the two left and the two right positions respectively, $p > .05$ for all).

[4] The response categories are: 1= Perfectly clear and as vivid as normal vision; 2= Clear and reasonably vivid; 3= Moderately clear and vivid; 4= Vague and dim; 5= No image at all, you only "know" that you are thinking of the object.

Further, examining the pattern of judgments across the five positions separately in the two conditions, we see evidence of a center-stage effect in the "other" condition (Means = 8.11, 8.26, 8.97, 7.94, 8.49 for positions 1-5, quadratic contrast $F(1, 70) = 2.60$, $p < .10$, $\eta^2 = .04$), but not in the "self" condition (Means = 7.45, 7.21, 7.68, 7.82, 7.83 for position 1-5, all contrasts n.s.). This pattern is consistent with the idea of the center-stage effect being based on inferences of popularity that are more relevant when a person is purchasing on behalf of unknown others, rather than for themselves.

POPULARITY INDEX. A repeated measures ANOVA on the popularity index incorporating self/other as a between-subjects variable revealed a quadratic contrast for position (F (1,148) = 4.66, $p < .05$, $\eta^2 = .03$), reflecting an inverse-U shaped curve (Ms = 43.59, 44.54, 46.92, 46.06, and 42.18 from extreme left to extreme right respectively). Individual contrasts support that items placed in the middle are rated as significantly more popular than those in the extreme left ($t_{148} = 1.9$, $p < .05$) or extreme right position ($t_{148} = 1.91$, $p < .05$). The condition factor did not exert a main or interaction effect, suggesting that inferences of popularity were made in both conditions, even though they appeared to have translated into choices only in the condition that encouraged the use of the "consensus" heuristic – that is, choosing an option that others will like.

ATTENTION. There were no differences across positions in the identification of the product that was most noticeable (26, 32, 30, 28 and 23 people out of 139, non-response 12, identified the product in the 1st-5th position from left to right as the most noticeable, $\chi^2_4 = 1.76$, $p > .75$). A five-level repeated measures ANOVA on the direct rating of how attention-getting each of the packages was, and a similar analysis on the ratings of attractiveness, including self/other as a between-subjects condition, also revealed no significant effects. As in study 2, there was no difference in the likelihood of recalling a product across positions (n = 122, 116, 123, 127, and

121 out of 151).[5] To further examine whether there was any difference in the clarity with which items in different positions were recalled, we examined the reported vividness of visual images for the five positions including self/other as the between-subjects condition in a repeated measures ANOVA. This analysis also did not reveal any significant effects across position (Ms = 2.82, 3.05, 3.05, 3.08, and 3.05 for positions 1-5 from left to right respectively, with lower numbers indicating more vivid visual images). Therefore, using a range of measures, there is no support for the idea that items in the center attract greater attention.[6] This rules out that attention drives the preference for the center-option. Further evidence for this path is examined using a moderated mediation approach described below.

MODERATED MEDIATION ANALYSES. To examine the route to evaluations, we first examined whether choice rankings and evaluations (purchase intentions + liking index) follow the same pattern across positions for both the "others" and "self" condition separately. A 5 (positions) x 2 (choice of center product or not) repeated measures ANOVA revealed significant position x choice interactions in both conditions ($F(4, 288) = 13.43$, and $F(4, 300) = 12.65$ for others and self respectively, $p < .001$ for both, $\eta^2 = .16$ and .14). Note that the previous analysis

[5] A subset (n = 94, or 62.3%) of the recall responses was coded in terms of which position was recalled 1st, 2nd and so on, to examine top-of-mind recall as a surrogate for attention. The first item recalled was most likely to be the option in the first position (n = 33, 16, 12, 20, and 9 for positions 1-5, no item recalled = 4, $\chi^2_4 = 19.44$, $p < .001$), and the item in the central position was more likely to be the third item recalled (n = 7, 14, 27, 19, and 16 for positions 1-5, no recall = 11, $\chi^2_4 = 12.84$, $p < .05$). There were no differences across position in the 2nd (n = 18, 24, 18, 10, and 17 for positions 1-5, no item recalled = 7, $\chi^2_4 = 5.70$, $p = .22$), 4th (n = 17, 11, 11, 16, and 21 for positions 1-5, no recall = 18, $\chi^2_4 = 4.79$, $p = .31$) or the 5th item recalled (n = 8, 12, 11, 16, and 15 for positions 1-5, no recall = 32, $\chi^2_4 = 3.32$, $p = .50$). This suggests that the order in which items were recalled reflected the order in which they were presented.

