The Effect of Decision Strategy on Deciding to Defer Choice

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ABSTRACT
Recent research has examined consumer decision making when the option of not choosing any of the alternatives is also provided. The findings from this research suggest that the decision to defer choice is sensitive to the uncertainty of choosing the most preferred option from the set of alternatives provided. Building on this research, the author tests whether the decision to defer choice is also influenced by task variables that influence decision uncertainty. In the first experiment, this proposition is tested for choice problems in which information on three relatively equally attractive alternatives is presented either sequentially or simultaneously. As predicted, the preference for the defer-choice option was greater when the three alternatives were presented simultaneously. A second study forced subjects into using one of four decision strategies in order to choose between two non-dominated alternatives. The preference for the no-choice option was found to be higher when the rule required explicit attribute tradeoffs and lower when it simplified choice. These results suggest that choice uncertainty is influenced by the decision strategy used to determine the preference among alternatives. We conclude with a discussion of the implications of the results for marketers' communication strategies.

KEY WORDS decision making; choice difficulty; decision strategy; conflict

The traditional focus in the decision-making literature has been on the problem of how people choose among different alternatives. In the real world, consumers also have the option of not choosing and instead seeking more information or searching for new alternatives. Normatively, the decision not to choose should be made when the alternatives in the choice set are not desirable or if there are increased benefits from search. In certain instances, choice among several desirable alternatives can be difficult and give way to a more fundamental kind of preference—the preference for not choosing. Recent research has demonstrated that the choice of a no-purchase option is sensitive to the characteristics of the choice set under consideration (Dhar, 1995; Huber and Pinnell, 1994; Tversky and Shafir, 1992).

More generally, the decision to defer choice may be sensitive to factors that highlight the uncertainty of preference among the alternatives in a choice set. While the classical theory of choice assumes that each alternative has a utility or subjective value, and that the consumer selects the alternative with the highest value, one of the most researched areas in behavioral decision theory has been the analysis of different decision strategies that consumers employ for choosing among available alternatives (Klayman, 1985; Payne, Bettman, and Johnson, 1988). These studies typically find that individuals adopt different decision rules in different choice situations, potentially leading to differences in...
outcomes. Further, different decision strategies may also result in different degrees of uncertainty about the most preferred alternative. In such cases, consumers may be hesitant or unwilling to make the purchase decision immediately.

In this paper, we examine the effect of applied decision strategy on the decision to defer purchase. While the use of different decision rules is consistent with the view that individual rationality is bounded, the different strategies potentially influence which option is chosen from the offered set (Payne, Bettman, and Johnson, 1992). Building on the notion of preference lability and decision uncertainty, we propose that decision strategies can also influence whether or not consumers decide to choose from the offered set. As an example, consider a consumer who is debating between two mutual funds as an alternative to her current savings account. Assume for the moment that the two funds differ primarily on risk and return. We propose that a decision rule that requires her to make explicit tradeoffs between the competing investments increases indecision and a tendency to postpone choice. Such an effect may have significant implications for a marketers' communication strategies, suggesting that purchase incidence can be modified by inducing consumers into using specific decision rules.

We further propose that the manner in which information about the alternatives is presented can also influence purchase uncertainty and the preference for a no-choice option. When alternatives are presented simultaneously, the decision process typically involves explicit interbrand comparisons and is sensitive to the ability to discriminate among the competing options in the choice set. Conversely, when the same alternatives are provided sequentially, the use of alternative-based rules is not expected to highlight the competing benefits of each alternative and increase the preference for a no-choice option.

This paper reviews previous research relevant to the area and tests the influence of task characteristics on the decision to defer choice in two experiments. The first study alters the choice processes by manipulating the format in which the information on the alternatives is presented. A second test of the underlying framework is to examine the effect of the specific decision rule applied on the decision to defer choice. We report our findings and conclude with a discussion of their implications for marketers as well as suggestions for future research.

THE EFFECT OF DECISION STRATEGY ON CHOOSING NOT TO CHOOSE

Research on how individuals choose among several alternatives has largely ignored the decision not to choose, an option that is often exercised by consumers (Greenleaf and Lehmann, 1995; Olsen and Swait, 1994). According to the classical theory of choice, the preference for a no-choice option depends only on the utility of the most preferred alternative in the choice set. In such cases, the preference for not choosing can be rationalized by a more complete inventory of preferences, one that captures the utility of maintaining the status quo and treats no-choice as just another option.

In psychology, conflict and dissonance researchers generally agree that defensive avoidance is a likely response to difficult choices (Festinger, 1964; Janis and Mann, 1977). In this vein, many studies have shown that the time to make a decision varies systematically with the composition of the choice set (Kiesler, 1966; Wicklund and Ickes, 1972). Recently, a number of studies that explicitly provided the no-choice option find that the decision to defer choice is sensitive to the set of alternatives under consideration (Dhar, 1995; Huber and Pinnell, 1994; Tversky and Shafir, 1992). Specifically, these studies show that adding attractive alternatives can increase choice uncertainty and the preference for the no-choice option. These results suggest that the degree to which a choice set offers many acceptable alternatives, and none that is seen as dominant, creates indecision, leading to a postponement of choice.

