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Overchoice and Assortment Type: When and Why Variety Backfires

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Almost universally, research and practice suggest that a brand that increases its product assortment, or variety, should benefit through increased market share. In this paper, we show this is not always the case.

We introduce the construct "assortment type" and demonstrate that the effect of assortment size on brand share is systematically moderated by assortment type. We define an "alignable" assortment as a set of brand variants that differ along a single, compensatory dimension such that choosing from that assortment only requires within-attribute trade-offs. In contrast, we define a "nonalignable" assortment as a set of brand variants that simultaneously vary along multiple, noncompensatory dimensions, demanding between-attribute trade-offs. In turn, we argue that an alignable assortment can efficiently meet the diverse tastes of consumers, thereby increasing brand share, but that a nonalignable assortment increases both the cognitive effort and the potential for regret faced by a consumer, thereby decreasing brand share. We term this effect "overchoice."

Across three studies, we provide evidence of overchoice and tie the effect to the effort and regret brought about by nonalignability. In the process, we demonstrate that simplification of information presentation, reversibility of choice, and a reduction in underlying nonalignability serve to reduce or eliminate this effect.

Key words: brand assortments; brand choice; decision making; product policy; variety
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It has long been thought that product variety is beneficial to consumers. Given heterogeneity in tastes across consumers and variety-seeking tendencies within consumers, a wider assortment should better meet the diverse preferences of consumers than a narrower assortment (Chernev 2003, Hoch et al. 1999, Iyengar and Lepper 2000, Kahn 1998). Thus, a retailer that increases its selection or a manufacturer that expands its brand assortment should increase its market share relative to one that does not (Bayus and Putsis 1999, Hoch et al. 1999, Kahn 1998, Kotler 1981).

However, recent research calls this "variety-is-good" belief into question. In cases where choice deferral is an option, adding a second attractive alternative to what had been a one-alternative consideration set has been shown to increase the frequency of not making a choice (Dhar 1998, Tversky and Shafir 1992). The same has been shown for assortments that increase from 4 to 16 alternatives (Chernev 2003) and 6 to 24 alternatives (Iyengar and Lepper 2000). And for at least one online grocer, *decreasing* assortment by 20% to 80% across product categories *increased* revenues by an average of 11% (Boatwright and Nunes 2001). These results speak to the potential negative impact of product assortment on consumer choice—an effect we refer to as "overchoice."[1]

Given these conflicting perspectives, this paper considers the impact of product assortment in a competitive brand context and asks "when" and "why" an increasing assortment might prove detrimental to brand choice. Consider two brands, Brand A and Brand B, each of which offers a single alternative in a particular product category. If Brand B were to expand its offerings to two, three, four, or more alternatives, how might the market share of Brand B be expected to change? Whereas traditional wisdom would point to an increase in share for Brand B, we argue that, under certain predictable conditions, such a strategy will backfire. Specifically, we introduce the construct "assortment type," and show that the decision to increase brand assortment can decrease market share for that brand when assortment type is "nonalignable" as opposed to "alignable."

Building on research by Markman on *attribute* alignability (c.f., Markman and Medin 1995, Zhang

[1] Alvin Toffler coined the term "overchoice" in his book *Future Shock* (1970) to describe a world in which there was too much choice to make optimal, satisfying decisions.

and Markman 1998), we define an alignable assortment to be one in which the alternatives vary along a single, compensatory product dimension. For automobiles, an alignable assortment might consist of otherwise identical cars that vary on engine size, with one car having a 2.2-liter engine, another having a 2.6-liter engine, and a third having a 3.0-liter engine. Jeans that vary on waist size, analgesics that vary on tablet count, and microwave ovens that vary on capacity also represent alignable assortments. Importantly, with the possible exception of price, an alignable assortment requires trade-offs *within* a single, compensatory attribute.

In contrast, we define a nonalignable assortment as one in which the alternatives vary along multiple, noncompensatory dimensions, such that one alternative possesses one desirable feature while a second alternative possesses a second desirable feature, with these features being "all or nothing" in nature. Such is the case for otherwise identical cars that vary in their options, with one having a sunroof, another having an alarm system, and a third having a leather interior. Other examples would include two laptop computers, with one having a floppy drive and a second having a zip drive, or college majors, with a choice of biology, mathematics, or political science. Unlike alignable assortments, nonalignable assortments involve trade-offs *between* dimensions, such that obtaining one desirable feature entails giving up another desirable feature.

Across three studies, we employ this alignability construct to (1) establish the counter-productive or overchoice effect of assortment size on brand share, (2) tie this overchoice effect to assortment type, and (3) test two process-level explanations for this overchoice effect.

The remainder of this paper is in four parts. First, we review the existing literature on assortment size and consumer choice. Second, we expand upon the construct "assortment type" and explore its potential impact on consumer choice. Third, we present three studies designed to test for the overchoice effect and its causes. Finally, we discuss the implications of our research.

Assortment Size and Consumer Choice

For years, manufacturers have expanded product lines in an attempt to better meet the needs of target consumers (Kahn 1998, Kotler 1991). Typically, they do so by adding new flavors, package sizes, formulations, features, and options (Fader and Hardie 1996, Kotler 1991). As a result, where once the Coca-Cola Company sold a single formulation of cola, now its sells more than 10, including Classic Coke, Diet Coke, Caffeine Free Diet Coke, and Cherry Coke.

The Positive Impact of Assortment Size

The logic behind such product line expansion is well supported in the academic literature. As pointed out by Kahn (1998) and others (e.g., Broniarczyk et al. 1998, Hoch et al. 1999), consumers benefit from a wide product assortment in several important ways. First, given heterogeneity in needs and tastes across consumers, a wide assortment increases the likelihood that any one consumer will find exactly what he or she is looking for. Thus, a consumer is more likely to find a pair of jeans that fits when selecting from among twenty different sizes than when selecting from among ten. Second, due to satiation, curiosity, or fluctuating requirements, an individual consumer will often seek variety within and across consumption occasions (Kahn 1995). As a result, a selection of ten different styles of beer better meets the variety-seeking tendencies inherent in some beer drinkers than a selection of three.

A noted exception to these argued benefits involves the potential confusion or frustration brought about by overwhelmingly large assortments (Cristol and Sealey 1999, Huffman and Kahn 1998, Lehmann 1998). As Huffman and Kahn (1998) note, "large assortment strategies . . . can backfire . . . if the complexity causes information overload such that a customer feels overwhelmed and dissatisfied, or chooses not to make a choice at all" (p. 491). These researchers, however, associate complexity with excessively large assortments, citing as examples 450 telecommunication products by MCI (Cristol and Sealey 1999) and sofas in 150,000 styles and fabrics by one retailer (Huffman and Kahn 1998). Short of such extremes, the belief that increasing variety benefits consumers has received considerable support.