[6] To examine whether the position that was more noticeable was the position more likely to be chosen, we cross-tabulated the top-ranked choice (center/ other options) with whether or not the center option was identified as being most noticeable (yes/ no) for the two between-subjects conditions separately. When respondents were asked to make a choice that others would like, there was no relationship between whether or not the middle option was chosen and which position had been identified as the most noticeable ($\chi^2 = .99$, $p = .32$). However, when respondents were asked to consider their own preferences, 6/15 (40%) respondents chose the middle option when they identified it as being most noticeable, as compared to 8/53 (15%) choosing it when they identified other options as being most noticeable ($\chi^2 = 4.44$, $p < .05$). The same analysis conducted using all five positions rather than combining positions into center/ not center revealed an identical pattern: No relationship between object chosen as most noticeable and top ranked choice in the "others" condition: $\chi^2_{16} = 16.35$, $p = .43$, and a significant relationship in the "self" condition: $\chi^2_{16} = 40.26$, $p < .001$. Therefore, when respondents are selecting for themselves, the attention they pay to the products is related to their choice, but when they are making choices for other people, then, it is not.

on evaluations did not include the choice of the center product as a design variable. The choice of the center product (yes/ no) was used as a design variable in this analysis to first demonstrate that evaluations of the middle options predict choice, prior to examining why this is so. The interaction reflected a higher evaluation for the middle position when it was the one chosen (Ms = 11.20 vs. 6.35 for others, and 10.89 vs. 5.84 for self, $t = 7.49$ and 7.60, $p < .001$ for both).[7] Thus, evaluations of the middle option seem to predict choice. A series of ANCOVAs, described next, examine the route to these higher evaluations. The ANCOVAs use both popularity indices and attention ratings together as covariates.[8] These analyses test whether the route to favorable evaluations is more strongly driven by popularity in the "others" condition than in the "self" condition, controlling for attention. The ANCOVAs incorporating both popularity indices as well as ratings of attention as covariates showed:

i) In the "others" condition the choice x position effect reduced in effect size ($F(4, 248) = 5.08$, $p < .001$, $\eta^2 = .08$ [vs. $\eta^2 = .16$ without the covariates]), with main effects for all five popularity indices (F(1, 62) = 5.78, 4.46, 7.97, 6.26 and 6.15, p < .05 for all, η^2s = ..08, .07, .11, .09 and .09 for popularity indices 1-5 respectively) and a continued position x popularity index

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[7] There was no difference for the 4th (Ms = 7.65 vs. 8.29 for others, and 7.89 vs. 7.78 for self, $t = .77$ and .13, p > .44 for both) or 5th position (Ms = 8.35 vs. 8.65, $t = .37$ for others, and 7.19 vs. 8.20, $t = 1.16$ for self, $p > .25$ for both). Evaluations were lower for the first position in the "other" condition when the middle option was chosen (Ms = 7.10 vs. 9.29, $t = 2.74$, $p < .01$), and no different in the "self" condition (Ms = 6.46 vs. 8.02, $t = 1.72$, $p = .09$), with the reverse pattern true for the evaluation of the option in the second position (Ms = 7.90 vs. 8.68, $t = .95$, $p > .34$ for others, and 6.04 vs. 7.88 for self, t = 2.17, p < .05).