In previous studies, choice difficulty was manipulated by altering the choice set under consideration. A relatively neglected area of research is the effect of the decision rules used on the difficulty of deciding
from a choice set. The effect of different choice strategies on decision instability is not obvious since their impact is limited to specifying a criterion for choosing from a given set. Note that if the correctness of the decision can be determined unambiguously, then the process through which one arrives at the choice should be immaterial. In practice, the decision to choose is often guided by considerations that justify the ease of arriving at a decision. Different strategies differ in their focus on competing alternatives as well as the ease of discriminating between them and, consequently, the preference for not choosing.\footnote{In this vein, Tversky (1972) suggests that one reason why the elimination-by-aspects decision rule is preferred is that the choices based on this rule can be easily justified.}

While there is no previous research that directly addresses the proposed relationship between the use of a specific decision rule and the decision to defer choice, a number of theoretical analyses and empirical results have a bearing on this issue. Previous research has suggested that decision rules can be characterized by the degree to which they differ in their focus on competing alternatives. Since rules that avoid explicit comparisons across alternatives ignore potentially difficult tradeoffs, they should make it easier to arrive at a stable intent. To illustrate, consider the following example from Festinger's (1957) seminal work on cognitive dissonance:

"Imagine a person having to choose between two alternatives, each of which is quite attractive. Before the decision is made, he considers the features of each of the alternatives. There are a number of elements that, considered alone, would lead him to choose Job A and also a number of elements that, considered by themselves, would lead him to choose Job B."

We suggest that when the two jobs are directly compared, the person may exhibit an increased tendency to defer choice. Specifically, when attribute differences are considered across alternatives, there is an increased consideration of foregone outcomes than when these tradeoffs are made among attributes that belong to the same alternative.

A related reason why decision strategies may lead to differences in not choosing is the notion that choice is seen as emerging when individuals have sufficient confidence in their chosen option. Thus, strategies that result in greater confidence in the decision are less likely to result in the postponement of choice. Zakay (1985) (see also Mayseless and Kruglanski, 1987) reports that the degree of confidence in the decision is influenced by the number of reasons available against an alternative. While rules are used to simplify choice complexity, they also differ in the number of (dis)advantages generated for the chosen and non-chosen alternatives. In this vein, rules that involve the explicit consideration of the pros and cons of competing alternatives result in a lower level of decision confidence in relation to decision rules for which the advantages of one option are not explicitly balanced against the advantages of others (Zakay, 1985). Thus, rules that generate both advantages and disadvantages for the alternatives under consideration should decrease decision confidence and, consequently, should increase the decision to defer choice.

Note that the rules which focus on competing options may differ in the degree to which they confront or avoid the potentially difficult task of weighing such differences. To the extent that a rule establishes a decisive advantage for a single alternative, it may actually increase the tendency to choose. This notion arises directly from the role of dominance in arriving at a choice. Montgomery (1989) posits that the process of choosing can be seen as a search for dominance structure, i.e. a decision emerges when the chosen alternative is seen as dominating the others. Recent findings show that adding a dominated alternative increases the likelihood of choice (Dhar, 1995; Tversky and Shafir, 1992). The authors argue that a dominated option facilitates arriving at a stable intention by providing a compelling reason for choice (Shafir, Simonson, and Tversky, 1993). In a number of choice scenarios, it is not possible to observe dominance or overall superiority for a specific alternative.
such cases, dominance may be achieved by rules that can be seen as providing an approximate dominance structure. For example, the lexicographic decision rule implies that the decision maker chooses based on the most important attribute on which one, and only one, alternative is better than all the other alternatives. Thus, when the lexicographic rule is used, the chosen alternative will be seen as dominating the rest on the attributes used in making the choice. Similar to context-induced dominance, rule-based dominance should also decrease the decision to defer choice.

In summary, decision rules can vary in the degree to which they focus on competing alternatives as well as the difficulty of weighing such differences. If preferences are uncertain, rules that require explicit weighing of the benefits of the non-chosen alternatives are likely to increase choice uncertainty and the preference for not choosing. On the other hand, decision rules that avoid explicit consideration of the differences among competing alternatives, or that create a dominance structure, reduce choice uncertainty, and should be more likely to result in choice. We conducted two studies using two different manipulations to influence the mode of decision processing. The first study used a task manipulation to alter the preferred decision strategy whereas the second study forced subjects into using a specific decision rule.

STUDY 1: EFFECT OF INFORMATION PRESENTATION FORMAT

In the previous research examining the preference for a no-choice option (Dhar, 1995; Tversky and Shafir, 1992), the alternatives in the choice set were described simultaneously. In a number of situations, the options are inspected sequentially rather than simultaneously. For instance, the alternatives may be located at different places and can only be inspected in sequence. This situation exists when information about different options is located in different stores (e.g. automobiles) or at different locations in the same store. Since differences in representation have an influence on the preferred decision strategy (Newell and Simon, 1972), the first study examines the effect of presentation format on the decision to defer choice.

Studies in information monitoring and eye movement reveal two distinct patterns of information acquisition. The decision strategies differ on whether information is evaluated by looking at particular alternatives across attributes (alternative-based) or by examining particular attributes across alternatives (attribute-based). The preferred strategy is determined by the differential availability of the information on the alternatives (Bettman and Kakkar, 1977; Russo and Dosher, 1983). Thus, for simultaneously available alternatives, dimensional comparisons are usually applied. In contrast, a dimensional strategy is difficult to apply for sequentially presented alternatives as the features of the first alternative would have to be stored in memory until the next alternative becomes available. Consistent with this notion, Schmalhofer and Gertzen (1986) report a strong tendency towards alternative-based processing for sequential presentations. Overall, this stream of research indicates that subjects are more likely to make alternative-based evaluations when the information is presented sequentially and attribute-based evaluations when information on the alternatives is presented simultaneously.