In a between-brand choice context, this "variety is good" premise suggests a manufacturer stands to gain market share by adopting a "large assortment" strategy (c.f., Bayus and Putsis 1999, Kahn 1998). By offering both a two-door and a larger four-door model of its Explorer-brand sport utility vehicle, for instance, Ford can meet the needs of both individuals and families, selling more cars and increasing its share of the SUV market in the process. The same should be true in a between-store choice context, where variety or "selection" has been shown to be a key factor in choosing one store over another (Arnold et al. 1983, Craig et al. 1984, Louviere and Gaeth 1987). With these store-level benefits in mind, researchers have begun looking at ways to increase or to maintain a consumer's perception of store variety while reducing actual variety (Broniarczyk et al. 1998, Hoch et al. 1999).

The Nonnegative Impact of Assortment Size

A complementary perspective from which to view assortment size involves the rational choice principle

of "regularity" (Huber et al. 1982, Luce 1959, Tversky 1972). Regularity dictates that the probability of choosing an alternative from a choice set should never increase with the addition of another alternative to that choice set. In a between-brand choice context, this implies that increasing the size of one brand's assortment should never serve to increase the market share of a competing brand whose assortment remains stable. More formally, if Brand A and Brand B each start out by offering one alternative $\{A_1, B_1\}$ in a particular product category, Brand B should never lose share by adding a second variant $\{B_2\}$ to the market. Quite simply, there should never be a greater probability of choosing A_1 in the larger choice set $\{A_1, B_1, B_2\}$ than in the smaller choice $\{A_1, B_1\}$. While not as strong a claim as "variety is good," regularity dictates that "increasing variety should never be bad" for a brand.

Evidence to the Contrary—Overchoice

Recent research calls these claims into question, however. Across a series of studies, Dhar (1997) found that subjects' preferences for a no-choice option (i.e., the decision to defer choice) increased significantly with the addition of a second attractive alternative to what had been a one-alternative choice set. For example, subjects presented with one answering machine deferred choice 42% of the time, while subjects presented with a second equally attractive answering machine deferred choice 58% of the time. Tversky and Shafir (1992) produced similar results using gambles, rental apartments, and portable CD players.

Iyengar and Lepper (2000) and Chernev (2003) offer added support for this overchoice effect using somewhat larger choice sets. In one particularly compelling demonstration of the phenomenon (Iyengar and Lepper 2000), consumers in an upscale grocery store encountered a tasting table on which were either 24 flavors of jam, or a subset of 6 of those flavors. While a slightly larger percentage of shoppers stopped to sample the jams when there were 24 as opposed to 6 flavors (60% vs. 40%), a much smaller percentage of those who sampled from the 24 jams went on to make a purchase (3% vs. 30%). As a result, while 1.8% (i.e., 3% of 60%) of shoppers who encountered 24 jams purchased, 12% who encountered 6 jams ended up purchasing.

Finally, Boatwright and Nunes (2001) provide real-world evidence of overchoice at the store level (see also Dreze et al. 1994). In their research, they analyzed sales for an online grocer as that grocer dramatically reduced the number of SKUs it offered across 42 different product categories. While assortment *decreased* by 20% to 80% across these categories, overall sales *increased* by an average of 11%. Consistent with the findings of Dhar (1997) and Iyengar and Lepper (2000), it appears that the larger assortments were doing more harm than good for this grocer.

The Moderating Role of Assortment Type

To make sense of these conflicting perspectives, we now propose that product assortments can differ not only in *size*, as has been assumed implicitly in much of the existing research, but also in *type*. In particular, we introduce the construct "assortment type" and differentiate between "alignable" assortments and "nonalignable" assortments.

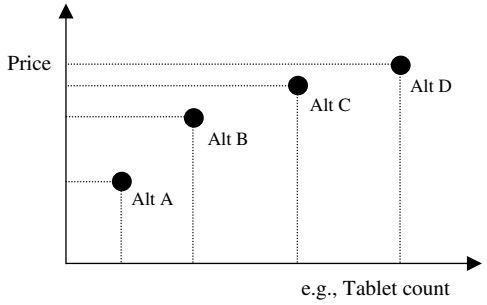
Attribute Alignability

To understand and explain consumer choice, researchers have long focused on the comparability of the attributes possessed by various alternatives (c.f., Johnson 1984). For instance, Markman and his colleagues (Markman and Medin 1995, Zhang and Markman 1998) have categorized attribute differences as either alignable or nonalignable. They define an alignable difference in terms of an attribute that is readily comparable between the two alternatives. Thus, the fact that one car gets 24 miles per gallon (MPG) and a second car gets 28 MPG would be an alignable difference, as would the fact that one corn chip is made with Midwestern corn and a second with Southwestern corn. In contrast, they define a nonalignable difference in terms of an attribute that is possessed by one alternative, but not by the other. Thus, one car having a sunroof and a second having leather interior would constitute a nonalignable difference.[2] When deciding between or comparing two alternatives, they have shown that subjects better remember (Zhang and Markman 1998) and have an easier time cognitively processing (Zhang and Fitzsimons 1999) alignable than nonalignable differences, impacting subsequent choice.

We note that other researchers have proposed conceptually related constructs. Johnson (1984), for instance, looked at the choice strategies consumers used when faced with "comparable" versus "noncomparable" alternatives, where comparability was "the degree to which alternatives are described or represented by the same attributes" (p. 741). He argued that comparable alternatives, such as a choice between televisions, allowed for within-attribute trade-offs, while noncomparable alternatives, such as whether to spend one's bonus on a new refrigerator or a vacation, required a more effortful, abstract assessment at the level of "utility."

[2] In Markman's framework, an attribute is alignable as long as all alternatives possess some aspect of that attribute. This could include the continuous attribute "miles-per-gallon," as well as the categorical attribute "corn type." In contrast, the fact that one alternative has a 60-month warranty and the other does not mention a warranty would make for a nonalignable difference, in spite of the seemingly continuous nature of the 60-month warranty.

Figure 1 The Nature of an Alignable Assortment

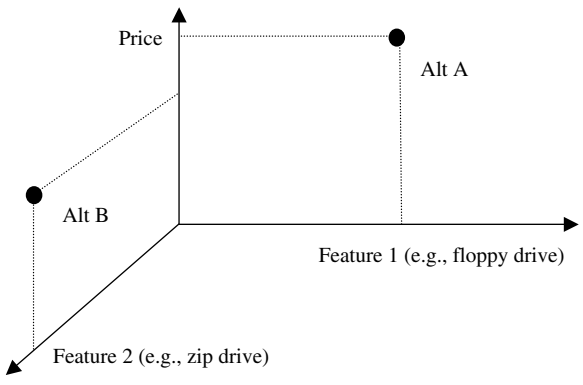


Assortment Alignability

Given that our interest is at the level of brand assortment, we now extend Markman's alignability construct and define an alignable *assortment* to be a set of brand variants that differ along a single, compensatory dimension, such that each variant has a specific quantity of that attribute. One example would be several bottles of Advil-brand ibuprofen that vary in tablet count, as shown in Figure 1. Other examples would include air conditioners that vary in cooling capacity and milk that varies in fat content. Such assortments require trade-offs *within* a single attribute, such as the quantity, capacity, or amount of an ingredient.

