Perceptions of Assortment Variety: The Effects of Congruency Between Consumers' Internal and Retailers' External Organization

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This research shows that consumers' perceptions of variety and satisfaction are dependent upon how the assortment is organized, both internally by the consumer and externally by the retailer. The results of three laboratory studies indicate for familiar categories congruency between a consumer's internal categorization structure and the external store layout leads to higher perceptions of variety and higher satisfaction with product choices, while for unfamiliar product categories, congruency between shopping goals and external structure leads to lower perceptions of variety but increased satisfaction with the store's assortment. However, if retailers institute external category filters congruent with consumers' internal shopping goals that allow them to bypass products, consumers have both lower variety perceptions and satisfaction with the assortment offering.

Consumers have always enjoyed browsing through stores or "window shopping" to see what products are currently available. Even while making a purchase, consumers often look around to find options for future consideration. For marketers, this type of window-shopping or browsing is an activity to encourage if it means consumers may return to purchase something in the future. However, if consumers do not perceive the full range of options offered, they may be less likely to return for another shopping trip.

In this paper, we examine how the "internal structure" consumers have in memory for product categories can influence how consumers perceive assortment variety in a store or on a website. Specifically, we build on categorization theory that suggests a person's prior category knowledge comes into play when making evaluations (Sujan 1985). Consumers evaluate new stimuli (in our case, the displayed assortment in a category) in terms of their prior knowledge of the category. If there is a match between the way consumers categorize items in their heads and the way retailers organize items in their stores, consumers can process the items more easily. If there is not a match, consumers may have to further process their category expectations in order to form evaluations (Fiske and Taylor 1991).

Unlike previous applications of categorization (e.g., Meyers-Levy and Tybout 1989; Goodstein 1993; Ozanne, Brucks and Grewal 1992), we examine how internal/external congruency can influence perceptions of the amount of variety offered and satisfaction with both choice and the offered assortment. Research shows that consumer attitudes toward and their probability of shopping at a retail site is positively related to their perceptions of the variety offered at that site (Arnold, Oum and Tigert 1983, Broniarczyk, Hoyer and McAlister 1998). In addition, when consumers perceive

the variety in an assortment to be larger, they may evaluate the product selected from that assortment more positively and be willing to pay more for it (Godek, Yates and Auh 2001). Of course, if the variety becomes overwhelming, it can actually decrease the likelihood of purchase (Huffman and Kahn 1998; Iyengar and Lepper 2000), but we do not consider this boundary condition in this research.

In investigating the effects of congruency between consumers' "internal structure" (the sub-categories into which consumers groups items) and retailers' "external structure" (the sub-categories into which retailers group items), we focus on two aspects of external structure: the layout or organization of the assortment and the filtering or screening method that the retailer provides for examination of the assortment. By layout, we mean the *classification system* by which a product category is literally displayed in the store or on a computer screen. For instance, cereal can be arranged either by brand, with all the Kellogg's cereals together and all the Post cereals together, or it can be arranged by type of cereal, with all the children's cereals together and all of the healthy cereals together. By filtering, we are referring to how much of the assortment is revealed. For instance, the entire assortment can be presented simultaneously, with every product visible at the same time (no filter), or the assortment can be presented in sections (filtered), where ultimately the whole assortment need not be viewed. For example, it is fairly easy to filter assortments on a website. A consumer might click on a specific hyperlink and then view only a particular sub-section of the assortment. The layout of a physical retail store might also serve as a filter, leading consumers directly to a sub-section of the assortment. Other store layouts (e.g., escalator routes, elevator locations, or shelving configurations), might force consumers to view more of the assortment. We

propose that a match between consumers' "internal structure" of an assortment and stores' "external structure" (or *layout*) for an assortment will lead consumers to perceive more variety, while a match between consumers' "internal structure" and the "external *filter"* of an assortment will result in consumers perceiving less variety.

In investigating "internal structure," we recognize that consumers may have many bases for their internal structures, or schemas of the product category (Alba and Hutchinson 1987). Early work in categorization focused primarily on taxonomic categories, suggesting that consumers organize products into their naturally defined categories (Rosch, Mervis, Gray, Johnson, and Boyes-Braem, 1976). For instance, since an apple is a type of fruit it is categorized internally as "fruit." However, later work has shown that consumers may also have goal-based categories (Barsalou 1985). For example, instead of being categorized only as "fruit," an apple might also be placed in the category of "afternoon snack." These internal goal-based categories then become more established in memory with increased frequency of use (Barsalou 1985; Ratneshwar and Shocker 1991). Likewise, internal structure can also be created by directly providing consumers with specific shopping goals (Huffman and Houston 1993, Huffman and Kahn 1998). For instance, telling consumers to look for a blue tie will indirectly lead them to organize the category into blue ties or not blue ties—items that match the goal and items that do not. In this research, we examine internal structure driven by two different forces: product category schemas and shopping goals.