[8] Additional ANCOVAs including only popularity indices as a covariate showed that in the "others" condition, the choice x position reduced in effect size ($F(4, 268) = 5.87$, $p < .001$, $\eta^2 = .08$ [vs. $\eta^2 = .16$ without the covariate]), with main effects for all five popularity indices (F(1, 67) = 10.19, 8.33, 10.90, 11.93, and 10.48, p < .01 for all, η^2s = .13, .11, .14, .15, and .13 for 1-5 respectively) and a position x popularity index interaction ($F(4, 268) = 3.77$, $p < .01$, $\eta^2 = .05$). In the "self" condition the choice x position effect size was also reduced ($F(4, 276) = 9.88$, $p < .001$, $\eta^2 = .12$ [vs. $\eta^2 = .14$ without the covariate]), and there were significant position factor interactions with the popularity indices for positions 2 and 5 ($F(4, 276) = 3.77$ and 3.45 respectively, $p < .01$ for both, η^2s = .05 for both). The same analyses incorporating only attention ratings as a covariate showed that in both the "others" condition ($F(4, 268) = 11.03$, $p < .001$, $\eta^2 = .14$) and the "self" condition, the choice x position effect remained significant ($F(4, 276) = 11.36$, $p < .001$, $\eta^2 = .14$), with no significant main or interaction effects involving the covariates of attention-ratings.

interaction ($F(4, 248) = 3.40$, $p < .01$, $\eta^2 = .05$). Note that the effects associated with attention are not significant, suggesting that popularity inferences, rather than attention, mediate the route to evaluations.

ii) In the "self" condition, the choice x position effect remained significant ($F(4, 252) = 9.35$, $p < .001$, $\eta^2 = .13$ [vs. $\eta^2 = .14$ without the covariate]). There were no main effects of any covariates, but the position factor was involved in significant interactions with the popularity indices for positions 2 and 5, as well as attention paid to the middle item (F (4, 252) = 3.42, 3.32, and 2.45 respectively, $p < .05$ for all, η^2s = .05, .05 and .04). Thus, when people consider their own preferences, the mediating path of popularity inferences is not only weaker but attention seems to also affect preferences for the middle item.

Discussion. To summarize, Study 3 replicated the results of studies 1 and 2 using a richer set of dependent variables to demonstrate the preference for the central position. It also extended these results to show that the center-stage effect is greater when people are making purchases for others with unknown preferences than when they are shopping for their own personal favorite. Study results provide convergent evidence ruling out attention as a mediating mechanism. Beliefs regarding the popularity of the central item (rather than attention) appear to mediate the route to preferences. Specifically, Study 3's moderated mediation analyses show that the path to improved evaluations for the middle position when people are buying for others is via popularity judgments rather than attention paid to the different positions; whereas, when they are buying for themselves, popularity inferences are somewhat weaker antecedents of evaluations, which are also based on attention paid to the middle position.

Overall, Studies 1-3 demonstrated that consumers use the spatial position of a product as a cue to infer its popularity and base their choices on this inference. This is reflected by the fact

that their intentions are based on popularity ratings. To provide further evidence for this account, the next two studies examine the implications of the effect being due to a belief-based inference. A belief-based mechanism implies that position effects should be contingent on the use of alternate sources of information to make a judgment. Consistent with this reasoning, Study 3 showed that even when a central position is used to infer popularity it translated into purchase intentions only when the relative importance of satisfying others is high. Studies 4 and 5 now investigate other conditions that attenuate the use of belief-based processing, to identify boundary conditions of the center-stage effect.

Study 4: Discounting the Diagnosticity of Position as a Cue

The goal of this study was to examine whether the center-stage effect can be attenuated when position is no longer informative (H5). As argued earlier, the strength of consumer inferences based on physical position will depend on both the perceived diagnosticity of shelf position as information as well as the accessibility of alternative individuating information. Specifically, a shelf space position should be perceived to be more diagnostic if it reflects a chosen retailer strategy. On the other hand, if a shelf space array was arranged at random, there is less reason to believe that shelf space positions are informative of brand popularity. If belief processing regarding shelf space arrays drives the center stage effect, then manipulating the information value of a shelf space array should moderate the center-stage effect: it should become stronger when arrays are believed to reflect retailer policy as compared to a random order. On the other hand, if the center-stage effect is due to attention paid to the items in the center, then manipulating the information value of the shelf-space arrangement should not affect choice behavior. Study 4 investigates this issue to garner further support for the hypothesis that

center-stage effects are due to belief processing.