The discussion from the previous section suggests that differences in the preferred strategy would differentially influence the decision to defer choice in the two conditions. In the choice task where the alternatives are inspected simultaneously, subjects are more likely to focus on the comparative advantages of the alternatives. Since the process of making tradeoffs between relatively equally attractive alternatives is likely to increase the difficulty of choosing any one alternative, there will be a

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2 Tversky (1969) also suggested that the additive rule is more likely when alternatives are presented sequentially while the additive difference rule is more likely when they were presented simultaneously.
tendency to defer choice. On the other hand, when the alternatives are inspected sequentially, an alternative-based aggregation into holistic evaluations is the more preferred strategy. In such cases, the degree of conflict is less likely to be affected by the nature of tradeoffs on specific dimensions since they belong to the same alternative. Further, when information on the alternatives is not accessible simultaneously, a satisficing strategy is more likely (Lindberg, Garling, and Montgomery, 1989; Olander, 1975). Since the choice process involves either a comparison of holistic evaluations, or of each alternative against some mental criterion or aspiration level (Simon, 1955), a satisficing or a holistic strategy is likely to result in a decision to purchase when the alternatives provided are attractive.

In summary, the first study examines the difference between the simultaneous and sequential presentation of alternatives on the decision to defer purchase. We predict that the proportion of subjects who defer choice will be greater when the alternatives are presented simultaneously. This difference is attributed to the fact that: (1) the uncertainty of which alternative to choose is more pronounced in the simultaneous presentation condition due to the greater focus on the benefits of competing alternatives and (2) the greater use of alternative-based strategies in the sequential condition is conducive to satisficing behavior. On the basis of this discussion, the first hypothesis is as follows:

H1: The preference for a no-purchase option from a choice set consisting of equally attractive alternatives will be greater in the simultaneous choice condition than in the sequential choice condition.

Method

Procedure

Subjects were 155 undergraduate students in business and psychology at a west coast US university, and participation in the experiment was a course requirement. Subjects were asked to imagine that they were considering making a purchase in the different categories described. The task instructions emphasized that there were no right or wrong answers and that they should select the option that best reflected their response to the situation described. Subjects were told that, as in real choice situations, they also had the option to defer choice and look for other alternatives. They were also told that in the event that they decide to look for other alternatives, the current ones may or may not be available.

Manipulation

As indicated previously, the treatment conditions differed in the manner in which the alternatives in the choice set were presented. Half the subjects were assigned to the simultaneous condition and the other half to the sequential choice condition. Within each task condition, subjects saw a choice set with three attractive alternatives \{A, B, C\}. Subjects were randomly assigned to one of the two treatment conditions, with 75 being assigned to one condition and 80 to the other.

Subjects were told to read carefully the information provided in order to determine whether or not they would like to purchase one of the alternatives provided. In the sequential condition, subjects viewed the three alternatives in sequence, each described on a separate page. Further, subjects were told that after they had seen each alternative, they could not go back to review the information. In order to control for any order effects, the position of the alternatives was rotated such that each one appeared in a particular sequence an identical number of times. In the simultaneous presentation

\[ \text{The linear additive model involves assigning weights to the different dimensions which, given the algebraic form of the model, reflect the extent to which one is willing to implicitly trade off different dimensions.} \]
condition, the alternatives were described on a single page followed by the same decision task. In both task conditions, following the description of the three alternatives, subjects had to decide whether to choose one of the alternatives or to look for other options.

**Choice sets**
The information format hypothesis was tested for four choice problems that represented different consumer choice situations. The categories were similar to those used in previous studies on task and context effects, the only criterion being reasonable familiarity with the product class for the student population. Specifically, the following choice problems were used: bookshelf speaker, auto-focus camera, laptop computer, and apartment. The alternatives were described by a list of their characteristic features taken from *Consumer Reports* and catalogs of large mail order companies. The choice set was constructed such that the three alternatives were each best on one dimension and were identical on the remaining attributes. The order in which the four problems were seen was randomly determined. A choice problem in the simultaneous condition is shown in Exhibit 1.

**Exhibit 1. Sample stimuli in the simultaneous choice condition**

**Bookshelf Speakers**

Imagine that you are planning to purchase a pair of bookshelf speakers for yourself. The local electronics store has three brands of small speakers on a sale that ends today. The three speakers by different manufacturers are as shown below:

<table>
<thead>
<tr>
<th>Speaker Features</th>
<th>Brand AAA</th>
<th>Brand BBB</th>
<th>Brand CCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass Rating (max = 100)</td>
<td>90</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>Treble Rating (max = 100)</td>
<td>80</td>
<td>90</td>
<td>70</td>
</tr>
<tr>
<td>Power Rating (max = 100)</td>
<td>70</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>5.5 lbs</td>
<td>5.5 lbs</td>
<td>5.5 lbs</td>
</tr>
<tr>
<td>Warranty (Yrs)</td>
<td>3 Years</td>
<td>3 Years</td>
<td>3 Years</td>
</tr>
</tbody>
</table>

Price: Special Price: $199 Last Day of Sale

In the situation above, I would probably:
1. Not buy any of these brands and search for other speakers.
2. Buy Brand AAA.
3. Buy Brand BBB.
4. Buy Brand CCC.
Results

Manipulation check
In order to validate the manipulation, a separate group of 60 subjects rated the overall attractiveness of each alternative on a 9-point scale (a higher number denoting greater attractiveness). As expected, the three alternatives in the choice set did not differ significantly in their mean attractiveness ratings. Further, the attractiveness ratings for the three alternatives in the different choice problems were always greater than 6, indicating that the alternatives were generally perceived as being attractive.