We conduct three laboratory experiments to examine the impact of external structure (driven by display organization or by a filter) and internal structure (driven by mental schemas or shopping goals) on perceived variety and on satisfaction with both

choices and the overall assortment offered. We conclude that for familiar product categories, where consumers have strong, internal categorization schemas, consumers are likely to perceive more variety and be more satisfied with their choices from the assortment if the internal structure and external structure are congruent. However, when consumers are not familiar with the product category, we find that the congruency of schema driven internal structure with external structure does not have any effect on variety perceptions and satisfaction, but instead shopping goals are very influential. Specifically, we find that when shopping goals are congruent with the external structure, consumers view less variety, but are more satisfied with the store's assortment. Shopping goals thus serve as self-imposed filters on the assortment that allow easier navigation through product categories, thereby increasing satisfaction. Finally, in contrast to shopping goals, we find if retailers themselves institute external category filters that match consumers' shopping goals, consumers have lower variety perceptions and satisfaction with the assortment offering because they can go directly to their desired products without seeing any other options.

CONGRUENCY OF EXTERNAL LAYOUT WITH INTERNAL STRUCTURE

In order to keep track of the complicated knowledge involved with learning about a product class, consumers form simplified categorizations or schemas (Alba and Hutchinson 1987), and then process new information received about the product category according to these schemas (Chase and Simon 1973, Chi, Glaser, and Rees 1982; Chiesi, Spilich, and Voss 1979; Larkin et al. 1980). When the external organization of the product assortment (i.e., the arrangement of a retailer's display of the assortment) is congruent with consumers' internal schema, consumers are able to perceive the variety of

the assortment more easily. This congruency between internal schema and external display organization should also simplify processing of the display, leading to more positive affect about the display and more satisfaction with the assortment (Stayman, Alden and Smith 1992). This display driven positive affect and satisfaction with the assortment should lead to higher satisfaction with choices made from the display.

However, if the organization of the product assortment in a retail store or on a web page is *not* congruent with consumers' internal schema, then the reverse will occur. Consumers will be confused by what they observe and will have to expend additional processing effort to recognize and categorize the various items in the assortment (Bettman and Zins 1979, Biehal and Chakravarti 1982, 1986). Consumers may decide not to expend this additional effort, but even if they do expend some cognitive effort, it may not be enough to understand the differences among the objects (Bettman, Johnson and Payne 1990; Hayes-Roth 1977; Payne, Bettman and Johnson 1990; Thorndyke and Hayes-Roth 1979), and therefore consumers may not perceive the extent of the variety offered. Furthermore, if consumers are confused and perceive less variety, they will be less satisfied with the assortment offered. This lower satisfaction with the assortment will lower satisfaction with choices made from the assortment for two reasons. First, the confusion and lower satisfaction with the assortment is likely to lower any positive affect that might be associated with the choice. Further, the lower level of perceived variety will decrease the assumed likelihood of a match between the retailer's assortment and the consumer's need (Baumol and Ide 1956; Kahn and Lehman 1991).

Familiar Categories—Using Internal Structure for a Product Class

Although we suggest that congruency between retailers' external layout and consumers' internal schema can lead to increased perceptions of assortment variety, this effect is not unconditional. Rather, it depends on the strength of consumers' internal category schemas—the stronger the internal category structure, the greater the need for congruency with the external layout. The strength of consumers' internal schemas is likely to depend upon their familiarity with the product category. If the category is very familiar, the existing knowledge of the category is likely to be well established in memory either by brand or by attribute (Johnson and Russo 1984). Prior research has shown that consumers who are more familiar with a product category and who have higher product category knowledge are likely to have better developed schemas (Sujan and Bettman 1989). Thus, the more familiar consumers are with a category, the more salient their internal schema for the category will be.

The salience of consumers' schemas for familiar categories is further reinforced by the external structure that a retailer provides with its category display. Prior work suggests that upon frequent exposure, consumers may internalize the external structure of the category display they observe in the store (Hutchinson, Raman, and Mantrala 1994; Buchanan, Simmons, and Bickart 1999). This suggests that consumers' internal structure for a category will be even stronger if they frequently encounter the category displayed in the same manner. As a result, consumers will come to expect that category to be displayed in stores or on websites in a manner congruent with their internal schema and will be dissatisfied when the category is not.

For consumers who are familiar with a product category, the processing of the product assortment is done with guidance from their internal schemas. This makes it

critical that consumers' internal schema and the external structure of a store layout be congruent to heighten perceptions of variety. When the external layout is congruent, consumers familiar with the category can quickly scan the options and locate the subsection of the shelf containing their desired products. Within this subsection, participants will be exposed to other product attributes arranged in a format to facilitate encoding. However, when the display is incongruent, the inconsistency between the internal schema and the external layout will hinder encoding a detailed perceptual representation. Thus, assortment judgments based on initial perceptual representations should be higher for more familiar consumers when shelf displays are congruent rather than incongruent with internal schemas.

On the other hand, since consumers less familiar with the category have a weak internal schema for the product category (if any), matching the internal structure with the external layout is not critical. Due to their limited knowledge structure, less familiar consumers will engage in minimal processing of the product display. Thus, for consumers less familiar with the category, the congruency of the product display and their internal schema is not predicted to impact assortment perceptions. Thus, we hypothesize:

> **H1**: Congruency between consumers' internal schema of a category (e.g., by brand or by attribute) and retailers' external layout of the product category has a greater effect on assortment perceptions for familiar than unfamiliar consumers.
>
> **H1a**: For consumers who are familiar with a product category, congruency between internal schema and external layout will result in higher perceptions of variety and higher satisfaction with choices from the category.

