Arranged to Distraction: How Categorizing Products With Complements Versus Substitutes Alters the Experience of Product Choice

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Although much is known about how substitute products impact consumers’ decision processes, little is known about how product displays involving complementary items affect decisions. If consumers shop for a single target product, complementary items are objectively irrelevant. Yet, our research finds that organizing products with complements distracts consumers, increasing decision time and perceived effort. This distraction occurs across different physical arrangements and is not due to detailed examination of complementary products. At the same time, complementary categorizations are perceived as attractive and inviting, suggesting that their negative effects may be offset by creating an engaging, affectively positive experience.

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**SPECIAL SESSION SUMMARY**

Never Alone: Product Choice in A Complementary World

Session Chair: Kristin Diehl, University of Southern California

Much research in consumer behavior has focused on selecting one product from a set of similar substitutes, trying to understand decision processes within a single products category. However, in a retail context even when planning to buy only from a single product category, consumers are confronted with other product categories that may be explicitly bundled, functionally related, or even merely adjacent to the target category. The presence of other products may have important implications on a variety of decision processes and behaviors that are not well understood yet.

In particular the three papers in this session investigate how the presence of other products affects how much and in what order information is acquired, to what degree products are valued differently in such settings and which products are purchased. Further, the papers span a diverse set of contexts ranging from consumers dealing with functionally related products to facing products that are merely physically adjacent. Purchase decisions under consideration take the form of buying only the target item, having the option to buy multiple items of one’s choice, or having to decide whether to buy a preset bundle of items. As such these projects investigate related yet complementary research questions that are highly relevant to today’s market environments.

The work by van Herpen, Diehl and Poynor examines how consumers shopping for a single target product are affected by the presence of complementary or even irrelevant items. Their research finds that organizing products with such products distracts consumers, increasing decision time and perceived effort. This distraction occurs across different physical arrangements and is not due to detailed examination of complementary products. At the same time, a target item surrounded by complements is perceived as attractive and inviting, suggesting that the negative effects on information processing may be offset by creating an engaging, affectively positive experience.

Relatedly Goldsmith and Dhar investigate how consumer’s construal level influences the number of items a consumer purchases when presented with multiple adjacent-category offerings. Since abstract construal levels activate higher order goals, a greater number of adjacent products is suited to reach that broader goal leading consumers to purchase more adjacent products. Under a more concrete mindset, however, fewer items are suitable to reach that lower level goal and thus a smaller number of adjacent items will be purchased. Further the authors show that being in an abstract mindset only increases the number of goal-relevant purchases but has no effect on goal-irrelevant purchases.

Finally, Pracejus, Popkowski Leszczyc, and Shen examine consumers’ purchase decisions for product bundles, specifically for bundled items that differ in the extent to which consumers are certain about their value. They find that participants consider the more certain item first, regardless of its importance or price. Further the retail price of the certain item, taken as a proxy for value, impacts how the less certain product is valued. However, the opposite is not the case.

Taken together, this session provides new insights for a range of research areas such as context effects, assortment size and structure, or the effects of retail environments.

**LONG ABSTRACT**

Arranged to Distraction: How Categorizing Products with Complements versus Substitutes Alters the Experience of Product Choice

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Websites such as www.furniture.com organize their assortment either by product type (i.e., dining tables) or by collection (i.e., full dining rooms with tables, chairs, sideboards, etc.). Likewise, clothing stores either present products in sets of substitutes or as part of entire outfits. These examples represent fundamentally different ways in which marketers organize products, in either taxonomic categories or consumption constellations. Although we know that consumers are influenced by the order and format in which alternatives are presented, prior research has mainly focused on sets of substitutes (e.g., Bettman, Luce, and Payne 1998) or on purchases of entire product bundles (Harris and Blair 2006). As a result, we know much about the influence of substitute products in an assortment, but relatively little about the influence of categorizing complementary products alongside the target item. Our research compares consumption constellations (Englis and Solomon 1996; Lai 1994) to more typical presentations of separating products by product types and identifies both drawbacks and benefits for consumers.