Hypothesis 1 predicted that subjects would be more likely to defer choice in the simultaneous choice condition. Exhibit 2 reports the percentage of subjects who choose/defer choice in the two task conditions and are illustrated for the bookshelf speakers in the text. Consistent with our predictions, the defer-choice option was selected by 14% of the subjects in the sequential condition; this increased to 30% when the same alternatives were presented simultaneously. As shown in Exhibit 2, similar results were obtained for other categories. The mean percentage of subjects not purchasing any of the alternatives was significantly higher in the simultaneous choice condition compared to the sequential choice condition for three of the four problems and in the predicted direction for the fourth choice problem. Across the four problems, the increase in the defer-choice option in the simultaneous condition over the sequential condition was 13% ($\chi^2(1) = 16.7, p < 0.01$).

Exhibit 2. The decision to purchase under sequential and simultaneous task conditions ($n = 155$)

<table>
<thead>
<tr>
<th>Product category</th>
<th>Seq.</th>
<th>Sim.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bookshelf speakers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase</td>
<td>86%</td>
<td>70%</td>
</tr>
<tr>
<td>Defer purchase</td>
<td>14%</td>
<td>30%</td>
</tr>
<tr>
<td>Auto-focus camera</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase</td>
<td>89%</td>
<td>80%</td>
</tr>
<tr>
<td>Defer purchase</td>
<td>11%</td>
<td>20%</td>
</tr>
<tr>
<td>Laptop computer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase</td>
<td>88%</td>
<td>72%</td>
</tr>
<tr>
<td>Defer purchase</td>
<td>12%</td>
<td>28%</td>
</tr>
<tr>
<td>Apartment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase</td>
<td>90%</td>
<td>78%</td>
</tr>
<tr>
<td>Defer purchase</td>
<td>10%</td>
<td>22%</td>
</tr>
</tbody>
</table>

*aThe difference in the percentage of subjects who purchase between the sequential and simultaneous presentation format is statistically significant by a chi-square test at the 0.05 level.

*bThe difference in the percentage of subjects who purchase between the sequential and simultaneous presentation format is marginally significant by a chi-square test at the 0.10 level.

In summary, Study 1 demonstrates that the decision to defer choice is sensitive to the manner in which the alternatives are provided. When the options are presented sequentially, subjects may be less sensitive to the need to discriminate between the available alternatives. Further, the focus on advantages of competing alternatives in simultaneous choice condition may result in an increase in the
degree of indecision. However, since subjects can use different decision rules for a specific presentation format, the simultaneous choice condition should lead to increased indecision only when subjects are forced to make tradeoffs among the competing features. The next study directly manipulates the decision rule used without varying the manner in which the alternatives are presented.

STUDY 2: EFFECT OF FORCED DECISION STRATEGY

The next study examined the effect of forcing subjects into using a specific decision rule on the decision to defer choice. Decision strategies can be thought of as varying on the two aspects that were posited to influence the no-choice option. First, decision strategies differ in the degree to which they focus on explicit comparisons across competing alternatives. Second, some strategies require the consideration of weighing the attribute differences, whereas others permit arriving at a choice without making such tradeoffs. Generally, the first factor denotes whether processing is alternative-based or attribute-based, and the second factor distinguishes between compensatory and non-compensatory information processing.

One can categorize the different rules within the cells of a two-by-two matrix, with the columns representing information processing within alternative and across alternative, and the rows denoting compensatory and non-compensatory processing. The four rules examined in this study represent different combinations of these aspects: linear additive, additive difference, lexicographic, and conjunctive. The linear additive rule involves compensatory, alternative-based processing. The additive difference involves compensatory, attribute-based processing. The lexicographic rule is attribute-based and non-compensatory while the conjunctive rule is alternative-based and non-compensatory. These differences are summarized in Exhibit 3.

Based on the earlier discussion, these general aspects of processing can be used to characterize the effect of specific rules on the decision to defer choice. While compensatory choice rules imply weighting

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Exhibit 3. Schematic representation of decision rules

<table>
<thead>
<tr>
<th>Nature of processing</th>
<th>Additive difference</th>
<th>Linear additive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensatory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-compensatory</td>
<td>Lexicographic</td>
<td>Conjunctive</td>
</tr>
<tr>
<td>By attribute</td>
<td>By alternative</td>
<td></td>
</tr>
</tbody>
</table>

Evaluation of information
of different features, the degree to which such rules focus on tradeoffs across alternatives depends on which rule is being used. Specifically, the advantages of competing alternatives are explicitly traded off when the additive difference rule is used. As suggested previously, when subjects are forced to balance the pros and cons across alternatives, the uncertainty of the most preferred alternative should increase, resulting in the decision to defer choice. In contrast, when a linear additive rule is used to determine the attractiveness of each alternative, the competing advantages are not prominent and the choice is determined by the highest overall rating. If the alternatives provided are generally attractive, this should facilitate the decision to purchase.

Since the rules that focus on competing options may differ in the degree to which they result in a decisive advantage for the chosen alternative, one can predict systematic differences between the lexicographic and the additive difference rule. Since the additive difference rule requires balancing attribute differences in determining preference, it should result in greater indecision than the lexicographic rule, which avoids making attribute tradeoffs and creates an approximate dominance structure, making it easier to decide. As a result, the likelihood of making a choice should be higher when the lexicographic rule is used.

Note that the lexicographic and the linear additive rules make arriving at a choice easier in different ways, either by avoiding the focus on competing options, or by making such comparisons easier. Implicit in the discussion is the assumption that the alternatives are seen as acceptable. However, if the decision rule results in the alternatives being seen as unacceptable, this should also increase the choice of the no-purchase option. Since the conjunctive decision rule is more likely to result in multiple outcomes being seen as unacceptable in relation to the other rules, it may increase the tendency to defer choice. Thus, when compared to the lexicographic rule, we predict that the use of a conjunctive decision rule will be less likely to result in a choice than the use of a lexicographic and the linear additive rule.