In contrast, we define a nonalignable assortment as one in which the brand variants vary along multiple, noncompensatory dimensions, such that while one alternative possesses one desirable feature, a second alternative possesses another desirable feature, with these features being "all or nothing" in nature. Laptop computers that differ in configuration, with one having a CD-rom drive, a second has a floppy drive, and a third having a zip drive, would constitute such a nonalignable assortment. As shown in Figure 2, to obtain one feature (e.g., a zip drive), one must give up another feature (e.g., a CD-rom drive). Other examples would include restaurant entrees (e.g., salmon vs. steak vs. lasagna) and college majors (e.g., biology vs. philosophy), where choosing one alternative delivers a level of features not available in another. Unlike alignable assortments, nonalignable assortments require trade-offs *across* attributes.

Figure 2 The Nature of a Nonalignable Assortment



Several aspects of this categorization are worth noting. First, the categorization takes place at the level of the assortment and not the level of the attribute. In other words, the alignability of an assortment depends on the makeup of the alternatives within that assortment. Thus, the continuous attribute "warranty" can result in an alignable assortment if all alternatives within the assortment possess a warranty of a specific length (e.g., 24 months vs. 36 months vs. 60 months). However, "warranty" can also contribute to the nonalignability of the assortment if one alternative within the assortment has a warranty and the others do not.

Second, the desired benefits of a considered assortment may play a role in that assortment's classification as alignable or nonalignable. Consider three automobiles: a two-seat sports car, a mid-sized sedan, and a minivan. For most individuals in most situations, this grouping would represent a nonalignable assortment, requiring consumers to trade-off sportiness and image for passenger capacity and safety. However, if a consumer needs to rent a vehicle to move his belongings from one apartment to another, these same three alternatives might be evaluated on the single dimension of cargo capacity, rendering the assortment alignable. Similarly, consider colors of paint. A consumer deciding between three shades of yellow may focus on the single dimension of "ability to brighten up a room," resulting in an alignable assortment. But another consumer deciding between light yellow and dark blue may consider trade-offs such as "ability to brighten up a room" versus "ability to hide dirt" versus "wear," resulting in a nonalignable assortment.

These examples suggest that assortment type, while obvious in many cases, can depend on the goals of the decision maker (as in the case of the three cars) or on the alternatives in the choice set (as in the case of the paints). In the end, however, it comes down to whether consumers are being asked to make trade-offs within a single, compensatory dimension or across multiple, noncompensatory dimensions.

The Impact of Assortment Alignability

Why might assortment type matter? In their research, Tversky and Shafir (1992) attributed choice deferral to the psychological conflict inherent in trading off the benefits of two attractive, but different, alternatives. In particular, they contrasted an easy choice with a difficult choice in the following fashion:

> When one option is better than another in all essential respects, there is no conflict and choice is easy.

> However, when each option has significant advantages and disadvantages, people often experience conflict that makes choice aversive and compels them to delay decision and seek additional information or options. Thus, people are more likely to defer choice when conflict is high than when conflict is low. (p. 358)

Using larger choice sets, Iyengar and Lepper (2000) found that subjects presented with larger assortments reported (1) greater levels of frustration with the choice process and (2) greater levels of regret and lower satisfaction with their chosen item than did subjects presented with smaller assortments. These results are consistent with Tversky and Shafir's (1992) concept of conflict.

But conflict also may play a role in brand choice. Just as consumers defer choice rather than choose from alternatives that entail conflict, we propose that consumers may opt out of a brand that entails conflict and into another brand that does not. Specifically, if Brand B offers an assortment that fosters high conflict and Brand A does not, consumers may avoid the Brand B alternatives and choose a Brand A alternative.

We assert that assortment type will contribute to this conflict, with a nonalignable assortment fostering far greater conflict than an alignable assortment, and with this conflict increasing with assortment size. First consider an alignable assortment. Alternatives within an alignable assortment vary along a single dimension that is continuous and compensatory in nature, allowing for a within-attribute, low-risk trade-off between alternatives (refer to Figure 1). In choosing between an automobile that gets 24 MPG and another that gets 28 MPG, for instance, a consumer need only know her relative preference along the single attribute "fuel economy." While the decision weight for the attribute "fuel economy" may be in question, the ordering of alternatives on that attribute should be straightforward, regardless of assortment size. Additionally, the trade-off between alternatives in an alignable assortment is incremental in nature—i.e., in most cases, the absolute difference between a car that gets 24 MPG and a car that gets 28 MPG is relatively minor. These factors—comparison on a single dimension and the incremental nature of the trade-off—combine to minimize the conflict inherent in the assortment.

For nonalignable assortments, however, the trade-offs between variants are no longer one-dimensional and low risk. A nonalignable assortment requires a consumer to make trade-offs both within and across attributes. In choosing between the laptop computers depicted in Figure 2, for instance, a consumer needs to assess her preference for a floppy drive, her preference for a zip drive, and her relative preference for a floppy drive versus a zip drive. Additionally, given the discrete nature of the features in this choice set, the trade-offs between these alternatives will be "all-or-nothing"—to get one option, you must give up another. More broadly, the conflict inherent in making a choice from a nonalignable assortment should be much greater than from an alignable assortment and should increase with assortment size.

With these points in mind, in a between-brand choice setting, we predict assortment type will moderate the effect of assortment size on brand choice. Specifically, assortment size should positively impact brand choice in the case of an alignable assortment, but negatively impact brand choice in the case of a nonalignable assortment, as reflected in the following hypotheses.

Hypothesis H1. *In a between-brand choice context, when brand assortment is alignable, a brand's market share will increase with assortment size.*

Hypothesis H2. *In a between-brand choice context, when brand assortment is nonalignable, a brand's market share will decrease with assortment size.*[3]

We now present three studies to test these and additional hypotheses.

Study 1

Study 1 was designed to test H1 and H2 by assessing the impact of assortment size and type on brand choice. In the product category "microwave ovens," we manipulated product choice sets such that any given subject faced a choice set containing one microwave oven from Brand A and somewhere between one and five microwave ovens from Brand B. In addition, the alternatives of Brand B were constructed such that they either were alignable (i.e., by varying the capacity of each oven) or nonalignable (i.e., by varying the special features of each oven).

Method

Subjects. Subjects were 300 adults who were approached in a shopping mall in Boulder, Colorado and were asked to fill out a brief survey. These subjects were unpaid.

Design and Procedure. The surveys employed in this study instructed subjects to "Imagine that you are planning to buy a microwave oven. At the store, you find the following alternatives." All subjects then were presented with a set of alternatives, each described on the dimensions of interior capacity, wattage, warranty, special features, and price. Each alternative also was identified either as a "Panasonic"

[3] We would note that H2 could be and is, in places, alternatively referred to as the "overchoice hypothesis."