Method. The scenario used was identical to that in Studies 2 and 3 with the following differences: ***i)*** In order to make the choice scenario better reflect the length of arrays that consumers may encounter, nine (rather than five) varieties of pretzels were shown using nine different presentation orders; ***ii)*** A between-subjects manipulation explained that either "the presentation order had been selected at random" or that it "represented real product placement by a local retailer." The dependent variable was the choice of the variety in the middle position.

Results. The choice of the middle option was contingent on whether participants were told that the ordering of options was random versus real ($\chi^2_8 = 15.03$, $p < .05$). While 4.5% chose the middle option in the "random" condition, as many as 31.8% did so in the "retailer" condition ($p < .05$ versus chance odds of 1/9 or 11.1%).[9] Thus, explicitly discrediting the diagnosticity of position as a cue to make judgments reduces the reliance on position as a source of information, supporting belief processing as the underlying reason for center-stage effects.

Study 5: Manipulating the Accessibility of Individuating Information

Contextual information is less likely to be used when individuating information is accessible, and, therefore, a primary input into a choice decision (Fiske & Neuberg, 1990). Study 5 tests this hypothesis by contextually manipulating the accessibility of a prior evaluation by changing the order in which choices and product judgments are elicited. When judgments are made prior to choice then the accessibility of consumer product evaluations is greater during the choice task, reducing the effect of information inferred from the position of products in the

[9] The percentage choosing options one through nine in the random condition was 4.5%, 9.1%, 13.6%, 0%, 4.5%, 27.3%, 9.1%, 13.6%, 18.2%, while the same percentages in the "real" condition were 0%, 9.1%, 18.2%, 4.5%, 31.8%, 4.5%, 0%, 9.1%, 22.7%.

choice set (Feldman & Lynch, 1988). As a consequence, choosing first should produce a higher reliance on position and spatial cues. This prediction (H6) is tested below.

Method. We used the same scenario as in Study 1: offering participants a packet of chewing gum as a token of appreciation for their taking part in an unrelated study. There were three packets of Extra Chewing gum used: Spearmint, Peppermint, and Winterfrost, presented using three different orders (SPW, WSP and PWS). However, unlike Study 1, participants were given a questionnaire where the picture of the three chewing gum packets was reproduced. All participants indicated which chewing gum they would choose. On a separate page they rated the attractiveness of the package of each of the chewing gums (1 = Do not like at all/ 7 = Like a whole lot), the quality of each of the flavors (1 = Poor quality/ 7 = Good quality), and how popular each of the flavors were, that is, the extent to which the average consumer will like each of the flavors (1 = Not at all popular/ 7 = Very popular). An exploratory factor analysis on the nine ratings revealed a three-factor solution, with each factor including the three ratings for the product (variance explained = 64.26%, factor loadings > .74 for all). Therefore, the three ratings were combined into an evaluation index separately for each position (α = .73, .74 and .67, respectively). The between-subjects manipulation was the order in which choice was elicited: In one condition choice preceded ratings, whereas in the other condition it followed it.

Finally, participants rated their level of agreement with three position-related belief statements referring to product choice: “Most popular products are always in the middle,” “I always choose the first item in a display,” and “I do not pay much attention to the last choice given” (1 = Disagree/ 5 = Agree).

Results.

CHOICE. A cross-tabulation of the number of times the chewing gum in the center was

chosen as a function of whether attitudes were formed before or after the choice showed a significant interaction ($\chi^2 = 6.55$, $p < .01$). When choice preceded attitudes, the product in the center was more likely to be chosen (45.2%), replicating Study 1 results. However, the center-stage effect was attenuated when consumers had rated the varieties of the chewing gums prior to making their choices: 26.7% chose the center option; no different from chance likelihood.