Based on this discussion, our second set of hypotheses is as follows:

H2a: When the decision rule is compensatory, the defer-choice option is more likely to be selected for the additive difference rule than for the linear additive rule.

H2b: When the decision rule focuses on explicit comparisons across alternatives, the defer-choice option is more likely to be selected for the additive difference rule than for the lexicographic rule.

H3a: When the decision rule is non-compensatory, the decision to defer choice is predicted to be greater for the conjunctive rule than for the lexicographic rule.

H3b: When the decision rules do not focus on explicit comparisons across alternatives, the defer-choice option should be greater for the conjunctive rule than for the linear additive rule.

Method

Procedure
In order to examine differences in the no-choice response across the different decision rules, the experimenter had to (1) train the subjects to use a certain decision rule, (2) check that the assigned rule was actually used, and (3) use a choice context involving a set of relatively attractive alternatives. Subjects were 230 undergraduate students at a major west coast US university, and they were paid $3
for participating in the study. Subjects, numbering between 55 and 60, were randomly assigned to each of the four rules.

The task was presented as a buying scenario, and subjects were told to imagine that they were planning to make a purchase in each of the categories described. In order to determine the best option in the choice set, subjects were told to apply the prescribed decision rule as accurately as possible. It was emphasized that subjects should use the prescribed rule only to determine the best option in the choice set. Subsequently, they could choose this brand or prefer to look for other alternatives.

Subjects were provided with a detailed description of the rule to which they were assigned. Since the retention of the decision rule was crucial, this description was followed by going through an example of using the specific rule and providing clarification at this stage until the assigned strategy was understood. This made it necessary that subjects be assigned to the same rule in each session. Since the information presentation format can influence the difficulty of applying different rules (Bettman and Kakkar, 1977), it was fixed across different conditions. Specifically, subjects were shown two alternatives on the same page.5

An important aspect that distinguishes the current study from previous research on decision rules (Wright, 1975; Zakay and Tsal, 1993) is that the rules were not meant to be applied with mathematical precision. Thus, subjects were not provided with importance weights or the cutoff criteria for the various attributes. It was emphasized that they should use their own subjective criteria in determining the importance weights/cutoffs for the assigned rule. This is not only consistent with how consumers actually use decision rules but also a primary reason why decision uncertainty was expected to vary across the rules.

After completing the main task, subjects were asked to respond to a series of questions that were adapted from earlier studies on information processing (Bettman and Kakkar, 1977; Wright, 1975). Some of these questions served as a check to determine whether the assigned rule was understood and followed by the subjects. Other questions were used to gain insights into the reasons underlying the no-choice response. Specifically, the procedural questions asked if the prescribed rule was followed, about the difficulty of understanding, and the use of the prescribed strategy. Two questions asked about the 'degree of confusion' and the 'degree of confidence' in the decisions that were based on the prescribed strategy.

Specific strategies
As mentioned previously, four choice rules used as treatments in the study were linear additive, conjunctive, additive difference, and lexicographic. Several different reasons led us to focus on these rules. Each is frequently cited in the decision making literature and is often utilized in real-life situations. The four rules allow us to examine in a parsimonious manner the two salient aspects that are predicted to influence uncertainty: two are compensatory and two are non-compensatory. Further, two of the rules involve information processing across brands while the remaining two involve processing within each brand. The four rules are briefly described below:

- **Conjunctive:** In this strategy, the decision maker sets a certain cut-off level on each dimension such that any alternative that falls below a cut-off is eliminated. To be selected, an alternative has to meet a certain minimum level on all attributes.

- **Lexicographic:** In this strategy, the first action of the decision maker is to consider the relative importance of the dimensions and to make an initial comparison on the basis of the most important dimension. If two or more alternatives are the 'best' on this dimension, the second most important

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5 In a separate study, the results were replicated for choice sets with three alternatives.
dimension should be used to distinguish between the options; if that is insufficient, the third criterion
is to be used, and so on.

- **Linear additive**: In this strategy, each dimension is given a weight reflecting its relative importance.
The evaluation of each alternative is the sum of the weighted values on the different dimensions. The
best alternative is the one with the highest overall value.

- **Additive difference**: In this strategy, the difference between two alternatives is defined as the sum of
differences obtained in the pairwise comparisons of each attribute. The alternative that has the
highest positive difference is the best alternative.

**Choice sets**
Various choice domains were used for testing the hypotheses, the general criteria being that the
subjects had some familiarity with the category. Brand names were not used so as to minimize conflicts
between any prior bias of the subject and the prescribed strategy (i.e. alternatives were identified by a
letter, A/B respectively). Each subject applied the prescribed strategy to four separate choice problems.
Each problem consisted of two alternatives described on four to six attributes. Some of the attributes
were assigned a score on a 100-point scale, where 100 represented the maximum value on that attri-
bute. The list of features used to describe the alternatives were taken from Consumer Reports and large
mail order catalogs and were representative of actual descriptions of brands in these categories.