Table 1 Study 1 Stimuli

Alternative	A	B_1	B_2	B_3	B_4	B_5
			Alignable assortment condition			
Brand	Panasonic*	Sharp	Sharp	Sharp	Sharp	Sharp
Capacity	1.1 cu. ft.	1.1 cu. ft.	1.3 cu. ft.	1.5 cu. ft.	1.7 cu. ft.	1.9 cu. ft.
Power Output	700 watts	700 watts	700 watts	700 watts	700 watts	700 watts
Warranty	30 months	30 months	30 months	30 months	30 months	30 months
Features	On-line help	On-line help	On-line help	On-line help	On-line help	On-line help
Price	$140	$140	$160	$180	$200	$220
			Nonalignable assortment condition			
Brand	Panasonic	Sharp	Sharp	Sharp	Sharp	Sharp
Capacity	1.1 cu. ft.	1.1 cu. ft.	1.1 cu. ft.	1.1 cu. ft.	1.1 cu. ft.	1.1 cu. ft.
Power Output	700 watts	700 watts	700 watts	700 watts	700 watts	700 watts
Warranty	30 months	30 months	30 months	30 months	30 months	30 months
Features	On-line help	On-line help	Adjustable speed TT	Moisture sensor	Hold warm feature	Programmable menus
Price	$140	$140	$160	$180	$200	$220

*The designation of Brand A as Panasonic and Brand B as Sharp was counterbalanced across subjects.

or a "Sharp" brand microwave oven. Finally, subjects were asked to identify the alternative they would choose to buy from among those presented.

Within this structure, subjects were presented with a single alternative from one brand (the "lone brand") and up to five alternatives from the second brand (the "target brand"). The designation of one brand (e.g., Panasonic) as the lone brand and the other brand (e.g., Sharp) as the target brand was counterbalanced across subjects. To test our predictions, the dimensions of the lone brand alternative were held constant across conditions and the number and dimensions of the target brand alternatives were manipulated in a 5 (assortment size) $\times$ 2 (assortment type) full-factorial between-subjects design. The stimuli employed are shown in Table 1.

The first factor, assortment size, varied the number of target brand alternatives included in the choice set. Each subject was presented with n variants of the target brand, with n varying from 1 to 5. For assortment size $n = 1$, the choice set consisted of alternatives $\{A, B_1\}$, with the characteristics of the target brand alternative identical to those of the lone brand alternative. Larger assortment sizes were constructed by progressively adding target brand alternatives to the smaller choice sets. As a result, assortment size $n = 1$ consisted of $\{A, B_1\}$, assortment size $n = 2$ consisted of $\{A, B_1, B_2\}$, assortment size $n = 3$ consisted of $\{A, B_1, B_2, B_3\}$, and so on.

The second factor, assortment type, captured whether the target brand assortment was alignable or nonalignable. In the alignable condition, the target brand alternatives varied along the single, continuous dimension of "capacity" (i.e., the interior room of the microwave). The price of each alternative increased with capacity, consistent with products found in the market.[4] In the nonalignable condition, the target brand alternatives varied along the discrete dimension of "special features." As shown in Table 1, one target brand alternative may have had an "on-line help" feature, while another may have had an "adjustable speed turntable" feature. As with capacity, price varied with feature in a manner consistent with products found in the market.

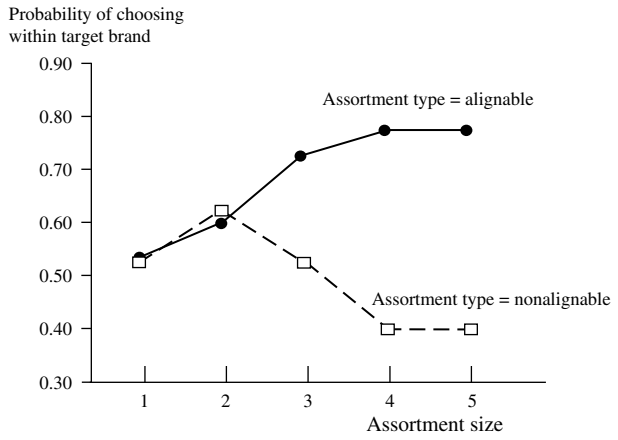
Results

A priori, we expected the likelihood of choosing an alternative from within the target brand to increase with assortment size when assortment type was alignable (H1), but to decrease with assortment size when assortment type was nonalignable (H2). As shown in Figure 3, aggregate subject responses were consistent with these predictions. In the case of the alignable assortment, as the size of the target brand assortment increased from one to five, the probability of choosing from within the target brand increased from 53% to 77%. But, in the case of the nonalignable assortment, while there was an initial increase in brand choice as one moved from one to two target brand alternatives (from 53% to 63%), the probability of choosing from within the target brand eventually decreased to 40% with five alternatives.

We analyzed these results two ways. First, as a preliminary test, we contrasted the probability of choosing a target brand alternative when assortment size was comparatively "small" (i.e., when $n = 1$ or 2) versus comparatively "large" (i.e., $n = 4$ or 5). Consistent with H1, when assortment type was alignable,

[4] Prices and product characteristics (e.g., capacity, special features) were drawn from two reviews of microwave ovens reported in *Consumer Reports* shortly before this study was run. As such, they were assumed to reflect actual trade-offs between price and product characteristics found in the market.

Figure 3 The Effect of Assortment Type on Brand Choice in Study 1



subjects' likelihood of choosing a target brand alternative was significantly higher when the assortment was large as opposed to small ($P_{Large/Align}$ = 77% vs. $P_{Small/Align}$ = 57%; $\chi^2(1) = 5.40$, $p < 0.05$). And consistent with H2, when assortment type was nonalignable, subjects' likelihood of choosing a target brand alternative was significantly lower when the assortment was large as opposed to small ($P_{Large/Nonalign} = 40\%$ versus $P_{Small/Nonalign} = 58\%$; $\chi^2(1) = 4.03$, $p < 0.05$).

Second, to more thoroughly analyze these data, we ran a logistic regression with the log odds of choosing the target brand as the dependent variable and the contrast codes for assortment size and assortment type as the independent variables. While this regression showed no main effect for assortment size ($\chi^2(4) = 1.57$, $p = 0.81$), it did show a highly significant main effect for assortment type ($\chi^2(1) = 10.96$, $p < 0.001$). It also produced a significant size by type interaction ($\chi^2(4) = 10.11$, $p < 0.05$), revealing the predicted moderating role of assortment type on the effects of assortment size. Subsequent independent logistic regressions revealed the nature of this moderating role to be consistent with H1 and H2. Namely, when the assortment was alignable, there was a significant increase in target brand choice with assortment size ($\chi^2(4) = 5.39$, $p < 0.02$). But when the assortment was nonalignable, there was a marginally significant decrease in brand choice with assortment size ($\chi^2(4) = 2.97$, $p = 0.085$).