EVALUATION INDEX. A repeated measures ANOVA on the three evaluation indices using order of elicitation (choice first/ evaluations first) and choice (1st, middle or last option) as between-subjects factors revealed a significant order-of-elicitation by choice interaction (F (4, 334) = 33.89, $p < .001$, $\eta^2 = .29$), implying that choices and evaluations were aligned.

POSITION RELATED JUDGEMENTS. Participants had the highest level of agreement with the belief "Most popular products are always in the middle" (M = 2.73, on a 5-point disagree-agree scale), followed by agreement with the statement "I do not pay much attention to the last choice given" (M = 2.19, paired $t = 4.60$, $p < .001$), which in turn was higher than the level of agreement with the statement "I always choose the first item in a display" (M = 1.91, paired $t = 3.29$, $p < .001$). Order of choice/ ratings did not affect judgments ($F < 1$ for all).

POSITION RELATED JUDGMENTS AS DETERMINANTS OF CHOICE. As beliefs were not affected by order-of-elicitation, we can examine the strength of the relationship between choices, evaluations and beliefs in the two order conditions. We conducted a logistic regression on the dependent variable of whether or not the middle option was chosen, incorporating the three evaluation indices and the three position-related beliefs as explanatory variables in the analysis, separately for the two order conditions. In the condition where choice was elicited first, the effect of the three evaluation indices was significant (Wald = 5.22, 14.23, and 9.57, $p < .05$ for all), as was the effect of the belief that popular choices are in the middle of a display (Wald = 4.82, $p <$

.05). On the other hand, when choices were elicited after evaluations, then only the effect of the first two evaluation indices was significant (Wald = 6.57 and 13.19, $p < .05$ for both), whereas the effect of the belief that popular choices are in the middle was not significant at $p > .05$.

Discussion. To summarize, the results of this study provide further evidence that the center-stage effect is driven by a belief substitution of internally-formed individuating information about the brand for a contextually constructed one based on the position of the brand in an array. In particular, consumers seem to rely on position-based beliefs to a greater extent when they make their choices prior to considering (via making evaluations) their preferences for the product. These findings both clarify Study 3's results and support H6.

General Discussion

This paper investigated whether there is a central position advantage, or "center-stage" effect, in product choice. We proposed that when consumers' believe that the order-of-presentation of items reflects retailers' strategy they expect that retailers place the most popular item in the middle of an array. When their purchase goals are consistent with purchasing the most popular item, then this inference translates into an item in the center being more likely to be chosen, especially when prior attitudes about the product are less accessible.

Results from five experiments support this model. Results show that ***i)*** there is a center-stage effect: a product in a central position is preferred over one at either end of the array; ***ii)*** the center advantage is due to beliefs that the product in the center is the most popular one rather than due to greater attention paid to the product, ***iii)*** the center advantage is attenuated when position does not convey information, the information is less relevant for choices, and when people's intrinsic product preferences are made accessible by the context.

Theoretical Implications

The belief-based model parsimoniously explains earlier findings by Christenfeld (1995) and Shaw (2000), which showed consumers' preference for the middle option among an array of identical items. Our results replicate Shaw's earlier findings that attention does not drive the effect. Instead, we find that position is used as a cue to infer the popularity of a brand, which follows through to product preferences. This belief-based model also allows for an explanation of different order effects documented in seemingly unrelated streams of research dealing with placement, whether the placement is of people, response alternatives, choices or products. In particular, these results speak to the literature in the following domains:

Packaging and placement beliefs. In a package design task, consumers may be more used to seeing brand name information on the right and logos on the left, and, therefore, when the design is consistent with their prior expectations, the package receives more attention and is better recalled (Janiszewski, 1990). In a store display, consumers expect that products located in an end-of-aisle display are also on discount leading to a sales spike for these products regardless of whether they are actually discounted or not (Inman et al., 1990).