**Results**

**Manipulation check**
The following four choice problems were used to test the hypotheses: apartment, bookshelf speaker,
color television, and laptop computer. Exhibit 4 summarizes the responses to several post-task
questions that served as a manipulation check on the decision rules. The three questions asked for the
following information on a nine-point scale: whether the subject had difficulty in understanding and

<table>
<thead>
<tr>
<th>Treatment means</th>
<th>Lexicographic</th>
<th>Additive difference</th>
<th>Conjunctive</th>
<th>Linear additive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of rule</td>
<td>7.47</td>
<td>7.17</td>
<td>6.66</td>
<td>6.54</td>
</tr>
<tr>
<td></td>
<td>(0.23)</td>
<td>(0.19)</td>
<td>(0.27)</td>
<td>(0.26)</td>
</tr>
<tr>
<td>Difficulty of comprehension</td>
<td>3.34</td>
<td>3.52</td>
<td>4.56</td>
<td>4.28</td>
</tr>
<tr>
<td></td>
<td>(0.33)</td>
<td>(0.36)</td>
<td>(0.41)</td>
<td>(0.35)</td>
</tr>
<tr>
<td>Difficulty of execution</td>
<td>3.86</td>
<td>3.94</td>
<td>4.06</td>
<td>4.54</td>
</tr>
<tr>
<td></td>
<td>(0.31)</td>
<td>(0.31)</td>
<td>(0.33)</td>
<td>(0.29)</td>
</tr>
<tr>
<td>Confusion</td>
<td>4.14</td>
<td>4.74</td>
<td>4.24</td>
<td>4.08</td>
</tr>
<tr>
<td></td>
<td>(0.28)</td>
<td>(0.29)</td>
<td>(0.26)</td>
<td>(0.27)</td>
</tr>
<tr>
<td>Choice confidence</td>
<td>5.34</td>
<td>6.11</td>
<td>5.73</td>
<td>6.15</td>
</tr>
<tr>
<td></td>
<td>(0.32)</td>
<td>(0.33)</td>
<td>(0.32)</td>
<td>(0.31)</td>
</tr>
<tr>
<td>Usage frequency</td>
<td>4.41</td>
<td>5.91</td>
<td>4.66</td>
<td>5.34</td>
</tr>
<tr>
<td></td>
<td>(0.30)</td>
<td>(0.35)</td>
<td>(0.37)</td>
<td>(0.35)</td>
</tr>
</tbody>
</table>

These items were measured on a 9-point scale; the end points were as follows: a'not at all closely'–'very closely', b'not at all
difficult'–'very difficult', c'not at all confused'–'very confused', d'not at all confident'–'very confident', f'not often at all'–'very
often'.
following the prescribed rule, and whether the subject followed the prescribed rule. The mean rating for the question asking the subjects how closely the prescribed rule was followed was high for the four rules \((M = 7)\). The mean ratings for the conjunctive and additive rules were slightly lower than for the other two rules \((M = 6.6 \text{ versus } 7.3)\). The differences in ratings were consistent with the ratings for ‘difficulty of comprehension’ variable in the sense that subjects found the conjunctive and additive rules also more difficult to understand \((M = 4.4 \text{ versus } 3.4)\). Consistent with previous findings (Adelbratt and Montgomery, 1980; Wright, 1975), subjects perceived the linear additive rule as being marginally more difficult to execute than the other three rules \((M = 4.5 \text{ versus } 3.9)\). Overall, the self-reported ratings are consistent with the notion that these rules were actually applied.

An indirect manipulation check pertaining to strategy selection can also be inferred from the specific alternatives that were selected. While subjects used self-generated importance weights, one would expect some consensus across subjects drawn from the same population. Accordingly, choices made using a lexicographic strategy should, on average, be more extreme compared to choices based on the additive difference rule. This was confirmed for the choices across the four problems. The relative choice shares were more extreme (difference between the mean share of two alternatives) for subjects assigned to the lexicographic rule than for the subjects assigned to the additive difference rule.

Type of decision rule
The hypotheses were tested using a \(2 (\text{focusing across brand/within brand}) \times 2 (\text{compensatory/non-compensatory})\) between-subjects design. The results for the percentages of subjects who deferred purchase for the four decision rules are reported in Exhibit 5. Hypothesis 2a predicted that the additive difference rule would result in a higher share for the no-choice option over the linear additive rule. The

<table>
<thead>
<tr>
<th>Product category</th>
<th>Lexicographic ((n = 55))</th>
<th>Additive difference ((n = 57))</th>
<th>Conjunctive ((n = 60))</th>
<th>Additive ((n = 58))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option A</td>
<td>48%</td>
<td>34%</td>
<td>50%</td>
<td>54%</td>
</tr>
<tr>
<td>Option B</td>
<td>34%</td>
<td>26%</td>
<td>17%</td>
<td>32%</td>
</tr>
<tr>
<td>Defer choice</td>
<td>18%(^a)</td>
<td>40%(^b)</td>
<td>33%(^b)</td>
<td>14%(^a)</td>
</tr>
<tr>
<td>Speakers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option A</td>
<td>48%</td>
<td>38%</td>
<td>33%</td>
<td>46%</td>
</tr>
<tr>
<td>Option B</td>
<td>32%</td>
<td>32%</td>
<td>37%</td>
<td>31%</td>
</tr>
<tr>
<td>Defer choice</td>
<td>20%</td>
<td>30%</td>
<td>30%</td>
<td>23%</td>
</tr>
<tr>
<td>Color television</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option A</td>
<td>76%</td>
<td>52%</td>
<td>53%</td>
<td>77%</td>
</tr>
<tr>
<td>Option B</td>
<td>9%</td>
<td>12%</td>
<td>23%</td>
<td>17%</td>
</tr>
<tr>
<td>Defer choice</td>
<td>14%(^a)</td>
<td>36%(^b)</td>
<td>24%(^b)</td>
<td>6%(^a)</td>
</tr>
<tr>
<td>Laptop computer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option A</td>
<td>22%</td>
<td>21%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Option B</td>
<td>52%</td>
<td>26%</td>
<td>40%</td>
<td>69%</td>
</tr>
<tr>
<td>Defer choice</td>
<td>24%(^a)</td>
<td>53%(^b)</td>
<td>40%(^b)</td>
<td>11%(^a)</td>
</tr>
<tr>
<td>Summary results</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase</td>
<td>81%</td>
<td>60%</td>
<td>68%</td>
<td>86%</td>
</tr>
<tr>
<td>Defer choice</td>
<td>19%(^a)</td>
<td>40%(^b)</td>
<td>32%(^b)</td>
<td>14%(^a)</td>
</tr>
</tbody>
</table>