Discussion

The rules of rational choice would argue that the probability of choosing the lone Brand A alternative should *never have increased* as one increased the size of the Brand B assortment. And the work of Kahn (1995), Huffman and Kahn (1998), and others (Broniarczyk et al. 1998, Hoch et al. 1999) would argue that the probability of choosing the Brand A alternative should have *decreased* with an increase in Brand B assortment.

In keeping with H1, this first study showed these expectations held when assortment type was alignable. When variants were added along the continuous, easily comparable dimension of "capacity," brand share steadily and significantly increased with assortment size. This is consistent with our premise that adding alternatives to an alignable assortment increases the likelihood of meeting an individual's preferences without greatly increasing the conflict associated with choosing from among those alternatives.

However, in keeping with H2, this study also showed that when brand variants were added along the nonalignable dimensions of "special features," brand share *decreased* with assortment size. Again, this result is consistent with our argument that adding alternatives to a nonalignable assortment increases the conflict associated with choosing from among those alternatives. As a result, as the nonalignable assortment increased in size, subjects in this study increasingly opted for Brand A.

There are two concerns with this first study, however. First, while the positive impact of assortment size on brand choice was unambiguously significant for the alignable assortment, the negative impact of assortment size on brand choice was only marginally significant for the nonalignable assortment. Given that our primary interest in this research is on the latter effect, we will look to provide additional support for H2 in later studies.

Second, and more importantly, while we were able to demonstrate the predicted overchoice phenomenon, we still lack an underlying explanation. Apart from the high-level argument that increased conflict can lead to brand defection, we have provided little in the way of causal mechanisms. We will now explore such mechanisms in detail.

Causal Mechanisms

Based on the existing academic literature, there are at least two plausible explanations for the overchoice effect observed in Study 1. The first involves cognitive overload. While cognitive overload has been used to explain choice deferral in cases of "overwhelmingly large assortments" (Cristol and Sealey 1999, Huffman and Kahn 1998), it also may apply to relatively small assortments. In Study 1, for instance, evaluating five nonalignable Brand B alternatives on six dimensions may be cognitively taxing, encouraging subjects to simplify the choice process by choosing the lone brand alternative.

However, this argument only holds if the cognitive requirements of choice are greater for a nonalignable than for an alignable assortment. Research suggests that this might be the case. For instance, the attribute alignability research showed that when deciding between two alternatives, subjects have a far easier time cognitively processing alignable than nonalignable differences (Zhang and Fitzsimons 1999). If one considers the mental steps required to evaluate two alignable versus two nonalignable alternatives, this is not surprising. While the alignable pair requires a single assessment (e.g., Do I value higher or lower gas mileage?), a nonalignable pair requires three assessments (e.g., Do I value a sunroof?; Do I value leather interior?; Do I value a leather interior more than a sunroof?). And as the number of alternatives increases from two to three to four, this difference in required effort will only be magnified (c.f., Shugan 1980).[5]

Shugan (1980) offers a similar assessment, arguing that the "cost of thinking" or the difficulty of choice increases as the covariance between the alternatives being considered becomes negative, as when Alternative A has more of one favorable attribute and Alternative B has more of a second favorable attribute. In our framework, a covariance between alternatives in a nonalignable assortment would most assuredly be negative, with one alternative having one favorable attribute, a second alternative having a second favorable attribute, and so on.

However, if cognitive overload is contributing to the overchoice phenomenon, we would expect the impact of assortment size on brand choice to be moderated by required cognitive effort. When the required effort is high, we would expect the negative effect predicted by H2. But when that required effort is reduced, we would expect this negative effect of assortment size to also be reduced or eliminated. We call this the overload hypothesis.

Hypothesis H3. *For a nonalignable assortment, the negative impact of assortment size on brand choice will be moderated by the required cognitive effort.*

The second plausible explanation for overchoice involves the anticipation or fear of regret inherent in choosing from a nonalignable assortment. As noted by Tversky and Shafir (1992), "the resolution of conflict is complicated by the presence of uncertainty about the consequences of one's action, and it is further hindered by the anticipation of . . . regret" (p. 358). Supporting this contention, Iyengar and Lepper (2000) found that subjects experienced greater levels of regret in their chosen item when they chose from a larger rather than a smaller assortment.

In a between-brand choice context, anticipation of regret is likely to be far greater in the case of a nonalignable than an alignable assortment. Specifically, an alignable assortment allows for incremental trade-offs on a single dimension. While a consumer may lament the fact he purchased a microwave oven that was slightly too small, the purchased oven may still meet most of his needs. Similarly, if a consumer opts for a darker shade of yellow paint, but later decides she should have chosen a slightly lighter shade of yellow, she still benefits from having chosen a shade that "lightens up a room." In contrast, the cross-dimensional trade-offs required with a nonalignable assortment serve to magnify the anticipation of regret. The fact that the assortment forces consumers to forego one attractive attribute to gain a second attractive attribute should increase the anticipation of regret and the likelihood of second-guessing oneself.

Therefore, if the anticipation of regret is contributing to the overchoice effect, we would expect the negative impact of assortment size on brand choice to be moderated by the potential for regret. Holding the complexity of the choice constant, when the potential for regret is high, we would expect greater overchoice than when the potential for regret is reduced or eliminated. We call this the regret hypothesis.

Hypothesis H4. *For a nonalignable assortment, the negative impact of assortment size on brand choice will be moderated by the potential for regret.*

We now present two studies designed to test these hypotheses. A priori, however, we note that these two hypotheses are not mutually exclusive. Rather, both (or neither) of these two causal explanations could contribute to the overchoice phenomenon.

Study 2

Study 2 had two goals. First, it was designed to further test for the overchoice effect (H2). Second, it was designed to explore the first of our potential explanations for this effect—the overload hypothesis (H3). If subjects have difficulty processing the information from a nonalignable target brand assortment, they may simplify the choice task by choosing the lone brand alternative.

Given our interest in testing the mechanisms driving overchoice, we limited out experimental stimuli to nonalignable assortments in this study. Alternatives within these assortments were described on multiple attributes, some of which were identical across the alternatives and some of which differed. To isolate the potential impact of cognitive overload, we varied the presentation of these attributes. Some subjects were presented with alternatives that were

[5] One could call this "complexity," with a nonalignable assortment growing complex more quickly than an alignable one.

"full profile"—described on all attributes regardless of whether those attributes were common or different across alternatives. Other subjects were presented with alternatives that had a "simplified profile"—described in detail only on those attributes that varied across alternatives. These subjects also were told that all alternatives had certain other attributes in common.

This simplification was expected to reduce the cognitive effort required to evaluate the available alternatives. Thus, if cognitive overload contributes to the overchoice phenomenon, we would expect increasing variety to be counterproductive when alternatives were full profile, but we would expect this effect to be moderated by the simplification of the stimuli.

Method

Subjects. Subjects for Study 2 were 204 graduate students at the Hong Kong University of Science and Technology. All were recruited via on-campus intercepts in graduate student cafeterias and common areas. Each subject was offered 20 Hong Kong dollars (∼US$3.00) for completing several unrelated studies that took a total of about 10 minutes to complete.

