

**Asymmetric dominance versus learning:  
Can context effects override the learning of choice-set rules?**

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**Abstract**

There are researchers (e.g., Huber, Payne, and Puto, 1982; Ariely & Wallsten, 1995) who argue that one individual's attraction to a given alternative (e.g., microwave 'A') is, in part, determined by the other alternatives available in the choice-set. That is, individuals make relative comparisons between options and these comparisons affect the perceived attractiveness of each of the options. The present paper explores all of the above with the goal of enriching the conceptualization of choice behavior as it relates to a continuously evolving decoy. Specifically, we explore the possibility that: (a) preferences are not static characteristics of individuals (rather, they may be constructed via the choice-context); and (b) constructed preferences are themselves also not static in that they too can be manipulated via a series of evolving choice-contexts. In the present project, an online version of an evolving set of stimuli is presented to human participants who react to a variety of choice-sets and make preference-based selections along the way. The expected results are discussed and implications for marketing strategies are explored.

**Introduction**

Considerable research has been conducted in the area of asymmetrically-dominated product set options (e.g., Ariely & Wallsten, 1995; Huber, Payne, & Puto, 1982). These researchers find that preferences are not based on static, preset cognitions; rather, preferences are malleable in that they can be constructed via the choice-context (i.e., the relative differences between options in a choice-set). This context effect can be described in terms of asymmetric dominance and subjective dominance.

Asymmetric Dominance

The argument that context can determine one's preferences stems from the premise that preferences are formed on-line rather than via some sort of preset preference pattern. Specifically, preferences are thought to be a function of the presence/absence of various preference-options. Huber, Payne, and Puto (1982) suggest that, within the framework of asymmetric dominance, two alternatives and an irrelevant alternative (decoy) are presented in such a way that: a) one option is better on a given dimension than a second option; b) the second option is better than the first option on another dimension (resulting in indifference between options 'a' and 'b'); and c) the third option is a 'decoy' in that it is designed to be similar yet inferior to one of the other alternatives. In this way, option 'c' is very similar – yet slightly inferior – to one of the other options (e.g., a or b), such that the decision maker's (DM's) attention is directed to

the better of the two highly similar options. Other researchers explain the asymmetric dominance effect from a subjective dominance perspective (Ariely & Wallsten, 1995).

### Subjective Dominance

Ariely and Wallsten (1995) argue that in a choice context, where no single alternative clearly dominates the other alternatives, the DM "... subjectively reconstructs the choice space." The DM is reconstructing the information in such a way that the task complexity is reduced (i.e., by subjectively reducing the number of dimensions in the choice space). And, the greater the similarity between two items (e.g., an alternative and a decoy), the easier the DM can detect differences in their corresponding dimensions – thereby increasing the subjective weight placed on these dimensions. This ultimately directs the DM's attention toward the alternative which is very similar – yet slightly superior – to the decoy. In an effort to add to the above research, we have designed an online version of a decision-making task through which we explore human participants' reactions to an evolving choice-set.

### Extending the Huber, Payne & Puto (1982) Model

The present project aims to conceptually replicate and extend the Huber, Payne, and Puto (1982) model in that we will present human participants with a clear upward ('Car 1'), and a clear downward ('Car 2') option, along with various positions of a decoy-option. Our goal is to first explore the extent to which an asymmetrically dominated alternative (i.e., either very close to and slightly inferior to Car 1 ('Car 3<sub>1</sub>') – see Figure 1); or very close to and slightly inferior to Car 2 ('Car 3<sub>2</sub>')), directs the DM's attention toward the option which dominates the decoy option. This phenomenon can be expressed with the following relationship of probabilities:  $P(\text{Car 1} \mid \text{Car 2 Car 3}_1) > P(\text{Car 1} \mid \text{Car 2})$ ; and  $P(\text{Car 1} \mid \text{Car 2 Car 3}_2) < P(\text{Car 1} \mid \text{Car 2})$ . Once the basic asymmetric dominance phenomenon has been replicated, we will extend the traditional research by manipulating the placement of the decoy in such a way that it is placed above and below each of the baseline options (Car 1 and Car 2). Specifically, we're interested in exploring the extent to which (a) a decoy option can effectively impact a person's preference for each option in a choice-set; and (b) changes in the placement of a decoy can lead to further preference changes.

### **Research Overview and Hypotheses**

A study has been designed to explore the extent to which: (a) preferences can be constructed / manipulated in the short-run by introducing a decoy option that increases the attractiveness of the option which dominates it; and (b) preferences can be manipulated across a larger period of time by changing (evolving) the decoy so that eventually it is dominated by a completely different option.

