Accept Or Reject?: How Task Valence Interacts With Product Information Processing to Alter Purchase Decisions

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Neuroscience research on the affective processes involved in purchase decisions has shown that buying an item depends on how strongly the brain's reward centers are activated by the product compared to the activation of negative emotion processing circuits by its price (Knutson et al., 2007). We draw upon paradigms from the behavioral literature to show that the decision valence (accept vs. reject) can interact with the salience of negative information, increasing the relative likelihood of purchase in reject decisions. The degree to which the balance of negative and positive emotional processing contributes to these tasks is under investigation using fMRI.

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Though behavioral research on decision-making has described in rich detail the ways that framing can affect the nature of a decision, we still do not fully understand the emotional and cognitive processes by which this takes place. Previous studies have investigated decisions framed as either choosing a desirable option, or rejecting an insufficiently appealing one, and have found results suggesting that the type of decision increases the salience of positive (choose) or negative (reject) information (e.g. Shafir 1993, Ganzach and Schul, 1995.) However, in these experiments the decisions are between two or more items and always lead to one option emerging as a winner. Thus the decision task changes the nature of the comparison or tradeoff between options as opposed to the evaluation of each one.

Recent work has highlighted the importance of positive and negative affect when evaluating individual products in a shopping context. Knutson et al. (2007) used functional magnetic resonance imaging (fMRI) to show that presentation of a product activated brain areas that respond to reward anticipation such as the nucleus accumbens. Price information appeared to activate the insula, a separate brain region. Thus this work supported the notion of distinct gain and loss neural centers whose balance contributed to the final decision whether or not to purchase the product. Focal analyses in these areas revealed that activation in these regions enabled prediction of the decision based on the comparative strengths of the localized signals. These results appear to reflect a “translation” of the overall complex cognitive and affective response to a balance of distinct affective evaluations.

Using a combination of fMRI and behavioral experiments, we look to build on this work by examining whether task information that emphasizes processing related to gain and loss can also change the desirability of an individual item in a shopping type context. In our design, participants made an accept or reject decision about purchasing a single item after being presented dichotomous information related to that item’s perceived reward value versus the potential negative impact of its price. This design was based off the task used in the Knutson et al. (2007) work, and the list of products were selected to be highly desirable to the participant pool of young adults. Each person made forty do (do not) accept decisions and forty do (do not) reject decisions; thus eighty separate products were presented in total. The order of accept versus reject choice tasks and the decision type for any individual product were counterbalanced across participants.

Participants received an endowment at the beginning of the experiment and their decisions had real monetary consequences. One accept trial and one reject trial were chosen randomly at the end of the experiment and if a participant had chosen to buy the product on those trials, they were required to pay back part of the endowment to receive it.

In our first experiments, for each trial, participants viewed a discounted price, and were then shown the associated product. Findings indicated that people chose to buy approximately the same total number of items in both the accept and reject conditions. Moreover, decision reaction times in trials where the participant chose to buy the item were longer than those in no-buy trials, possibly indicating more conflict or difficulty in the decision to make a purchase. However, there was no difference between reaction times in the accept and reject tasks for buy choices or in reaction times for no-buy choices. Average preference and willingness-to-pay ratings, reported on seven-point scales, were also not significantly different between accept and reject framed decisions.

For a second set of participants, the salience or impact of the price was minimized by presenting a photo of the product first, and then listing its price afterwards. Results showed that under these conditions, significantly more products were purchased under reject than accept decisions. Again, there was a main effect of slower reaction times on any trials (accept- or reject-type) in which an item was bought. However, across both buy and no-buy choices, reaction times for reject decisions were significantly slower than accept ones, indicating that it was more difficult to reject purchase of an item when the salience of price was decreased. Interestingly, average preference for the purchased items was higher in the accept condition than in the reject condition though willingness to pay ratings were the same across decision types.

These behavioral findings imply that minimizing price, an easily processed feature that can be used as a decision heuristic, makes the nature of evaluation in a reject decision more complex. Additional experiments involving fMRI will complement this work and examine activation of specific brain areas such as the anterior cingular cortex, shown to be involved in conflict during decision making. We predict greater anterior cingulate activation in tasks where the information most congruent with the choice type is minimized in the decision process. This methodology can also allow us to investigate the question of whether accept and reject decisions preferentially activate positive or negative emotional neural circuitry respectively.

References