Design and Procedure. The survey used in this study asked subjects to imagine they needed to purchase a digital camera and that a knowledgeable salesperson recommended several alternatives. The wording was as follows:

> Suppose that you want to purchase a digital camera for a trip you will soon be taking. One Saturday, you visit the local camera store with the intent of buying a camera that day. The very knowledgeable salesperson shows you (two)[three] cameras in your price range. The cameras are:

Subjects were then shown one alternative from the lone brand of camera (e.g., Nikon) and either one or two alternatives from the target brand (e.g., Canon), with the designation of the lone brand as Nikon and the target brand as Canon counterbalanced across subjects. Each camera was described on seven attributes: brand, model name, resolution, weight, battery life, type of lens (zoom vs. panoramic), and price. Finally, each subject was asked to indicate which alternative they would choose to purchase and to indicate their relative strength of preference for the two brands of camera shown.

The stimuli in this survey were manipulated in a 2×2 between-subject, full-factorial design. The first factor, assortment size, varied the number of alternatives available in the target brand. All subjects saw a single alternative from the lone brand. In addition, if they were in the one-alternative condition, they saw one of the two target brand alternatives, counterbalanced across subjects. If they were in the two-alternative condition, they saw both of the target brand alternatives. Thus, a subject in the full-profile/two-alternative condition saw:

	Brand: Nikon	Brand: Canon	Brand: Canon
Model	FinePix 3000	DigiPix Zoom	DigiPix Panorama
Resolution	3.4 MegaPixels	3.4 MegaPixels	3.4 MegaPixels
Weight	14 ounces	14 ounces	14 ounces
Battery Life	250 Pictures	250 Pictures	250 Pictures
Lens	3X Zoom Lens	3X Zoom Lens	Panoramic Lens Setting
Price	HK$2,800	HK$2,800	HK$2,800

There are several things to note about these alternatives. First, the target brand alternatives were nonalignable. When both were available, choosing one required giving up one feature (i.e., zoom lens) to gain another (i.e., panoramic lens). Second, the attributes on which each alternative was described were chosen such that several varied across the alternatives (i.e., brand, model name, lens) and the rest were held constant (i.e., resolution, weight, battery life, price). This was important for our second manipulation. Finally, price was held constant at HK$2,800, or about US$400.

Our second manipulation, presentation format, varied the manner in which the attributes were presented. In the full-profile condition, each camera was fully described on all seven attributes, as shown above. But in the simplified-profile condition, a sentence was added to the opening scenario that described the attributes the alternatives had in common. It read:

> Each alternative has a resolution rating of 3.4 MegaPixels, each weighs 14 ounces, and each has a battery life of 250 pictures.

The recommended alternatives were then described only in terms of the attributes that differed, plus price. For example, subjects in the simplified/two-alternative condition saw:

	Brand: Nikon	Brand: Canon	Brand: Canon
Model	FinePix 3000	DigiPix Zoom	DigiPix Panorama
Lens	3X Zoom Lens	3X Zoom Lens	Panoramic Lens Setting
Price	HK$2,800	HK$2,800	HK$2,800

This manipulation was expected to reduce the cognitive load placed on subjects. Rather than have to process three alternatives on seven attributes, they could now focus their attention on those few attributes that differed. If cognitive overload contributes to the overchoice phenomenon, this manipulation should moderate the effect.

Finally, following these manipulations, we asked all subjects two questions. First, they were asked to indicate which of the alternatives they would choose to purchase. Second, they were asked to indicate on

a seven-point Likert scale their relative preference for the two brands represented in the choice set. The scale was anchored at "1" by "I strongly prefer the Nikon brand" and at "7" by "I strongly prefer the Canon brand."

Results

When faced with the cognitively effortful task of choosing from among target brand alternatives described in "full profile," consumers may defect to the simpler assortment offered by the lone brand. If so, our use of "simplified profiles" should moderate this effect (H3).

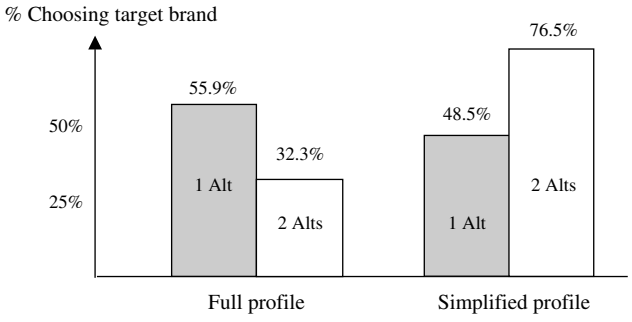
As shown in Figure 4, that is what we found. The percentage of subjects choosing a target brand alternative in the full-profile condition declined from 55.9% when one target brand alternative was available to 32.3% when two were available ($\chi^2(1) = 5.03$, $p < 0.05$). But with simplified profiles, that percentage increased from 48.5% to 76.5% ($\chi^2(1) = 7.26$, $p = 0.01$).

These data were analyzed in a logistic regression with the log odds of choosing a target brand alternative as the dependent variable, and with contrast codes for assortment size and presentation format as the independent variables. This logistic regression showed no main effect of assortment size ($\chi^2(1) = 0.10$, $p > 0.70$), but a significant main effect for presentation format ($\chi^2(1) = 7.10$, $p = 0.01$). Subjects seeing the simplified profiles were significantly more likely to choose a target brand alternative then subjects seeing the full profiles. This main effect was qualified, however, by a highly significant assortment size by format interaction ($\chi^2(1) = 13.92$, $p < 0.001$).

Similar results were obtained when we analyzed subjects' relative preferences for the lone brand versus the target brand. The mean preference ratings for subjects in the full-profile conditions decreased from 3.73 in the one-alternative condition to 2.91 in the two-alternative condition, indicating a declining preference for the target brand. The reverse was true in the simplified profile, where the mean ratings increased from 3.60 to 4.50. We analyzed these data in a 2×2 ANOVA and found a significant main effect for presentation format ($F_{1,203} = 9.67$, $p < 0.01$) and a significant assortment size by format interaction ($F_{1,203} = 13.51$, $p < 0.001$).

Collectively, these results are highly supportive of H3. By simplifying the informational display, thereby reducing the effort required to cognitively process the available alternatives, we were able to reverse the overchoice effect predicted by H2.

Figure 4 The Impact of Cognitive Effort on Brand Choice in Study 2



Discussion

This second study establishes three important results. First, it lends further support to the overchoice effect (H2). In Study 1, we demonstrated the counterproductive effect of assortment size and nonalignability in the context of choosing a microwave oven. In this second study, we replicated this effect in the context of choosing a digital camera.

Second, this second study provides support for the overload hypothesis (H3). When faced with a nonalignable brand assortment, consumers are cognitively challenged to process all of the available information, leading the consumer to choose from a competing brand that does not require such cognitive effort. We were able to reverse this effect by simplifying the information presentation, thereby reducing the cognitive requirements of choice.

