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Labovitz School of Business & Economics, University of Minnesota Duluth, 11 E. Superior Street, Suite 210, Duluth, MN 55802

The Middle Option Bias: Is the Compromise Effect Driven By a Response Order Effect

Daniel Mochon , Yale University, USA

Shane Frederick, Yale University, USA

Studies of compromise effect typically confound an option's serial position with its position in attribute space (i.e. the "medium" priced option is presented second). When these two effects are separated, we find that occupancy of the middle position is often more important than possession of average attribute values.

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Special Session

Context Effects Revisited: New Antecedents, Moderators and Extensions

Selin A. Malkoc, Washington University in St. Louis, USA

EXTENDED ABSTRACTS

"The Middle Option Bias: Is the Compromise Effect Driven by a Response Order Effect"

Daniel Mochon, Yale University, USA
Shane Frederick, Yale University, USA

In the Compromise Effect an option gains choice share when an alternative is added to the choice set that makes this previously available option the middle one in the attribute space, and consequently the 'Compromise'. For example, in one study an average priced/average quality television was chosen more often relative to an expensive/high quality one when a cheap and low quality option was added to the choice set (Simonson 1989). This effect is generally attributed to the increased ease of justifying the compromise option (Simonson 1989), an aversion to extreme options (Simonson and Tversky 1992) and to inferences about the attributes themselves (Wernerfelt 1995).

One problem with many demonstrations of this effect is that they confound the position of the options in attribute space, with their position in physical space, since options are generally ordered by their attributes. For instance, in the above example, the televisions were ordered by price, and thus adding the cheap/low quality alternative made the 'Compromise' option the middle one in the response order as well.

Many studies have demonstrated that the order in which options are presented affects which one is ultimately selected (Krosnick 1999). For example, participants often show a primacy effect, where they are more likely to pick options presented earlier than those that appear later (Carp 1974). In this research we propose a new response order bias, which we label the 'Middle Option Bias' whereby participants are more likely to choose the second option presented when there are three rather than two options, independent of what the options might be. Consequently, we suggest that part of the Compromise Effect may be driven by the mere change in the 'Compromise' option's position on the survey, rather than its position in attribute space. In the first study we demonstrate the existence of this Middle Options Bias in a context where the options have no clear attributes, and therefore we would not expect any other context effects. In the second study we show how this bias can account for the Compromise Effect.

In the first study we tested the existence of the Middle Option Bias in a general context where the options don't have any attributes that can be ranked. This allows us to demonstrate this response order bias in a setting where other context effects should be absent. In this study, participants were told to imagine that they were in a contest where a ball would be drawn from an urn, and if they guessed the correct color, they won $10. They were told that the urn contained either 30 balls of each of 2 colors, or 30 balls of each of three colors, and were then asked to select the color they would guess. Participants were assigned to one of twelve conditions, based on a full factorial 2 Number of Options Presented (2 vs. 3) X 6 Order of the Options design. Thus each option appeared once in each position for both the two and three options conditions. We then examined how the order in which the options were presented affected their choice. In line with the Middle Option Bias, participants chose the second option presented more often when there were three options (42.1%) than when there were only two (34.0%). The increase in the choice probability of the middle option relative to the first one was statistically significant ($p<.05$).

In the second study we tested whether the order in which the options are presented affects the magnitude of the Compromise Effect. In this study participants were asked to make choices in four domains, each domain appearing on a separate page in a random order. The number of options (2 vs. 3) and the order of these were manipulated between subjects. When focusing only on the two conditions with the order typically used in Compromise Effect studies (with the compromise option appearing second), the probability of choosing the 'Compromise' option was higher when there were three options than when there were two [54.5% vs. 39.1%; $p<.01$]. This effect however seems to be mainly driven by the fact that the 'Compromise' option is the middle response, rather than the fact that it is the middle one in attribute space. When we compare how often people choose the 'Compromise' option (the middle one in attribute space) independently of order–when averaging across the order manipulation–we find no Compromise Effect [45.0% vs. 44.6%, $p=.9$].

In these studies we suggested a new explanation for the Compromise Effect, where we argued that the effect might be driven by the order in which the options are presented, and not their position in attribute space. While we do not suggest that all of the Compromise Effect is driven by a response order effect, our findings do suggest that the effect may be much smaller than previously thought.