Complementary products can distract consumers who plan to buy a single target product. They may complicate search, as the cluttered environment obscures rapid identification of specific target products (Bravo and Farid 2006). As such, complements may raise the effort involved in shopping simply because they compete for attention (Janiszewski 1998) and thereby increase the difficulty in remembering and comparing target products. For complements to act as distractors it is not necessary that consumers actually effortfully search complementary products or consider them at all relevant to their purchase goals (Perruchet, Rey and Hivert 2006). We predict that the mere presence of complementary items in a display will mentally distract consumers from their target product, therefore increasing decision time and difficulty but not necessarily time spent actively processing complements.

However, presenting targets within consumption constellations may also generate positive outcomes. Compared to substitute-based organizations, consumption constellations may encourage greater visualization of product use (Dahl and Hoefffler 2004). Furthermore, consumption constellations may highlight new uses for the target product and its complements which a categorization with substitutes would not suggest. As a result, we predict that consumers’ satisfaction with the assortment as a whole should be higher when items are externally categorized with complements rather than only with substitutes.

In Experiment 1, 82 participants were randomly assigned to either a substitute or a complement organization, in a 2-group design. Stimuli were clothing brochures, with products from 8 taxonomic categories. Participants were asked to choose a shirt. In line with our predictions, participants in the complement condition experienced higher decision effort, more difficulty to grasp the selection, and more confusion than participants in the
substitute condition. Still, consistent with our predictions, they thought that the assortment was more attractive.

Experiment 2 examined whether increased effort in complement organizations could be attributed to greater physical distance between target products. Does the act of flipping pages to view different consumption constellations explain this increase in effort? 92 participants were asked to select a pair of pants from an online assortment containing 8 pairs of pants. Participants were randomly assigned to one of three conditions: substitutes together (the 8 pairs of pants all displayed on 1 screen), substitutes separated (one pair of pants on each of 8 screens), or complements (8 pairs of pants displayed on 8 screens surrounded by complementary products). The computer captured time measures as well as subjective responses.

Our results suggest that the physical separation of items in complementary sets cannot explain the decision difficulty found in Experiment 1: Decision times were significantly longer in the 8-page complement than the 8-page substitute condition, where page distance was objectively equal and only the organization changed. Interestingly, differences in decision time were not driven by consumers actively examining complementary products, but rather by them spending more time looking at consumption constellations overall. As in Experiment 1, individuals shopping in complementary sets consistently took longer deciding and reported greater decision difficulty. Yet, such sets also generated greater assortment satisfaction and were seen as more inviting.

A third study more closely investigates the effect of consumption constellations versus substitute presentations on information acquisition across. Using digital cameras as the target product described along product attribute and price info, we show that respondents take longer making a decision, but they acquire fewer individual pieces of information about these cameras. Yet, replicating findings from our previous study, they enjoy the experience more.

As a whole, our research shows that even when consumers purchase products from a single, specified category, whether these products are immediately surrounded by complementary products or separated as opposed to supplementary products substantially changes the decision process. Marketers may want to create such complementary environments because they seem inviting and engaging to consumers. However, they should also be aware that although consumers spend more time deciding, they do not engage in more detailed examinations of either the target products or any complements.

The Role of Abstract and Concrete Mindsets on the Purchase of Adjacent Products

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LONG ABSTRACT

Most choice research has looked at how consumers choose in isolation (e.g., within one category at a time). In contrast, real world consumer choice often involves making a series of choices within adjacent categories that are considered together (e.g., a consumer in the oral care aisle may consider buying one or more items among toothpaste, mouthwash, floss, etc.). Although many brands are widening their within-category product lines to take advantage of this phenomena (e.g., Varadarajan 2007), such extensions into these adjacent product spaces are more likely to generate incremental sales if consumers see such products as complementary rather than as substitutes for one another. Despite its ecological relevance, relatively little research has been devoted to exploring how consumer decision processes may change purchase considerations of other products in adjacent categories.

The current project makes an initial attempt to explore how a consumer’s construal level will influence the number of items a consumer purchases when presented with multiple adjacent-category offerings. Construal level theory (CLT) argues that consumers may form different representations of the same stimuli (e.g., products), based on psychological distance. CLT posits that when psychological distance is greater, a consumer will have a more abstract construal, characterized by higher-level representations of the stimulus, focused on central features (Trope and Liberman 2003). To that end, we argue that an abstract mindset will cause consumers to perceive adjacent products in terms of their relationship to higher order goals (e.g., oral care). Conversely, CLT states that when psychological distance is reduced, consumers form a more concrete construal of a stimulus, characterized by lower-level representations, such as the sub-goals each product can attain (e.g., breath freshening). Based on the differential activation of the higher order goal, we posit that an abstract mindset will increase the overall number of adjacent products purchased, as these products will be viewed as additional means to attain their broader goal. Under a concrete mindset, less will be purchased as fewer items will be necessary for lower level goal attainment. Further, we draw on the relationship between construal level theory and regulatory focus to identify the process underlying this effect.