H1b: For consumers who are not familiar with the category, congruency between internal schema and external layout will not effect perceptions of variety nor satisfaction with choices from the category.

EXPERIMENT 1

In order to test H1 we used a product category that varied in familiarity—microwavable popcorn. In addition, to test the congruency aspects of H1, participants each needed a customized external layout of the product category based on their own internal schema. To determine each individual's internal schema we relied on previous research in memory (e.g., Hutchinson 1983), which suggests that internal schema of a category are related to the importance of specific product attributes.

To show that importance ratings were indeed connected to participants' internal categorization of the microwave popcorn category, we ran a categorization test on a separate sample of respondents. Since the classic categorization literature uses card sort tasks to assess internal memory structure (Rosch et al.1976), participants sorted 25 cards describing different microwavable popcorns on four different attributes (brand, flavor, size, price), and also rated the attributes on importance. These two tasks were counterbalanced and participants performed a distracter task between them. For the 63 participants involved in this task, 86 percent displayed a strong match between their attribute importance weights and their sort classification, with 56 percent of subjects sorting based on their most important attribute and 30 percent of subjects sorting based on their second most important attribute. We believe this offers strong support for our assumption that internal structure is determined by importance weights in this product category.

Participants, Stimuli, and Procedure

Experiment 1 was a 2 (congruency: congruent vs. incongruent) X 2 (familiarity: high vs. low) between-subjects design. Seventy-seven undergraduate students participated in exchange for extra credit. Congruency was manipulated by organizing the shelf display to be either congruent or incongruent with participants' internal schema of the product category, as determined by their attribute importance weights. Familiarity was determined by a self-reported frequency scale. Familiar participants reported eating microwavable popcorn at least once a month, whereas unfamiliar participants reported eating it on average only four times a year.

Individual importance weights for the same four attributes described in the categorization test, as well as a frequency of use and need for cognition scales (Cacioppo, Petty, Chuan 1984), were collected one month prior to the actual study. The pretest was imbedded in a series of other questions and debriefing revealed that participants did not connect the pretest to the actual experiment

Using the importance weights from the pretest, the external layout of the assortment was custom tailored to be either congruent or incongruent with participants' internal schema of the category. In the congruent layout condition, the products were arranged first by their most important attribute, followed in sequence by their second, third, and least important attribute. Likewise in the incongruent layout condition, products were arranged first by their least important attribute, followed in sequence by their third, second, and most important attribute. There was considerable heterogeneity in attribute importance orderings, with fifteen different importance orderings being reported, but five orderings accounted for more than 80 percent of participants: (1) brand,

flavor, price, size; (2) flavor, brand, price, size; (3) flavor, price, size, brand; (4) flavor, price, brand, size, and (5) price, flavor, size brand. There was no obvious relationship between attribute importance and frequency of use.

Participants completed the experiment in small groups at separate computer stations. Each participant had a unique computer disk corresponding to their own internal schema of the category and congruency condition. After they were seated at the computer station, participants first answered questions concerning their grocery shopping habits and opinions about local grocers. They then saw product lists from six different categories, with 25 products in each list. The target category, microwavable popcorn, was the fourth category viewed and was organized based on the participant's corresponding condition. The other five categories were also organized by attribute, but the attribute differed across categories. Participants chose products from each of the lists and reaction times were recorded. To motivate realistic choices, participants were told they would receive one of the six products they chose as a free gift.

After completing the six choices, participants reported the amount of variety they perceived in the microwavable popcorn category on a scale ranging from 1 (*low variety*) to 5 (*too much variety*) and their level of satisfaction with their final choice on a scale ranging from1 (*very dissatisfied*) to 10 (*very satisfied*). In addition, participants listed all the information they could recall about the microwavable popcorn options on the list.

Results

The data were analyzed using ANCOVA with congruency and familiarity as between-subjects factors and need for cognition as a covariate. Twenty-seven participants were classified as familiar microwavable popcorn users and 46 as unfamiliar.

Manipulation Check

To check that congruency was manipulated successfully, participants reported "ease of use" of the microwavable popcorn display where 1 was very difficult to use and 5 was very easy to use. A model with "ease of use" as a dependent variable and congruency and NFC as independent variables reveals a main effect for congruency ($F(1,69) = 3.22$, $p < .08$), where participants in the congruent condition found the display easier to use ($M = 3.68$) than the incongruent condition ($M = 3.45$). Not surprisingly, the congruency manipulation was also more successful for high than low NFC participants ($F(1,69) = 4.02$, $p < .05$).

Hypothesis Testing

In support of H1, the results indicate a significant congruency by familiarity interaction on perceived variety ($F(1,68) = 4.63$, $p < .05$). Consistent with H1a, familiar users reported higher perceived variety in the congruent ($M = 3.78$) than the incongruent ($M = 3.17$) external layout condition ($F(1, 25) = 4.65$, $p < .05$). Supporting H1b, external layout did not affect perceived variety for unfamiliar users ($M = 3.59$ vs. $M = 3.74$, congruent and incongruent, respectively, $F < 1$).[1] The satisfaction results are directionally consistent with the perceived variety results although the congruency by familiarity interaction was not significant ($F<1$). Familiar users reported directionally higher satisfaction in the congruent ($M=4.41$) than the incongruent ($M=4.16$) external layout

[1] Note mean levels of variety perceptions suggest that familiar users report an overall lower mean of assortment variety for our selections than do less familiar users. This is reasonable as familiar users would likely have been exposed to more variety in their personal consumption. Our chief interest here though is not in the absolute levels, but rather in the difference between congruent and incongruent displays.