"Between a Rock and a Hard Place: Desirability Based Attenuation of Attraction Effect"

Selin A. Malkoc, Washington University in St. Louis, USA
William Hedgcock, University of Iowa, USA
Steve Hoeffler, Vanderbilt University, USA

Many important decisions people face involve choosing between options that are undesirable — the proverbial "lesser of two evils." Consumers face budget or geographical constraints that lead to mostly undesirable consideration sets, yet a choice is necessary. We examine the role of desirability in the context of the attraction effect (Huber, Payne and Puto 1982). Based on negative information processing research, we argue that choosing from less desirable options will activate a more vigilant system, thus attenuating or eliminating the attraction effect. Conversely, when evaluating desirable options, heuristic processing is used, leading to attraction effect. Five studies found consistent support for our proposition.

In Experiment 1, we manipulated option desirability by employing an attribute space that varied from –10 to +10 for the rating of the product features (where a score of zero was considered average). The ratings on the desirable (undesirable) domain took positive (negative) values Participants chose a fitness club. Three choice sets were tested: (1) set {A, B}, where there was no decoy, (2) set {A', A, B}, where A asymmetrically dominated and (3) set {A, B, B'}, where B asymmetrically dominated. The analyses showed the attraction effect in the desirable domain, where choice of A was highest when A' (83%) was present, moderate when there was no decoy (64%) and lowest when B' was present (40%). As predicted however, presence or location of decoy had no effect in the undesirable domain (77%, 74% 64%).

To test the robustness and increase the generalizability of the effect, remaining studies manipulated desirability in unique, yet normatively familiar ways, without the use of negative signs. In Experiment 2, we used high and low attribute values to manipulate

desirability. Participants chose a hotel from one of the two sets: {A', A, B} or {A, B, B'}. Results replicated study. When the options were desirable, we observed higher choice of A, when A' was present (73%) than when B' was present (36%). When they were undesirable however, there were no differences across conditions (54% vs, 47%).

In Experiment 3 manipulated desirability by setting a reference point for the attribute levels (industry average) and using geographical constraints to justify having a consideration set that falls above/below this point. Participants chose a frequent flyer program, where half of them saw options that were above industry average, whereas the other half saw options below the industry average. We found that the attraction effect persisted in the desirable domain (32% vs, 6%), but not in the undesirable domain (37% vs 30%).

In Experiment 4, we kept attribute values constant but varied participants' reference points (which served to make the exact same stimuli more or less desirable, depending on the prior reference point). Participants chose between two cell phone plans. These two plans were identical in desirable and undesirable domains. Instead the specifications of their current cell phone plan was manipulated to make these options appear more or less desirable. We found that when options were perceived to be more desirable, the attraction effect surfaced (76% vs, 39%), but was eliminated when the options were perceived as less desirable (63% 53).

In addition, Experiment 3 and 4 examined whether simply evaluating desirable versus less desirable options changed the post-choice regulatory focus and whether such changes could account for the asymmetry in the attraction effect. These studies ruled out regulatory focus as the process.

Experiment 5 used a positive and negative framing manipulation to change the perceptions of desirability. We kept the attribute values and the reference points constant, only altering how the attribute values were framed. Participants chose a humidifier, where the attributes were either framed positively (95% effective, returns permitted within 30 days), or negatively (5% ineffective, returns denied after 30 days). Once again, we found that attraction effect persisted in the desirable domain (73% vs, 38%), but not in the undesirable domain (64% vs. 54%). In this study, we also recorded participants' response latencies to test whether a processing shift can explain the desirability-based attenuation of the attraction effect. The mediation analysis indicate that the effect of (un)desirability on the attraction effect works through an increased processing while making the choice.

Lastly, we examined whether other context effects would also be susceptible to changes in the desirability of the set. To provide an initial test, a new study used the positive/negative attribute space manipulation from Study 1 and created two sets {A, B, C}, {B, C, D}. We find that share of B is higher when it is the compromise option (44%) than when it is the extreme (12%). However, this was not the case in the undesirable domain (8% vs. 14%). These results indicate that desirability of the choice set might be relevant for other context effects as well.

We provide evidence for the attenuation of the well-established attraction effect when choice involves less desirable alternatives, which is more commonplace with the current economic conditions. We suggest that the attraction effect (and other context effects) might be more malleable than previously thought of.