Our predictions are tested in four studies. In the first study, participants’ completed a construal level manipulation (Freitas et al. 2004) then moved onto a task where they were told to imagine that the airline had lost their luggage. They were then given the opportunity to purchase replacement products from three categories (hair care, oral care and sun protection). Within each category, participants first made an initial choice (e.g., a choice between toothpastes in oral care). Next, they were presented with 5 additional items from adjacent categories (e.g., mouthwash, floss, etc.) and told to purchase any additional items which they would like from that set of options. In line with our prediction, within each category participants put in an abstract construal level purchased more additional items than participants in a concrete construal level (oral care: M_{abstract} = 2.1; M_{concrete} = 2.9; p < 0.05; pattern replicated and was significant for all categories).

Our second study was designed to extend the findings from Study 1. As in Study 1 respondents chose a central item from the category (e.g., toothpaste in oral care) before considering additional purchases, one account for the results could be that respondents in the abstract construal condition might have had greater commitment to the goal of oral care after making an initial successful choice (Fishbach, Zhang and Dhar 2005). Thus, first choosing a toothpaste made respondents subsequently more likely to pursue the goal of good oral care through related means (e.g., additional purchases). The next study controlled for this account by offering all adjacent category items simultaneously, as a single choice. Specifically, after completing a construal level manipulation, participants were shown one category of products (e.g., oral care) containing twenty different items and asked to indicate which items from that category they would like to purchase. In support of our hypothesis, respondents assigned to the abstract construal condition made significantly more adjacent category purchases (oral care: M_{abstract} = 4.7; M_{concrete} = 6.3; p < 0.05; results were replicated with an additional product category).

These two studies demonstrate that that one’s construal level can influence adjacent category purchases. Studies 3 and 4 test a
boundary condition and the mechanism underlying this effect. While Studies 1 and 2 demonstrate that having an abstract construal of the purchase decision increases the number of adjacent category purchases, as products unrelated to the category were not included in the choice set, one could argue that perhaps an abstract construal simply increases purchase interest generally, as opposed to only for products with shared goal-relevance. Study 3 is rules out this account by presenting respondents with an array of both goal-relevant and goal-irrelevant products. We demonstrate that being in an abstract construal increases the number of goal-relevant purchases only (replicating our initial finding) and has no effect on goal-irrelevant purchases. As prior work has demonstrated that a promotion mindset can lead to more abstract representations, in Study 4 we directly manipulate regulatory focus and demonstrate that manipulations of regulatory focus can have an analogous effect with a promotion focus leading to significantly greater adjacent product purchases.

At present, this research achieves several goals: we demonstrate that one’s construal level of a purchase decision affects the number of purchases which one makes when presented with multiple adjacent category offerings. As consumers make choices when they consider adjacent categories simultaneously has not yet been examined, we believe this research makes an important contribution to the extant research on consumer choice. Finally we believe that as the factors which influence product perceptions are of critical interest to firms these findings have clear practical implications.

The importance of value certainty in assessing multiple items simultaneously

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LONG ABSTRACT

As the other papers in this session make clear, when consumers make simultaneous decisions in multiple related domains or categories, the process has special characteristics not encountered in single product decision making. While co-promotion and even adjacent retail location can significantly impact decision outcomes, the situation becomes particularly interesting when the seller forces consumers to consider whether to buy a set of items as a bundle.

We know from previous research (Popkowski Leszczyc, Pracejus and Shen 2008) that the value of uncertain items can be strongly influenced by bundling them with certain items. Specifically, we showed that bundling an uncertain item with a second item about which consumers have high certainty about value can lead to two surprising effects. When the certain item is of low value, people tend to value the bundle less than the uncertain item alone. They would pay less for more. We call this effect Hyper-subadditivity. When the certain item has a high value, however, we get the opposite: superadditivity without complementarity, where consumers value the bundle more than the additive values of the individual items, even though none of the items are compliments.