Finally, we found the predicted effect merely by increasing the target brand's assortment from one to two alternatives. This is in contrast to the comparatively large assortments employed by Iyengar and Lepper (2000) and Chernev (2003) to demonstrate the negative effects of variety. We would note that our results are consistent with those of Tversky and Shafir (1992) and Dhar (1997), who found that adding a second attractive, but conflicting, alternative to what had been a one alternative choice increased the likelihood of choice deferral. Here, adding a second attractive, but conflicting, alternative to what had been a one-alternative *brand* set increased the likelihood of choosing the competing brand.

Study 3

Study 2 identifies cognitive overload (H3) as one causal mechanism for the overchoice phenomenon. When presented with an increasing nonalignable assortment that was complex in presentation, subjects defected from that assortment to the lone alternative. However, when the presentation of the nonalignable assortment was simplified, that defection did not take place.

This finding does not invalidate the potential role of regret, however. In particular, holding assortment complexity constant, consumers may avoid choosing from within an assortment if that assortment creates the potential for regret, something consumers would rather avoid. Given its nature, a nonalignable

assortment is argued to create such potential, asking consumers to trade-off one attractive attribute to obtain another.

To explore this possibility, we presented subjects with the task of buying a gift for the father of a good friend. In this task, subjects were presented with one alternative from the lone brand and either one or two nonalignable alternatives from the target brand. In addition, while half the subjects saw their decision as final, half were told that their friend's father could exchange the chosen gift for another alternative. If overchoice is driven by the anticipation of regret (H4), the ability to exchange the chosen item should reduce this regret and moderate or eliminate overchoice. Again, given our interest in the mechanisms driving overchoice, we limited out experimental stimuli to nonalignable assortments.

Method

Subjects. Subjects were 480 adult visitors to a Boston-area museum. Individuals were approached as they lingered inside or outside the museum and were asked to fill out a brief survey. Approximately 50% agreed. These subjects received a small gift for their efforts.

Design and Procedure. The surveys used in this second study were similar in style to those used in the first two studies and presented subjects with the following scenario.

> Suppose that you need to purchase a small gift for the father of a good friend. You know that your friend's father is an avid golfer, and you think that a dozen golf balls would be a good choice. You go to a golf retailer near your home, explain your situation to the salespeople, and they recommend the following golf balls.

Each subject was then presented with two or three alternatives, each identified either as a "Maxfli" or a "Titleist" brand golf ball, two popular brands. Each alternative also was described by product name, product slogan, and price. Finally, subjects were asked to identify the golf balls they would choose to buy from those presented.

Within this survey, information was manipulated in a 2 (assortment size) $\times$ 2 (exchange) full-factorial, between-subjects design, with 120 subjects per condition. The first factor, assortment size, varied the number of target-brand alternatives. In addition to seeing a single lone brand alternative, half the subjects saw one target brand alternative and the other half saw two target brand alternatives. The designation of the lone brand alternative as Maxfli and the target brand alternatives as Titleist was counterbalanced across conditions.

The lone brand alternative was described as Maxfli (or Titleist) brand, "Tour Performance" golf balls, with the tag line "Play Golf Like the *Pros*." The price was listed as \$24 per dozen. The first of the target-brand alternatives was described as Titleist (or Maxfli) brand, "Pro Distance" golf balls, with the tag line "For the *Longest* Shots in Golf." The second was described as Titleist (or Maxfli) brand "Pro Control" golf balls, with the tag line "For the *Straightest* Shots in Golf." Both were priced at \$24 per dozen. Subjects in the one-alternative condition saw one of these two Titleist alternatives, counterbalanced across subjects. Subjects in the two-alternative condition saw both of these Titleist alternatives.

Three aspects of the target-brand alternatives are noteworthy. First, they were nonalignable. As their product names and slogans suggest, one was meant to optimize on distance and the other on control (or direction), forcing subjects to make a between-attribute trade-off when both alternatives were available. Second, given the purpose of the purchase (i.e., a gift for a friend's father), there was likely to be a good bit of uncertainty as to which of these two target-brand alternatives would be most appreciated (e.g., Does he have trouble with distance or direction?), producing further conflict when both were in the choice set (Tversky and Shafir 1992). Third, all alternatives were priced at \$24, controlling for price across all conditions.

The second factor, exchange, involved the addition of a sentence to the scenario description for half the subjects. Those subjects in the no-exchange condition saw the motivating scenario exactly as outlined above. But those in the exchange condition had a sentence added to the end of the scenario that read:

> In addition, they let you know that, within 30 days of purchase, your friend's father can exchange the golf balls you choose for another type.

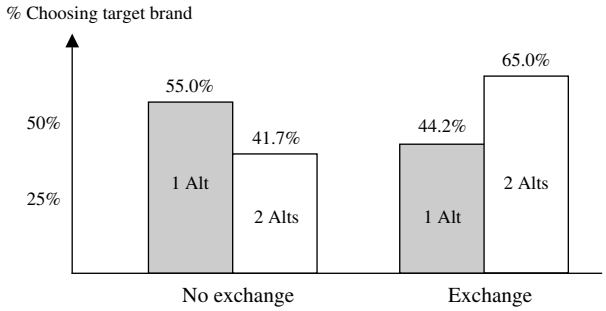
This additional line was expected to reduce the anticipatory regret a subject might feel in choosing from among the two alternatives offered by the target brand. Therefore, if overchoice is driven by anticipation of regret, this line should moderate the effect.

Results

As shown in Figure 5, that is what we found. In keeping with the overchoice effect (H2), the percentage of subjects choosing a target brand alternative in the no-exchange condition declined from 55.0% when one target brand alternative was available to 41.7% when two were available ($\chi^2(1) = 4.35$, $p < 0.05$). In contrast, when the opportunity to exchange the gift was available, the percentage of subjects choosing a target brand alternative increased from 44.2% to 65.0% ($\chi^2(1) = 10.99$, $p = 0.001$).

To more thoroughly test for this apparent interaction, we ran a logistic regression with the log odds

Figure 5 The Impact of Exchange on Brand Choice in Study 3



of choosing a target-brand alternative as the dependent variable, and with contrast codes for assortment size and exchange as the independent variables. This logistic regression revealed no main effect of assortment size ($\chi^2(1) = 0.70$, $p > 0.40$) or exchange ($\chi^2(1) = 1.94$, $p = 0.163$), but a highly significant interaction between these two factors ($\chi^2(1) = 14.52$, $p < 0.001$).

Discussion

Together, Studies 2 and 3 suggest two potentially complementary causal mechanisms for overchoice. The first is cognitive overload. When faced with a nonalignable brand assortment, consumers are cognitively challenged to process all of the available information, leading the consumer to choose from a competing brand that does not require such cognitive effort. We were able to reverse this effect by simplifying the information presentation, thereby reducing the cognitive requirements of choice.