"Preferences, Interrupted"

Wendy Liu, UC San Diego, USA
Jonathan Levav, Columbia University, USA

In everyday life, decisions are often made in multiple stages due to interruptions or suspensions. For example, a consumer may be considering a purchase, but may be sidetracked for a while by other interests. In this paper we ask, what is the effect of such interruptions on preferences? Recent research (Liu 2008) shows that interrupting or postponing a decision can have a significant effect on decision outcome by changing the way people think about the decision. In particular, when thinking about a choice after a brief period of separation from initial exposure to the problem, thinking becomes more high-level and top-down, resulting in greater focus on high-level construal and less attention to low-level detail. Thus, people choose items that rate high on desirability (a high-level trait; Trope and Liberman 2000) rather than feasibility (a low-level trait). For instance, when choosing between a hiking trail that has beautiful scenery but is far away, and another that is plain but easily accessible, after an interruption people are more likely to choose the former option, compared to when the decision is not interrupted.

The current research builds on the growing interest in the dynamic course of decision making, and examines the effect of interruption on the degree of context-dependence in decisions. We find that interrupting decision-makers as they consider the option set attenuates the attraction effect, but increases the compromise effect. We propose that this occurs because interruption leads to a greater reliance on one's inherent, chronic preferences, rather than a construction of preferences based on contextual cues. Furthermore, this process shares similarities to the effect of thinking about the distant future, whereby the person focuses on the high-level construal of the problem.

In our studies we contrast two classic context effects: the compromise effect (Simonson 1989) and the attraction effect (asymmetric dominance; Huber, Payne and Puto 1982). Behavioral decision theory posits that choices are determined by two types of information concerning the options: preferences that exist in people's memory and responses to current contextual stimuli (Tversky and Simonson 1992). We propose that the two types of information correspond to different levels of "preference construal." Inherent preferences concern people's pre-stored attitudes toward objects. However, because memory is a limited resource, preferences for many objects is constructed rather than retrieved (Bettman, Luce and Payne 1998). We suggest that, as a result, retrieved preferences concern high-level dimensions of objects, such as the product's identity (e.g., its brand) or the identities of its main attribute dimensions. We associate these types of retrieved preferences with a "high level" of preference construal. In contrast, contextual information refers to specific relationships among the values contained in the decision situation, such as the attribute levels themselves. Since people typically do not have pre-sorted preferences regarding aspects such as attribute levels, they make decisions based on the relation between different attribute levels (e.g., dominance). We associate preferences that are based on this type of reasoning as reliant on a "low level" of preference construal. For example, in choosing between two computers, a high-level construal involves the identity of the attributes (e.g., the attributes of memory); a lower-level construal involves the values on these attributes (e.g., 2 GB for memory). We hypothesize that because the person processes at a higher level construal after a period of interruption in a decision, he/she will pay more attention to attribute identity, rather than relationships in attribute value after an interruption.

This hypothesis implies a different prediction for the attraction and compromise effects. The attraction effect relies on a perception of a peculiarity in attribute levels, namely, a dominance between values of one option. However, the attention to such a dominance relationship may be attenuated if a person's focus is on higher-level constructs such as the identity of the attribute dimensions, rather than attribute values. Consequently, we expect an interruption in

decision making will reduce the attraction effect. This effect is confirmed in S1, where an interruption reduced the attraction effect in all categories.

On the other hand, the compromise effect is a result of feeling of conflict between two attribute dimensions. That is, if two attribute dimensions are both important to a decision (and both have reasonable attribute values), people may feel great conflict giving up value on either dimension, and as a result choose a middle ground where each value is at a middle level. We propose that when people pay greater attention to the higher level construal of attribute identity after an interruption, they are likely to feel even greater conflict between the attributes, and therefore be more likely to choose the compromise option. This prediction is borne out in S2 in 4 out of 4 categories.

A third experiment studies the mechanism underlying the interruption effect. Specifically, we find that temporal distance has a similar effect as decision interruption, attenuating the attraction effect, while increasing the compromise effect.

"Choice Context from Distal Similarity Signals"

Uzma Khan, Stanford University, USA
Ab Litt, Stanford University, USA
Itamar Simonson, Stanford University, USA

When and how are we influenced by others' preferences and product recommendations? Trust, liking, closeness, and credibility of recommenders are likely important considerations. Another critical factor is how *similar* people feel they are to the recommender, e.g., in preferences, personality or beliefs (Simons et al., 1970). While similarity in choice-relevant preferences is a reasonable factor to consider in decision-making, we propose that people over-generalize similarity on one dimension to infer similarity in domains unrelated to the focal decision. For instance, a common taste in obscure art-house movies might be over-generalized to infer similarity in cell-phone preferences. Such distal *similarity signals* can exert important contextual influence in decision-making, influencing both choice and recommendation efficacy.