(F<1) whereas unfamiliar users reported equal satisfaction for congruent (M=3.73) and incongruent (M=3.70) external layout.

To explore the mechanisms driving variety perceptions, an ANCOVA analysis was conducted only on the familiar users. In this analysis, variety perceptions were a function of congruency, response time, and satisfaction with choice ($R^2 = 0.66$). The results show a significant main effect of congruency ($F(1,20) = 4.13$, $p < .05$)[2], such that participants perceived more variety in the congruent (M = 3.80) than the incongruent condition (M = 3.17). This is consistent with H1a that argues familiar users make instant perceptual judgments of assortments such that when the layout is congruent with their internal schema, they register a wider range of product offerings and perceive more variety. The results also indicate significant interactions between congruency and response time ($F(1,20) = 6.20$, $p < .05$), and congruency and satisfaction ($F(1,20) = 6.07$, $p < .05$), suggesting that the initial holistic perception of variety is modified as consumers proceed to a deeper level of processing where they attend to specific product information.

For familiar participants exposed to congruent layouts, the more time taken to make a decision, the more information they processed and the more variety they perceived ($F(1,13) = 8.65$, $p < .05$). This relationship, however, did not hold for familiar participants exposed to incongruent layouts. For these participants, the high amount of processing required to make choices from an incongruent layout resulted in higher recall (M = 8.75) than those in the congruent condition (M = 7.87), but did not directly affect their variety perceptions ($F(1,10) = 2.61$, $p > .10$).

[2] The F-statistics and means are slightly different in this analysis than in the one reported above because some participants had missing data on either response time or satisfaction.

Although increased processing by familiar participants in the incongruent conditions had no effect on variety perceptions, the lower satisfaction they experienced did lead to lower perceived variety ($F(1,10) = 28.33$, $p < .001$). The same was not the case for familiar participants in the congruent conditions. For these participants, satisfaction had no effect on perceptions of variety ($F < 1$).

Discussion

The results of experiment 1 provide support for H1, showing that familiar participants have more well-defined schemas, thereby making the congruency between internal schema and external layout an important predictor of perceived variety. When consumers are very familiar with a product category, if products are organized in the store to be congruent with their internal schema, they can quickly do a perceptual match with the entire display and then zoom in on one section for deeper processing. This leads to higher perceptions of variety and greater satisfaction with the chosen items. The flipside is that when the products are displayed in a manner incongruent with their internal schema, more familiar consumers become confused and frustrated. Although familiar consumers may spend more time looking at an incongruent display and may even remember more about the items in the display, they do not perceive more variety. Instead, the incongruency induces negative affect and actually lowers variety perceptions.

This same pattern, however, does not hold true for consumers who are less familiar with the product category. For unfamiliar consumers, congruency between external layout and internal schema has no effect on perceived variety. Since unfamiliar consumers do not have established schema, the external structure cannot cause interference.

In the next experiment, we focus on cases where consumers are unfamiliar with the product category and have no internal structure. As a result, we impose an internal structure of the category by giving consumers a specific shopping goal. We show that imposing this internal structure can increase perceived variety and can also increase satisfaction with the assortment offered.

Unfamiliar Categories—Imposing Internal Structure for a Product Class

The first hypothesis suggests that when consumers have strong internal schemas for product categories, they perceive more variety when the internal schema matches the external layout. However, when the internal schema is not strong, congruency between the external layout and the internal schema is less relevant. In this latter case, it may also be true that consumers are not particularly motivated to process the options available in the external structure. Providing a goal may be necessary to motivate the level of processing needed to increase variety perceptions and to increase satisfaction with the assortment offered.

Prior research has shown that internal structure can actually be created through consumers' shopping goals (Barsalou 1983, Loken and Ward 1990). More specifically, consumers have been shown to take in the assortments they observe based on their goals and organize their learning around those goals (Huffman and Houston 1993). So when internal schemas are weak, a specific shopping goal can serve as an organizing framework. In this case, congruency of the external display with the internal structure imposed by a shopping goal will increase perceived variety (Broniarczyk, Hoyer, and McAlister 1998). The goal serves two purposes: (1) to motivate consumers to process the

range of alternatives being offered, and (2) to serve as a lens through which consumers will view the offered alternatives.

We predict, however, that congruency between internal structure imposed by a shopping goal and external display may act differently than congruency between internal schema and external display. In looking at congruency between internal schema and external displays, we suggested that congruency allows consumers to scan options quickly and locate the subsection containing their desired products. Within this subsection, participants are exposed to other product attributes arranged in a format to facilitate encoding. However, when displays are incongruent, the inconsistency hinders encoding of a detailed perceptual representation. A goal, on the other hand, does not represent such a systematic organization of the product category. Rather, a shopping goal can serve as a screen. A consumer with a shopping goal will process items by determining whether or not each item in the assortment matches the goal. Goal-directed search in catalog layouts has been found to make information gathering more efficient and less time consuming (Janiszewski 1998). In this case, we predict that perceived variety may actually be higher when goals are incongruent with external displays because it forces consumers to evaluate more options in the assortment and does not allow them to zone in only on items that match the goal. However, although consumers may perceive more variety when goals are incongruent, their satisfaction with the assortment being offered is likely to be lower because of the resulting more complicated processing. We therefore hypothesize:

H2a: For unfamiliar categories, congruency effects with external display will be with shopping goals rather than internal schema.