\(^a\) The difference in the percentage of subjects who defer purchase is not significant at the 0.05 level for the decision rules with the same superscript.
results, aggregated over the four choice problems, show that 14% of the decisions resulted in no purchase when the subjects were assigned to the linear additive rule; this number was 40% for the subjects assigned to the additive difference rule, and the difference was significant for three of the four choice problems ($\chi^2_{(1)} = 37.8, p < 0.001$). Hypothesis 2b predicted that the lexicographic rule would result in a lower share for the no-choice option in relation to the additive difference rule. The results, aggregated over the four choice problems, show that while 19% of the decisions resulted in no purchase when the subjects were assigned to the lexicographic rule, this number was 40% for the subjects assigned to the additive difference rule, and the difference was significant for three of the four problems ($\chi^2_{(1)} = 25.2, p < 0.001$). These results support the premise that decision to defer choice is affected by both the focus on competing alternatives as well as the difficulty of determining the most preferred option.

Hypothesis 3 stated that the conjunctive rule would result in a higher share of the no-choice option in relation to the lexicographic and the linear additive rules. The results, aggregated over the four choice problems, show that 19% of the decisions resulted in no purchase when the subjects were assigned to the lexicographic rule; this number was 32% for the subjects assigned to the conjunctive rule ($\chi^2_{(1)} = 11.1, p < 0.01$). This difference was significant for two of the four choice problems and in the predicted direction for the remaining two problems. Also as predicted, 32% of the decisions resulted in no purchase when the subjects were assigned to the conjunctive rule; this number was 14% for the subjects assigned to the linear additive rule and was significantly lower for three of the four problems ($\chi^2_{(1)} = 20.7, p < 0.001$).

The hypotheses were also tested using a binary logit. The dependent variable was a 0–1 dummy variable, where 1 denotes that a purchase was made from the offered set. Each choice of each subject served as an independent observation. There were three independent variables: (1) a dummy variable COMP, which had a value of 1 if the rule was compensatory; (2) a dummy variable FOC, which had a value of 1 if the rule required focusing on competing alternatives; and (3) a dummy variable COMPFOC capturing the interaction between the two variables COMP and FOC, which had a value 1 if the decision rule was compensatory and required focusing on competing alternatives. The coefficient for COMP ($\chi^2_{(1)} = 1.5, p > 0.2$) was not significant and for FOC ($\chi^2_{(1)} = 2.8, p < 0.1$) was marginally significant whereas the coefficient for COMPFOC ($\chi^2_{(1)} = 46.7, p < 0.001$) was negative and highly statistically significant, indicating that the decision to defer choice was most influenced by the interaction between the type and form of processing. In summary, the preference for a no-choice option was the highest when the rule required focusing on competing options and increased the difficulty of making such tradeoffs.

Post-task questions
Subjects also responded to additional questions after the decision task in order to gain further understanding of their responses (Exhibit 4). Specifically, subjects rated the following on a 9-point scale: ‘how frequently were you confused about the right choice using the prescribed rule?’ and ‘how confident did you feel about your choice using the prescribed rule?’. Consistent with the notion that explicit tradeoffs across alternatives increase choice uncertainty, the additive difference rule was seen as leading to significantly more confusion about the best choice in relation to the other decision rules ($M = 4.7$ versus $4.1$, $t(228) = 1.85, p < 0.05$). However, the confidence ratings for subjects who did make a choice was not lower for the additive difference rule. Rather, the confidence ratings were higher for the two compensatory rules. This could be attributed to the fact that choice based on compensatory rules may be seen as better because all the information provided was considered.

The results for the effect of decision rules on the difference in no-choice response suggest two alternative explanations. The data on usage frequency in Exhibit 4 show that the lexicographic and
conjunctive rules are mentioned as being least likely to be used. One explanation for differences in the purchase likelihood could be the involuntary use of the decision rule. For instance, subjects who were forced to use a non-compensatory rule may not have considered it an appropriate strategy. To the extent that such rules would suggest choosing an alternative that is different from their most preferred one, subjects may prefer to forgo making a choice. This explanation is not supported by the findings since the above reasoning would imply that the use of non-compensatory rules should lead to an increase in the decision to defer choice. In contrast, the results indicate that subjects were most likely to forgo choosing when applying an additive difference rule and least likely to forgo choosing when they were using the lexicographic decision rule.

A second alternative explanation relates to the difference in the difficulty of applying the four decision rules. For instance, if the decision to defer choice indicated a desire to minimize effort, subjects would avoid choosing when asked to use strategies that were effortful to understand and execute. Based on self-reports of rule difficulty, the linear additive and conjunctive decision rules were rated as the most difficult to understand. However, the linear additive rule also resulted in the lowest incidence of no choice. Further, while both the lexicographic and the additive difference rules were rated similar in ease of understanding and execution, they resulted in the greatest difference in the decision to defer choice.