We believe these results are due to consumer inference making about the uncertain product. Specifically, we showed that the effect is likely due to direct inference about value of the uncertain product, rather than numeric priming or inferences about the quality of the uncertain product. To further explore the specific mechanisms underlying hyper-subadditivity in bundle evaluation, we now attempt a more rigorous quantitative model of the phenomenon.

One hundred and thirty-six undergraduate business students participated in an auction where they bid their own money. We demonstrated hyper-subadditivity when the low value (high certainty) blank CDs are bundled with a medium value (low certainty) knife set. We also see superadditivity in the bundle consisting of the knife set and the (high certainty high value) DVD player. Additional information of relevance to this session includes the order in which participants considered the items and the role played by perceived retail price of each item.

Participants were asked which of the items in the bundle they considered first, plus their degree of certainty concerning the value. For the bundles consisting of the low-certainty knife set and one of the high-certainty goods (CDs or DVD player), 82.02% of the participants considered the item they were most certain about first. For the third bundle, consisting of the CDs and DVD player, with little difference in the degree of certainty in the values, most participants focused on the more expensive DVD player.

To further test our inference of value model, we consider the negative (positive) effect of the retail price of CDs (DVD player) on the retail price of the knife set, while controlling for the difference in the level of uncertainty in the estimates of the retail prices. For this purpose we estimate the following two regression models:

\[
RP_{knife} = \alpha_i + \beta_1 RP_{cd} + \beta_2 CP_{cd-knife} + \epsilon_i \quad (1)
\]

\[
RP_{knife} = \alpha_i + \beta_1 RP_{dvd} + \beta_2 CP_{dvd-knife} + \epsilon_i \quad (2)
\]

Where \( RP_{knife} \) = the estimated retail price for the knife set, \( RP_{cd} \) = the estimated retail price for the CDs, \( RP_{dvd} \) = the estimated retail price for the DVDs, \( CP_{cd-knife} \) = difference in the level of certainty in the individuals’ estimate of the retail price of CD versus the knife set, \( CP_{dvd-knife} \) = difference in the level of certainty in the individuals’ estimate of the retail price of DVD versus the knife set, and \( \alpha_i, \beta_1, \beta_2 \) are the parameters to be estimated, for \( i = 1, \ldots, n \) bidders (\( \alpha_i \) is an individual specific intercept, included to capture unobserved differences between individuals).

Consistent with our expectations, the estimate of the retail price for CDs has a negative effect on the retail price estimate for the knife set (\( \beta_1 = 1.14, p < .05 \)), while the estimate of the retail price for the DVD player has a positive effect (\( \beta_1 = .22, p < .01 \)). Furthermore, the negative effect for CDs is more substantial when the difference in the level of certainty in the individuals’ estimate of the retail price of the CDs minus the retail price of the knife set is greater (\( \beta_2 = -6.47, p < .01 \)).

The results of these regression analyses, while consistent with our hypotheses, do not provide a definitive answer of the direction of inference. Further analyses provide more proof that the CDs retail price estimates influence those of the knives. When individuals are more certain about their estimate of the retail price of the knife set, their estimate of the retail price is \$27.44 for CDs and \$95.55 for the knife set. However, when individuals are more certain about the retail price of DVDs, their estimate of the retail price is \$28.04 for CDs and \$66.82 for the knife set. While the CD estimate remains the same, the estimates for the knife set are lower (\( t = 1.75, df = 38, p < .10 \)) when individuals are more certain about the retail price of CDs.
Discussion:

So, we can see that new evidence supports our previous conceptual model of how item uncertainty drives hyper-subadditivity in multi-item bundles. Consistent with our expectations, participants reported that they considered the more certain item first, regardless of importance or price. In addition, participants views of a proxy for value (retail price) showed an impact of the certain item on the uncertain item, but not vice versa. Taken together, these findings demonstrate that when people are making a decision about multiple items, that value certainty plays a critical role. It suggests that people may often consider the more certain item first, giving it disproportionate weight in the decision process. It also suggests that great caution should be taken when combining items which vary in certainty, whether bundled, co-promoted or even merely co-located in a retail setting. Of course, the findings reported here are specific to bundles, so more research into value certainty seems warranted in other multi-product domains.

REFERENCES