H2b: When consumers unfamiliar with a product category are given a shopping goal that is congruent with the external display, consumers will perceive less variety in the category but will be more satisfied with the assortment of goods offered than when the shopping goal is incongruent with the external display.

EXPERIMENT 2

In this experiment, we created a hypothetical product category, "trinkets," for two reasons: (1) with hypothetical products we could insure that consumers were unfamiliar with the category, and (2) we could manipulate participants' specific internal organization of a product category. There were 27 "trinkets" in the assortment, generated from three attributes (brand, scent, and size) each possessing three attribute levels. Experiment 2 was a 3 (internal schema: none vs. brand vs. scent) X 3 (goal: none vs. brand vs. scent) X 2 (external display: brand vs. scent) between subjects design. Two-hundred and one undergraduates completed the experiment for course credit on individual personal computers. Participants were asked to look over and make a choice from an assortment of "trinkets." The 27 trinkets were shown all at once on one computer screen.

Internal Schema Manipulation

Participants in both the brand and scent internal organization conditions were asked to learn information about trinkets. They were instructed to pay close attention to the information presented in preparation for questions asked at a later time. The learning task described the most important attribute of trinkets being either the brand or scent, depending on condition. It listed the three different types of brands (scents) and told them that all three brands (scents) had the same market share, while still being unique products.

It also mentioned that any store selling trinkets would stock each of the three brands (scents). After reading the information, participants were asked a series of questions about what they had read. Specifically, they were asked to list the three brands (scents), to name the most popular brand, to list the trinkets in alphabetical order and to name the least popular brand (scent). After reading each set of questions, participants typed their answers in the appropriate boxes and were then given the correct answers to reinforce the learning of the internal schema.

After completing the learning task, participants in the two learning conditions were told to look over the assortment of trinkets on the following screen. Participants in the no internal organization condition proceeded immediately to look at the assortment of products bypassing the learning task.

Goal Manipulation

Participants in the no goal condition, simply proceeded to the assortment screen with no further instructions, whereas participants in the brand goal condition were told they needed to buy an "Energy" brand trinket, and participants in the scent goal condition were told they needed to buy a "Fresh" scent trinket.

External Display Manipulation

The trinkets were organized on the screen either by brand or by scent, depending on the external organization condition. For the brand external organization condition, the 27 trinkets were organized into three blocks of nine, each block corresponding to a different brand and labeled as such. Likewise for the scent external organization condition, there were three blocks of nine, each block corresponding to a different scent.

In both external organization conditions, all 27 trinkets were shown on the same screen with the three blocks placed next to one another horizontally.

Once participants made their final selection, they reported their overall perceptions of variety on a scale ranging from 1 (*low variety*) to 5 (*too much variety*) and the extent to which the store offers the trinkets they would like to buy on a scale ranging from 1 (*not at all*) to 5 (*to a great degree*). On a scale ranging from 1 (*very dissatisfied*) to 5 (*very satisfied*), they also indicated how satisfied they were with the choice they had made (although in a hypothetical product category, it is not clear this question had any meaning to them. In fact, there were no significant effects on this variable and we will not discuss it further.) Finally, as a manipulation check for the internal schema instilled by the learning task, participants indicated how they generally organized the trinket category in their heads.

Results

Two-hundred and one subjects participated in experiment 2. The manipulation check screened to insure that only subjects for whom the internal schema was created were included in the analysis. Based on the results of the manipulation check, 161 participants reported a match between the manipulated internal organization condition and their reported internal organization and were therefore included in the analysis.

We found a main effect of goal on overall perceptions of variety. Across all internal and external organization conditions, participants who were not given a specific goal perceived significantly less variety ($M = 3.66$) than participants in the brand goal ($M = 4.16$) or scent goal conditions ($M = 4.22$; $F(2, 143) = 5.99$, $p < .01$), supporting the general notion that consumers can organize their learning of a product category around a

goal. However, this main effect should only be interpreted in light of the two-way interaction between goal and external organization. As predicted, there was a significant interaction between goal and external organization on perceived variety ($F(2, 143) = 7.92$, $p < .001$). In the no goal conditions, there was no difference in perceived variety across the two external organization conditions ($M_{brand} = 3.44$, $M_{scent} = 3.87$; $F(1, 155) = 2.34$, $p > .10$). In the brand goal condition, however, participants indicated significantly lower perceptions of variety for the congruent, brand external organization ($M_{brand} = 3.76$), than for the incongruent, scent external organization ($M_{scent} = 4.6$; $F(1, 155) = 10.35$, $p < .005$). Similarly, in the scent goal condition, participants perceived significantly less variety for the congruent, scent external organization ($M_{scent} = 3.95$), than for the incongruent, brand external organization ($M_{brand} = 4.49$; $F(1, 155) = 5.75$, $p < .05$). Together these results indicate that when a goal is congruent to the external organization, people see less overall variety in the assortment. There were no significant main effects of internal schema, or interaction effects of internal schema with external display on perceived variety. These results thus support H2a and H2b.