The second causal mechanism appears to be the potential for regret. When faced with a nonalignable product assortment from within a single brand, consumers are forced to trade-off one attractive attribute to obtain another. This creates the potential for regret, something consumers would rather avoid, driving them toward choosing the lone brand alternative. One way to avoid this brand defection is to reduce the potential for regret, as we did by offering the opportunity to exchange the purchased product.

These findings suggest that overchoice is not driven by a single factor. Rather, both cognitive overload and the anticipation of regret may be at work in many of the studies conducted on choice deferral and the demotivating effect of increased variety. In fact, when increasing assortment sizes from 4 to 16 (Chernev 2003) or 6 to 30 (Iyengar and Lepper 2000), it is hard to imagine how both mechanisms would not be at work.

General Discussion and Conclusions

Summary of Research

Research on consumer decision making and rational choice has long viewed variety as good for consumers, manufacturers, and retailers (c.f., Broniarczyk et al. 1998, Hoch et al. 1999, Kahn 1998). Some recent research calls these views into question, however, showing that increasing variety can lead to choice deferral (Boatwright and Nunes 2001, Chernev 2003, Dhar 1997, Iyengar and Lepper 2000). The present research extends these recent findings to a between-brand choice context and investigates when and why an increasing assortment will prove detrimental. In particular, we argue that the impact of assortment size on brand choice will be systematically moderated by assortment type, with an increasing alignable assortment positively impacting brand choice, but an increasing nonalignable assortment negatively impacting brand choice.

In Study 1, we show this to be the case. In a between-brand choice context, as assortment size for one brand increased from one to five alternatives, the probability of choosing an alternative from within that brand increased from 53% to 73% when the assortment was alignable, but decreased from 53% to 40% when the assortment was nonalignable.

And in Studies 2 and 3, we replicate this negative impact of a nonalignable assortment and explore its root causes. In particular, we find the overchoice effect is driven both by "cognitive overload" (Study 2) and the "anticipation of regret" (Study 3). In turn, we find that simplifying the information presentation and reducing the potential for regret moderate the negative impact of nonalignability.

Theoretical Implications

From a theoretical perspective, there are at least two insights from our research. First, our results suggest a systematic violation of the rational choice principle of regularity. Across three studies, as the size of a choice set for a nonalignable assortment increased, the probability of choosing an original alternative within that choice set increased significantly. Along with the attraction effect (Huber et al. 1982) and the compromise effect (Simonson 1989), this "overchoice effect" is one of the few systematic violations of regularity that has been demonstrated in the choice literature.

Second, while there exists theoretical and empirical research that explores the effect of assortment size on consumer choice, this research is the first to introduce the concept of "assortment type" as an important theoretical construct. Further, our research shows that the negative impact of nonalignability has multiple causes. It is due both to the increased cognitive effort required to process a nonalignable assortment (e.g., the number of comparisons required) and to the increased potential for regret inherent in such an assortment. When considered together, assortment size and assortment type provide a more complete picture of the effect of assortment on judgment and choice.

Managerial Implications

From a managerial perspective, our research also indicates that an increasingly large assortment can negatively impact consumer choice and brand share. Further, if an assortment forces consumers to make choices that have the potential for regret or that force consumers to process large amounts of information, this negative impact of variety can occur in assortment sizes that are quite small in number, clearly within the range of many existing product assortments. In light of these effects, managers should be aware of the moderating effect of assortment type on consumer choice and develop strategies to deal with it.

Several strategies come to mind. One would be to increase the perceived alignability of any given assortment through feature bundling. For instance, rather than promote its home computers solely on their features and specifications, Dell promotes them in a good, better, best type of arrangement, effectively turning a large, nonalignable assortment into a more manageable, alignable assortment. Some car companies also have chosen to do this, as when Honda offers an increasingly outfitted DX, LX, and EX version of its popular Accord sedan. Such bundling of features should make consumer decision making easier and reduce the potential for regret, providing a rationale for bundling beyond that of traditional price discrimination.

Second, one could simplify the cognitive effort required to make a given choice. Study 2 suggests that this might be done through a strategic simplification of information presentation. Other manufacturers have opted to lead the consumer through the decision making process. At one point, for instance, Titleist used a very simple interactive program to lead people through the golf ball choice process. This program asked a series of questions, such as "Do you hit most of your shots in the fairway?" and "How far do you hit your drive?" and would recommend which of its ten or so golf balls would best meet the needs of the golfer. *Consumer Reports* magazine often provides similar templates to help people deal with nonalignable assortments, such as which cellular telephone plan to choose or whether to lease or buy a car.

Third, a marketer could reduce the potential for regret. Study 3 suggests this could be accomplished through a liberal exchange policy. Money-back guarantees could serve the same purpose. Interestingly, while such policies are broadly used in practice to encourage sales, our research would argue that these policies will be significantly more effective in the case of increasing nonalignable assortments than increasing alignable assortments.

Finally, a manufacturer could simply recognize the potential shortcomings of a large, nonalignable assortment and reduce its offerings. In recent years, Procter and Gamble has taken to rationalizing its product lines in many packaged good categories. While done primarily for operational reasons (e.g., to reduce stockouts, to increase turnover), such a strategy could also increase demand for P&G alternatives within those categories.

In the end, any strategy which reduces the conflict inherent in a brand's assortment, whether it be a reduction in the number of nonalignable alternatives offered, a reduction in possible regret, a simplification of information processing, or a reduction in the underlying nonalignability should help decrease overchoice.

Future Research

While this research challenges the positive effects of variety on brand choice, there are some interesting research questions that remain open. First, Studies 2 and 3 lend support to two causal mechanisms for overchoice—information overload and the anticipation of regret. However, future research should explore when each of these mechanisms plays more or less of a role in consumer choice.

Toward this end, we can speculate on when regret versus information overload will play a larger role in brand choice. For instance, we would expect regret to have greater impact in product categories where product characteristics change between purchasing occasions, as in categories undergoing rapid change (e.g., personal computers) or categories with long inter-purchase cycles (e.g., appliances). Similarly, we might expect regret to have greater explanatory power among consumers who are more risk averse or who are first-time buyers. In contrast, we would expect information overload to have greater impact in cases where a consumer is already mentally taxed (e.g., shopping with their small children) or in cases where the cost of error is low (e.g., all alternatives offer satisfactory benefits). Similarly, we might expect information overload to have a greater impact for consumers who have a low need for cognition. Obviously, further research is needed to explore these possibilities.

Finally, in this paper we have operationalized alignability as a dichotomous property of a product assortment—i.e., assortments in our studies were either purely alignable or purely nonalignable. But many assortments demand trade-offs both within and across attributes. For instance, in deciding on a car, there are certain product attributes that will be alignable and offered in some amount by every alternative (e.g., engine size, mileage, etc), while other attributes will be nonalignable and offered by some alternatives, but not others (e.g., sunroof, leather interior). In such cases, which set of features will have a greater impact on whether a consumer chooses from

within a particular brand? Obviously, more research is needed to understand the relative impact of alignable and nonalignable features when those features are both present in a brand assortment.

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