People placement beliefs. The spatial belief heuristic is consistent with McArthur & Post's (1977) speculation that prominent positions are evaluated more favorably due to learned cultural norms (Raghubir & Valenzuela, 2006, Taylor & Fiske, 1975). However, the route through which objects in one position are evaluated more favorably than objects in another position varies across people and product contexts. Specifically, whereas Taylor and Fiske's results showed that people in central positions were perceived to be more causal to the outcome, and Raghubir and Valenzuela's results showed that those in central positions were more likely to win a game, both studies invoked an attention mechanism to explain position effects. Whereas

Taylor and Fiske suggested (though did not demonstrate) that higher attention leads to the position effect, Raghubir and Valenzuela showed that prior beliefs act as a substitute for the amount of attention that is directed to a specific position, leading to negative individuating information of those in middle positions being less attended to, and, through this counter-intuitive route, conferring a position advantage.

This paper adds to this literature by showing that position effects can exist for different reasons in different contexts. Specifically, the mere belief that popular products are placed in the middle can lead to their being chosen, even if they are not differentially attended to. Prior literature has shown position effects due to central position being attended to more (Taylor & Fiske, 1975) or less (Raghubir & Valenzuela, 2006). Thus, the primary contribution over the person perception literature is to show that attention is not a necessary or a sufficient precondition for position effects. Rather, the meta-cognitive beliefs regarding position that consumers hold emerge as both necessary and sufficient conditions for these effects to occur. As such, it suggests that position effects require some base level of higher order processing (e.g., invoking a schema and then applying it), rather than lower order perception (that guides attention to stimuli). The extent to which these effects have an automatic versus a controlled nature is suggested as an area for future research.

Survey method beliefs. A potential reason for the order effects found in impression formation (Asch, 1946) and survey methods (Schuman & Presser, 1996) is that individuals and respondents may simply follow conversation norms (Grice, 1975), assuming that the reason an item was provided first (or last) was because it was most diagnostic of a personality (in an impression formation task), or because it is most likely to be chosen by others (in a survey methods context). That is, learned norms regarding placement order dictate people's responses,

and these norms are situation and context specific. This is consistent with our proposed spatial belief theory where the order of placement of an item in an array is in itself informative, with the content of the information represented by the position contingent on specific learned norms.

Managerial Implications

The internet revolution has allowed for online shopping to be a well-accepted way of purchasing products. Previous research has examined the influence of unique online store characteristics, such as interactive decision aids and customization procedures (Senecal & Nantel, 2004). Less attention has been paid to the equally intriguing question of whether the same traditional marketing principles affect online purchase decisions as well. In a busy retail environment with millions of brand choices and limited information processing ability, the effect of position cues is particularly relevant.

Our research can provide some insights about the effects of a product's physical placement on a Web display. Online purchase decisions seem to be an appropriate context in which to apply our findings since space allocation is rarely an issue and limited eye movements are usually enough to scan the entire display (Breugelmans, Campo & Gijsbrechts, 2007). Our results support that shelf organization does have an effect on consumers' purchase decisions. Since we find that a position advantage is due to improved attitudes towards the brand, that these attitudes are not mediated by attention, but rather reflect an overall belief, this implies that managers should be willing to pay a premium to have their brands occupying the premium position in an online product layout. Web retailers should be able to use this information to bargain with manufacturers for shelf benefits or promote brands that are not market leaders. However, our findings also show that the "center-stage" effect can be attenuated by making pre-existing attitudes or other diagnostic information accessible (*e.g.*, using a "Market Leader" label

on packaging).

Areas for Future Research

This paper examined the existence, antecedents and consequences of consumers' position-based beliefs about product layouts. Position-based beliefs belong to the larger genre of marketplace meta-cognition that refers to individuals' thinking about the rules that govern marketplace interactions (Wright, 2002). We examined a specific marketplace meta-cognition: beliefs about the center of a horizontal array. This is one of many retailer decisions. Others include center of vertical orientation, left and right extreme, top and bottom extremes, and off-center positions. It is an open question whether consumers have well developed "shelf-space schemas" for each of these positions, what these are, and what their implications are for choice.