There was a main effect of internal organization on satisfaction with the assortment offering (i.e., whether the assortment had what participants actually wanted). Across all goal and external organization conditions, participants who were not given an internal organization for the category indicated that the assortment had significantly less of what they actually wanted to buy ($M = 3.09$) than participants in the brand ($M = 3.57$) or scent internal organization conditions ($M = 3.71$; $F(2, 143) = 3.87$, $p < .05$). Although there were no congruency effects of internal organization with external display (as

predicted) this result shows that even weak internal schema help consumers interpret product displays.

As predicted in H2b, there was also a significant interaction between goal and external organization on satisfaction with the assortment ($F (2, 143) = 4.11$, $p < .05$). In the no goal conditions, there was no difference in how much participants felt the assortment had what they wanted across the two external organization conditions ($M_{brand} = 3.40$, $M_{scent} = 3.33$; $F (1, 155) = .01$, $p > .90$). In the brand goal condition, however, participants indicated that the assortment had more of what they wanted in the congruent, brand external organization ($M_{brand} = 3.71$), than in the incongruent, scent external organization ($M_{scent} = 3.17$; $F (1, 155) = 2.40$, $p < .15$), though the difference was not significant. Similarly, in the scent goal condition, participants indicated that the assortment had more of what they wanted in the congruent, scent external organization ($M_{scent} = 3.92$), than in the incongruent, brand external organization ($M_{brand} = 3.18$; $F (1, 155) = 5.72$, $p < .05$). Together these results indicate that when goals (imposed internal structure) and external organization are congruent, people actually see the assortment as offering more of what they actually want.

Discussion

The results of experiment 2 indicate a difference in how congruency between external organization and goal driven internal structure influences overall variety perceptions, as compared to congruency between external organization and schema driven internal structure (Experiment 1). Results in experiment 2 showed that when a goal and external organization do not match, people see *more* overall variety in the assortment, but *less* of what they actually want to buy. Likewise, when a goal and

external organization match, they see *less* overall variety, but *more* of what they actually want to buy. Further, our results show that goals are stronger than internal organization in influencing perceptions of variety, at least when the internal schema is new and relatively weak.

A shopping goal serves the consumer as an internal filter, but retailers can also impose external filters that limit how much of the assortment can be viewed at once. If the external filter is congruent with a consumer's shopping goal, we would expect a further reduction in the amount of variety consumers perceive. Self-imposed shopping goals were shown above to increase consumer satisfaction with the assortment. Retailers may therefore believe it is advantageous to institute external filters to ease consumer decision-making from an assortment. Is it possible that such external filters reduce rather than enhance consumer satisfaction with the assortment?

EXTERNAL FILTERS CAN RESTRICT APPRECIATION OF VARIETY

Retailers can choose not only the manner in which the assortment is organized, but often times can influence how much of the assortment is viewed at any given point in time. Although a highly filtered presentation of an assortment may allow consumers to find exactly what they need very quickly and may decrease their frustration and search time, a filtered assortment may also decrease consumers' perceptions of how much variety is available. In supermarkets, retailers often place high penetration and frequency items such as milk in the back of the store to force consumers to be exposed to more of the store assortment (Kahn and McAlister 1997); similarly websites can either make it easy to find what a consumer wants (in a filtered approach) or force them to go deeper into the website to find what they want.

Earlier we argued that goals can serve as a lens through which the assortment can be viewed and categorized, which in turn can affect the amount of variety consumers perceive. In this experiment we investigate how goals completely aligned with the retailer's filtering mechanism influence variety perceptions. In this case, the consumer will likely avoid large parts of the assortment by going directly to the item(s) that match the goal. Rather than scanning through the entire assortment and coding all of the available products as one that either meets their shopping goals or not, as a result of the filter, consumers will immediately jump to a small subset of the assortment that matches their goal (although they certainly could browse the site if they were so inclined). In such cases, where the filtering mechanism leads consumers to focus on only a few items in the assortment, we predict perceptions of variety will be lower. It should be noted that although fewer items will be viewed, perceptions of variety *could* be higher in the filtered situation, because consumers could infer that there is much more to the assortment that they did not observe directly.

Such external filtering is also likely to affect consumer satisfaction with the assortment. Iyengar and Lepper (2000) have shown that consumers are attracted to large assortments and value the freedom of more choices. An external filter that limits consumers' exposure to the entire offering is therefore also likely to negatively impact consumers' satisfaction with that assortment. Thus, we hypothesize:

> **H3**: If the external filtering mechanism imposing structure on the assortment is congruent with a shopping goal imposed internal structure, consumers will perceive less variety and be less satisfied with the assortment offered.

Although H3 suggests filters may lead to efficiencies for the consumer, they may also bring about a cost to the retailer by allowing the consumer to have a less positive assessment of the overall assortment variety. It is our goal here to measure the costs associated with a filtering approach and we do so in situations where the exposure to more of the assortment is not overwhelming for our participants. There are clearly boundary conditions where consumers may resent the inefficiencies of not being able to get exactly where they want as efficiently as possible, but we do not consider those boundary conditions in this research.