The "signal-value" of similarity cues and relative strength of associated context effects can depend on various factors, e.g., whether the signaled similarity is on a dimension important to one's self-identity, intensity or idiosyncrasy of the preference or characteristic, etc. For example, for a liberal individual, a review of a right-wing conservative book might have *high* signal-value, whereas that of kitchen utensils would have relatively *low* signal value. We examine whether distal similarity can serve as an influential contextual factor in decision-making by exploring similarity-induced asymmetric dominance (Huber et al., 1982). We show that varying the choice context established by different similarity signal permutations (high/positive vs. high/negative vs. low) can reverse and shift the asymmetric dominance effect.

Study 1: Participants chose a preferred digital camera from several options. Each option was recommended by another consumer, for whom participants were provided a sample product review in an unrelated domain. In the Control condition, they chose between two cameras, A and B, reciprocally dominating each other in mega-pixels and price, respectively. In two other conditions they chose between three cameras: A, B, and C. Option C here had the *same* objective specifications as B. A and B were recommended by consumers whose other reviews were of a calculator and kitchen utensil, respectively (low signal-value). In contrast, C was recommended by a consumer who previously reviewed a right-wing/conservative book (high signal-value), either positively (Pro-Conservative condition) or negatively (Anti-Conservative condition). For political liberals (who predominated in our sample), the review in the Anti-Conservative condition was hypothesized to send a *positive* similarity signal, versus a *negative* (or dissimilarity) signal in Pro-Conservative condition.

Despite B and C having identical objective attributes, we hypothesized this similarity signal difference would influence relative preferences between these options. Consistent with this view, in Pro-Conservative condition the choice-share of B increased among the options {A,B,C} compared to the control choice-set {A,B}. The choice-share of A declined substantially compared to the control, whereas C was chosen by only one participant. Thus, camera-B asymmetrically dominated camera-C.

As evidence that this effect was due specifically to the unrelated preceding product review, in the Anti-Conservative condition we observed a reversal. Here, B's choice-share *decreased* and was below that of C, and A's choice-share also fell. This preference reversal between B and C combined with decline in A's share is consistent with C asymmetrically dominating B in this condition. As expected based on the nature of this similarity context, results were moderated by political liberalism

Study 2: An alternative account for Study 1 is that, instead of signaling similarly/dissimilalty, pro/anti-conservative reviews simply influenced how much participants *liked* that reviewer, which affected how participants evaluated that person's camera recommendation. Study 2 disentangled these factors by using a product review that induced liking of the reviewer but simultaneously signaled *dissimilarity*. We did so with a product review of a book on charitable giving, as part of which the reviewer revealed an extremely charitable lifestyle (e.g., dedication of 50% of annual income to charity). While such a person may be liked, their extreme nature (82% of participants reported donating 5% or less of annual income to charity) was hypothesized to cause dissimilarity to be inferred. The procedure was identical to Study 1's, though with only one {A,B,C} condition in which camera-C was recommended by the aforementioned extreme-charitable reviewer. Consistent with expectations, participants rated this reviewer as both more liked but more dissimilar to themselves than those who recommended camera-A and camera-B (for whom provided product reviews were of a calculator and kitchen utensil as in Study 1).

Supporting a similarity-based context effect (and opposite to a liking-based account) results were analogous to the Pro-Conservative condition in Study 1, i.e., a *dissimilarity* signal for C caused B to asymmetrically dominate it. Specifically, compared to the control choice-set {A,B}, the choice-share of B increased, that of A declined and C was chosen least frequently in the {A,B,C} choice-set condition. Moreover, individuals who chose B from the {A,B,C} choice-set reported lower perceived similarity between themselves and the charitable person than did those choosing A or C.

Conclusions. Results support an important role of distal similarity signals in establishing choice contexts, as observed here in inducing and reversing asymmetric dominance effects. When similarity between oneself and another is inferred, even in domains or dimensions unrelated to a focal decision, recommendations by that other person are more influential and likely to be heeded. These findings illustrate a novel way of influencing choices through contextual cues, and reveal an important moderator of the efficacy of product recommendations and potentially other forms of interpersonal influence.

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