It is also an open question as to whether these beliefs are consciously applied or done so non-consciously. For example, consumers may differently apply general rules in terms of the value of different positions in a retail context depending on the extent of distraction and stimulation in the shopping environment (*e.g.*, aural stimuli, flashing lights, or other shoppers). A relevant research question is whether such competing demands on a consumers' time would ameliorate or exacerbate the center-stage effect. If the effect increases under load, this suggests that the use of the position belief does not consume cognitive resources (*i.e.*, may be automatic), but if it were to decrease, it would imply that the center-stage belief requires conscious cognitive resources to be used. The fact that a position advantage for attention did not translate to sales (Chandon et al., 2007) could be due to the fact that the use of eye-tracking mechanisms could have led to greater attention being paid to stimuli which attenuated the use of belief-based inferences, leading to null effects of position on sales, and suggesting that the effect requires cognitive resources. Future research could also examine the moderating role of individual

difference to assess the robustness of the effects to differences in the depth of processing as measured by people's need for cognition as done in the Inman et al. (1990) study, and the importance of satisfying others as compared to oneself as measured by the cultural difference individualism-collectivism scale (Markus & Kitayama, 1991).

Finally, not all choices among similar options have been characterized by centrality. For example, Christenfeld (1995) found a preference for extremity when people chose a route among several equivalent ones. Besides, studies on order effects in sequentially presented information have typically indicated that the first or last items in a sequence are more influential than the middle ones (Nisbett & Wilson, 1977). It is possible that an extremity advantage exists for choices containing sequentially presented options, whereas a centrality advantage exists for simultaneously presented ones due to a different conversation norm (Grice, 1975) or marketplace meta-cognition (Wright, 2002). When respondents need to choose from a large range of options, then it is plausible that they expect that the most popular options will be the first or the last ones to be presented. This belief has been proposed as an explanation for recency and frequency effects in survey methods (Asch, 1946; Schuman & Presser, 1996). It is possible that the sequential presentation of nominal alternatives in the Nisbett and Wilson (1977) study triggered this belief as applied to marketplace meta-cognitions in a choice context, leading to the recency effect where consumers chose the last option presented in a series of stockings. Research should further test whether the sequential or simultaneous presentation mode moderates whether choices reflect a center-stage effect versus recency or primacy effects.

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Table 1: Results by Measure -- Study 3

Dependent Variable[1]	Extreme Left	Middle-Left	Middle Position	Middle-Right	Extreme Right	Self/Other by Position Interaction
Rank						
Other	17.6	19.6	27.0	14.9	20.9	$\chi^2 = 4.77^2$
Self	19.5	20.1	18.2	21.4	19.5	
Purchase Intentions						
Other	4.00	4.04	4.51	4.01	4.22	$F(1,149) = 4.77^2$
Self	3.62	3.69	3.91	3.87	3.91	
Liking						
Other	4.11	4.22	4.46	3.93	4.27	$F(1,149) = 5.52^2$
Self	3.83	3.52	3.77	3.95	3.92	
Popularity						
Other	4.46	4.23	4.74	4.58	4.46	F(1,149) = .22
Self	4.33	4.46	4.55	4.51	4.33	Position Factor - Quadratic F(1, 149) = 4.72, p<.05
Allocation						
Other	19.82	19.94	21.69	20.57	18.32	F(1,149) = .38
Self	19.08	20.02	21.45	20.67	19.96	Position Factor - Quadratic F(1, 149) = 2.70, p<.10
Market Share						
Other	19.97	20.19	21.57	20.43	17.91	F(1,149) = .17
Self	19.69	20.25	19.84	21.18	19.36	Position Factor - Quadratic F(1, 149) = 3.01, p<.10
Attention						
Other	4.09	3.93	4.03	3.99	4.01	F(1,149) = .63
Self	3.58	3.91	3.91	3.95	4.07	
Attractiveness						
Other	4.22	4.03	4.30	4.15	4.26	F(1,149) = .55
Self	3.84	4.13	3.97	4.23	4.25	
Vividness						
Other	2.85	3.17	3.01	3.07	3.06	F(1,149) = .09
Self	2.80	2.93	3.09	3.09	3.04	

1: Rank represents the frequency of choice by position in the first two choices.
2: $p < .05$