EXPERIMENT 3

In this experiment we used a real product class, carrying bags, but one with which participants were generally unfamiliar and had at best weak internal structures. Further, an investigation of these types of Websites indicated no consistent classification pattern. Across all conditions of our experiment, the bags were organized in the same format, but we manipulated the degree of external filtering.

In the first condition (no filtering) the products were viewed all at once by participants. In the second condition, the hyperlink external filter condition, the web site was designed so that participants could click on a link that would take them directly to the sub-category in which they were interested. Even though they could go to that category directly, the other links and their names were visible on the screen and could theoretically have influenced perceptions of variety. In the third condition, primed, the bags were once again viewed all at once but the classification system used to organize the bags was described to participants (and this classification system was the same as the system used to create the links in condition two). Thus, in this condition, the rational for

the organization was made clear but the participants were still forced to view the entire assortment, whereas in the tabbed condition they could literally choose to view only part of the assortment. They could, however, also view the entire assortment if they so chose. This experiment was designed to test H3, which argues if an external filter is congruent with the internal structure imposed by a shopping goal, the participant will perceive less variety and be less satisfied with the assortment offered. In addition, it also tests whether these decreases are due to congruence with the structure of the filter (which is mimicked in the primed condition) or the actual filtering (i.e., the ability to view only a part of the assortment).

Procedure

Participants were 237 undergraduate students who completed the study for course credit. The experiment was administered on personal computers over the Internet but in a laboratory setting. It was a one-factor between subjects design. Once seated at a computer, participants reviewed a simulated web site selling various kinds of bags. They had one of four different, specific goals that were counterbalanced across the experimental conditions. The specific goals were: (1) buy a bag, (2) buy a backpack, (3) buy a backpack that also carries your laptop, and (4) check out the backpacks that also carry a laptop. The 32 bags were presented to participants in one of three different external filtering formats: no filter, no filter with primed organization, or hyperlink filter that allowed partial viewing of the assortment. After they completed the shopping task, for the perceived variety measure participants reported the number of business bags offered in the store. In addition, participants also indicated their satisfaction with the assortment offered on a scale ranging from 1 (*not satisfied at all*) to 7 *(quite satisfied*) and

the degree to which they felt overloaded by the number of products and amount of information provided on a scale ranging from 1 (*not at all*) to 7 (*a great deal*). Finally, participants listed all of the bags they could recall having seen.

Results

In support of H3, the results indicated a main effect of external filter on perceived variety ($F(2, 212) = 2.94$, $p < .05$). Participants in the hyperlink external filter condition perceived significantly less variety ($M = 17.3$) than participants in the no filter ($M = 20.98$) or primed ($M = 22.04$) conditions. Similarly, the results also reveal a main effect of external filter on satisfaction with the assortment ($F(2, 218) = 7.35$, $p < .001$). Again, participants in the hyperlink external filter condition were less satisfied with the assortment ($M = 4.25$) than participants in the no filter ($M = 5.06$) or primed ($M = 5.01$) conditions.

The results also reveal a significant main effect of external filter on cognitive overload ($F(2, 220) = 3.34$, $p < .05$). Participants in the no filter ($M = 2.48$) and primed ($M = 2.63$) conditions indicated they found the assortment to be significantly more overwhelming than participants in the hyperlink condition ($M = 1.96$). This finding supports the idea that when consumers are presented with an external filter that matches their shopping goal, they are able to go directly to their desired item without having to look through all the products offered in the assortment.

Lastly, we also found a significant main effect of external filter on the number of bags recalled ($F(2, 211) = 5.18$, $p < .01$). Participants in the hyperlink external filter condition recalled significantly fewer bags ($M = 4.48$) than participants in the no filter ($M = 5.06$) or primed ($M = 5.18$) conditions. There were no significant effects or interactions due to type of goal.

Discussion

The findings of this experiment provide an interesting comparison with the previous findings. In experiment 3, we found that congruence between a consumer's internal structure imposed by a shopping goal and the external filter provided by a website, results in lower perceived variety. In experiment 2, we found that congruence between a consumer's internal structure imposed by a shopping goal and external organization also resulted in lower perceived variety. However, in experiment 2 the congruence between goal and external display increased satisfaction with the overall assortment, whereas in this experiment the congruence between external filter and shopping goal decreased satisfaction, although participants felt less overwhelmed. Since the match between goal and external filter allowed consumers to find the subset of products that fit their shopping goals immediately, they essentially ignored the rest of the assortment. In experiment 2, the congruence between goal and display allowed the respondents to focus on the items of interest without formally cutting off the other possibilities and this seemed to increase satisfaction.

Although we examine the filtering concept in an on-line environment where filtering is easy to implement, this concept could also occur in physical stores. For example, retailers could provide detailed maps or guides on kiosks that could guide consumers directly to the product of interest or alternatively they could lead consumers through circuitous paths (e.g., IKEA does this in their furniture stores) that force consumers to view more of the assortment. Our findings provide support for retailers who design store layouts or websites that require their customers to roam the store before being able to purchase their desired products. Even if customers do not engage in impulse

buying while walking through the store or browsing through the site, our results indicate that they are likely to perceive more variety and feel more satisfaction with the overall assortment.