**DISCUSSION**

Consumers often arrive at a decision situation without being certain whether or not to purchase. Our results demonstrate that the nature of the choice process has a systematic influence on the decision to defer choice. These findings extend the emerging literature on the factors that influence the no-choice decision (Dhar, 1995; Huber and Pinnell, 1994; Tversky and Shafir, 1992). The two studies reported here support the notion that decision rules differ in the degree of choice uncertainty they induce, leading to differences in the decision to defer choice. The present research focused on two task manipulations affecting the underlying decision processes: changing the information presentation format and forcing the use of a specific decision rule. The results from the two studies are summarized as follows:

- **Information presentation format.** The decision to defer choice was greater when a set of non-dominated alternatives were presented simultaneously than when they were presented sequentially. This hypothesis was supported in three of the four choice problems for which it was tested. The premise that choosing from an efficient set in the simultaneous condition was more difficult due to competing forces was not tested directly. Future research could examine the difference between the two presentation formats when one alternative dominates the others in the choice set. Since the inclusion of an inferior alternative potentially makes the choice easier in the simultaneous presentation condition, the preference for a no-choice option should then be similar in the two presentation conditions.

- **The effect of the decision rule.** The second study examined the effect of asking subjects to use specific decision rules on the preference for a no-choice option. These rules differed in the degree to which they focused on competing alternatives as well as the ease of discriminating between them. As predicted, the decision to defer choice was higher when the rule required an explicit focus on the competing alternatives and a balancing of their differences. The variable COMPFOC, which captured the interaction between these two factors, was the most significant in explaining the no-choice response. Both the lexicographic rule, which makes explicit comparisons easier by creating a dominance structure, and the linear additive rule, which avoids making such comparisons, resulted in higher incidence of choice.
Since the conjunctive rule is quite complex in practice, its effect on choice needs further elaboration. Previous research has shown that attribute cutoffs that subjects use to impute the acceptable levels are influenced by the choice context. Specifically, Huber and Klein (1991) report that the cutoffs are determined so as to maximally discriminate between the available alternatives. Thus, cutoffs that are too low could result in too many acceptable alternatives and cutoffs that are too high could result in no alternative being acceptable. In this case, the increase in the share of the no-choice option for this rule could potentially stem from all the alternatives being deemed unacceptable or from the difficulty of choosing among multiple feasible alternatives. The self-reported ratings for the 'degree of confusion' variable for the conjunctive rule were similar to that for the lexicographic rule, suggesting that the lower choice incidence may have been due to the rejection of all the alternatives based on high cutoffs on the different attributes. The effect of different decision rules on not choosing by increasing the likelihood of rejection is worth examining in greater detail in future studies.

Theoretical implications and limitations

The present research manipulated the choice process by altering the information format and the decision rule prescribed. The paper did not examine possible interaction effects between the choice context and the preferred strategy. Since strategies are contingent upon task complexity, an increase in the task complexity could change the preferred decision rule within a specific information presentation condition. While it appears reasonable to assume that the preferred strategy would not change for the small number of alternatives used in the problems examined here, future research should examine the difference between sequential and simultaneous formats when the number of alternatives provided is varied. Further, the four choice rules investigated here are far from an exhaustive list. While they were selected because they are often used and reflect underlying differences, examining additional strategies should provide further insights into the decision processes leading to choice deferral.

A limitation of our research is that it was conducted in the laboratory and forced subjects into using a particular decision strategy. While utmost care was taken to ensure that subjects followed the rule to which they were assigned, it is possible that subjects’ motivation to use the assigned rule varied systematically across the rules. Although subjects’ posttask responses did not support this premise, future research could monitor the process by using a computerized presentation or by analyzing think aloud protocols. A related question that could be examined by future research is the preferred strategy for choice under conflict. Consistent with the effort–accuracy framework, Bettman et al. (1993) find that subjects shift to a linear additive decision rule for choices among equally attractive gambles. Their findings are not inconsistent with the current research if we assume that the linear additive rule achieves the same level of accuracy as the additive difference rule without confronting the negative aspects of choice in a direct manner.

An important extension of the current research would be to examine the interactions between the decision rule employed and other situational variables. A large body of research suggests that decision processes shift systematically under time pressure (Svenson and Maule, 1993). For instance, Payne, Bettman, and Johnson (1988) demonstrate that the preferred decision strategy shifts as if subjects were making tradeoffs between effort and accuracy of choices. In particular, subjects shift to using a lexicographic type rule when decision time is limited. If the results of the present study hold, one implication would be that the preference for a no-choice option may decrease under time pressure. Thus, giving subjects more time to decide could actually result in an increase in the tendency to defer choice.

Marketing implications

Our findings suggest that marketers can affect whether or not consumers purchase by altering their decision processes. If the decision to purchase is partially based on the relative focus on competing
alternatives, then communication strategies should take this into account. Thus, a marketer can organize information in a way that encourages a particular type of choice rule. For instance, it might be more effective to organize displays in a manner that discourages explicit comparisons across brands. In a similar vein, a salesperson may prefer to show each alternative sequentially and show additional alternatives only if the consumer is unwilling to purchase from the existing set. Further, persuasive strategies by marketers that are based on encouraging prospective consumers to make comparisons with competitors ('we cost more but we offer better quality') may actually prove counterproductive and result in putting off choice.

The ultimate goal of any marketing program rests in not just ensuring that a choice occurs but that a specific option from the many that are available is selected. The finding that a lexicographic decision rule is more likely to result in a purchase provides a systematic advantage for some brands. Specifically, when subjects are uncertain about which alternative to purchase, brands associated with higher values on the more important attributes are more likely to be selected than other alternatives with the same overall attractiveness. This suggests that for product categories that involve preference uncertainty, marketers may accelerate purchase behavior and increase market share by differentiating their offering on the dimensions that are seen as more important.

ACKNOWLEDGEMENT

The author thanks Subrata Sen, the associate editor, and the three anonymous reviewers for their useful comments.

REFERENCES


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