The present research aims to extend the findings of laboratory experiments to include a scenario in which the context evolves on-line. Specifically, the present research conceptually replicates the work of Huber, Payne, and Puto (1982) and extends this research by: (a) testing the limits of asymmetric dominance; and (b) pitting the asymmetric dominance effect against basic human learning processes.

In the context of the present study, the following hypotheses will be examined:

Hypothesis 1. With the first hypothesis, it is expected that individuals in the control condition will have a baseline preference for Car 1, due to the fact that Car 1 is designed to be clearly superior to Car 2;

Hypothesis 2. With the second hypothesis, it is expected that when a single decoy is introduced which is very similar to – *yet slightly superior to* – Car 1, this decoy (Car 3) will be the most preferred option;

Hypothesis 3. With the third hypothesis, it is expected that when a single decoy is introduced which is *exactly the same as* Car 1, both the decoy (Car 3) and Car 1 will be the most preferred options;

Hypothesis 4. With the fourth hypothesis, it is expected that when a single decoy is introduced which is very similar to – *yet slightly inferior to* – Car 1, and Car 2 is equally inferior to the decoy (Car 3), both Car 1 and the decoy (Car 3) will be the most preferred options – with Car 1 being the *overall* most preferred option (see Figure 1);

Hypothesis 5. With the fifth hypothesis, it is expected that when a single decoy is introduced which is very similar to – *yet slightly inferior to* – Car 2, Car 2 will be more preferred than it is in the control (no decoy) condition;

Hypothesis 6. With the sixth hypothesis, it is expected that as one's preference for a given option *increases*, reaction time to select and rate that option will *decrease*.

## **Research Design**

### Sample

The sample will consist of 80 individuals (human participants) randomly selected from a participant pool of undergraduate students at the University of North Carolina at Chapel Hill.

### Options

Participants will have the opportunity to choose between cars on the basis of two dimensions: (a) gas mileage; and (b) reliability. In each choice-set, each option will be presented with their corresponding ratings along the two dimensions: gas mileage and reliability (the ratings will range from A – highest rating – down to B, C, D, and E – lowest rating). The dimension-ratings for the options in each choice set will be manipulated to yield the evolving context-conditions.

### Computer Program for Stimulus Presentation

The project stimulus materials have been programmed in Authorware to create a stand-alone Authorware application. The choice-contexts will be presented on-line, on a computer screen, and will evolve as the participant advances through the experimental trials. Over the course of the choice-context evolution, the decoy option will be presented (on a separate screen for each trial) above and below each of the baseline options (Car 1 and Car 2). The human participants work through the materials by clicking through the evolving choice-set screens – selecting their most preferred options and rating each option.

### Dependent Measures

We will measure the individuals' choices and ratings online as they indicate these via mouse-clicks. The software will also record (online) the reaction time to respond to each item in the materials (e.g., time to make selection/rating).

### **Expected Results**

Overall, there are several patterns of results that we expect to find. First, if we find that the introduction of a highly similar – yet slightly inferior decoy – leads an individual to choose the dominating alternative, then we have conceptually replicated the Huber, Payne, and Puto (1982) findings in a new choice-context (i.e., a context with a clear baseline-preference for one alternative over the other, as opposed to the Huber et al., 1982 studies in which the initial (baseline) choice-context was one of indifference). Second, if we find that the individuals' preferences can be further manipulated by changing the decoy between choice-set trials, then this will (a) provide additional support for the robustness of the asymmetric dominance effect; and (b) open the possibility that even the constructed preferences are themselves highly malleable. On the other hand, if – after constructing an initial preference with the decoy – individuals' preferences are unaffected by further manipulations of the decoy, this suggests that the initial decoy has staying power in pointing to the dominating alternative. Finally, we expect that reaction time will decrease as one's preference for a given option increases.

### **Implications**

The implications of the proposed study include the possibility that individuals do not have stable, static preferences; rather, preferences can be readily manipulated – even constructed – through the use of decoy alternatives. This has clear market implications for impulse buying and e-commerce.

### **References**

- Ariely, D., & Wallsten, T.S. (1995). Seeking subjective dominance in multidimensional space: An explanation of the asymmetric dominance effect. Organizational Behavior and Human Decision Processes, 63, 223-232.
- Huber, J., Payne, J.W., & Puto, C. (1982). Adding asymmetrically dominated alternatives: Violations of regularity and the similarity hypothesis. Journal of Consumer Research, 9, 90-98.

### **Figure 1**

*High*

Car 1 (upward option)

Gas Mileage

**Car 3<sub>1</sub> (decoy option)**

*low*

Car 2 (downward option)

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*low*                      *High*  
Reliability