Experiments 2 and 3 also demonstrate that it is not the congruence between a shopping goal driven internal structure and the external organization that yields the lower variety perceptions and satisfaction with the assortment, but rather the explicit ability not to view parts of the assortment. Providing consumers with an external filter that allows easier navigation through the assortment decreases perceptions of variety and satisfaction with the offering. However, providing consumers with an understanding of the structure of the assortment (i.e., primed condition) has no effect on perceived variety or satisfaction with the assortment. These results suggests that simply understanding the external layout does not provide the same benefit for perceived variety and satisfaction with assortment as does congruence between the external structure of the assortment and a consumer's *existing* internal structure (Experiments 1). Thus, congruent external filtering limits appreciation of the assortment while goal driven internal structure congruent with the organization of the assortment does not.

CONCLUSIONS

Results from three experiments show that the amount of variety that consumers perceive and satisfaction consumers derive from the assortment offering and their final choices are largely dependent on whether the internal organization inside the consumer's head (either due to internal schema or due to a shopping goal) is congruent with the external organization provided by the store. To examine external structure we manipulated both

the layout of the products on the screen or in the store, as well as the filtering mechanisms used for product search.

In the first experiment, we demonstrated that for familiar product categories congruency between a person's existing internal structure and the external layout of the store results in higher perceived variety and more satisfaction with items chosen from the assortment. Since consumers have strong, established internal schemas of familiar product categories, it is critical that the external layout of the assortment match the internal organization. When the two organizations are congruent, people are better able to process the assortment and therefore perceive more variety. On the other hand, when the two organizations are incongruent, consumers become confused and overwhelmed by the assortment and are unable to perceive the full extent of variety that is offered.

We used a hypothetical category in experiment 2, where we manipulated a weak internal structure and provided shopping goals. This experiment showed that in unfamiliar categories, the shopping goal trumps the weak internal structure at organizing the category. Further, when shopping goal driven internal structures are congruent with external displays, consumers perceive less variety but are more satisfied with the assortment, while the reverse is true when shopping goals are incongruent with external displays. Further research should examine the interaction between shopping goals and internal categorization for more well-developed internal schemas than those examined here.

The last experiment examined the effects of shopping goal driven internal structure being congruent with the filtering mechanism used by a retailer to navigate search of the assortment. When consumers' shopping goals are congruent with the

external filtering structure, consumers perceive less variety and are less satisfied with the offering than when the entire assortment is presented on one screen. The congruence between shopping goal driven internal structures and external filters allows consumers to proceed immediately to the small number of products that meet their needs for that shopping trip. Consumers still see the other products and categories of products that the web site also offers, but they do not actually have to view the products directly. As a result, they do not process the rest of the products offered in the assortment. Since they only observe a small subsection of the assortment, they perceive less variety and are less satisfied with the offering. On the other hand, when no filter is provided and the entire assortment is viewed at once, consumers must search through the entire assortment looking for items that fit their goal. Since in this case consumers are forced to process the entire assortment in order to find an item that meets their needs for that particular shopping trip, they leave the store with higher overall perceptions of variety and increased satisfaction with the offering.

Future research could consider the boundary conditions of our results. Certainly, as others have pointed out (e.g.., Iyengar amd Lepper 2000, Huffman and Kahn 1998), too much variety can be overwhelming. We have not really reached that stage in our research. In all of our experiments, participants were able to cope with the amount of variety we presented. However, one can certainly imagine situations with too much variety (e.g., consider a kitchen tile shop) and then filtering may be useful in increasing satisfaction with the shopping process (a measure we did not consider in this research), even at the expense of satisfaction with the overall assortment (which we did measure).

Together the results of these experiments all suggest that the congruence or incongruence between the internal organization inside consumers' heads and the external organization of the assortment provided by stores influences how consumers perceive the variety offered. This work contributes to the existing literature on the application of categorization theory to consumer domains (e.g., Sujan 1985, Meyers-Levy and Tybout 1989, Goodstein 1993), by examining the role of internal categorizations or schemas in the evaluation of the external structure of an assortment. This work also contributes to the perceived variety literature (e.g., Broniarczyk, Hoyer and McAlister 1998, Hoch, Bradlow and Wansink 1999, Kahn and Wansink 2004) that suggests consumer perceptions of variety are dependent on more than just the actual number of individual items in the assortment. Retailers should be aware of several factors in order to try and get consumers to perceive more variety in their assortments.

First, the more familiar consumers are with a category, the more important it is for a retailer to match the assortment layout with the targeted consumers' schema for that category. Second, for unfamiliar categories, shopping goals are useful in helping consumers perceive the full extent of the variety being offered. If consumers are likely to browse, it may be useful for retailers to provide in-store or on-site display cues to suggest shopping goals for their customers. These should not only help consumers to perceive more variety in the assortment, but may also increase the likelihood of purchase as well. Finally, retailers should consider the tradeoffs of having filtering mechanisms on their web sites that allow for easy navigation through their assortments. While they may decrease confusion for a particular shopping trip, they can also result in consumers perceiving less variety and being less satisfied with the offering in their store. Retailers

should at the very least offer ample incentives for consumers to “pop-out” of their directed path. Knowledge of these three factors will allow retailers to predict whether the external organizations they choose for their assortments will be congruent to consumers’ internal organizations or not, and how their choices will affect perceptions of variety and satisfaction with their overall assortments.

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