

Does Positive Affect Buffer Against Dissatisfaction for Complex Decision Making?

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## ABSTRACT

Research has demonstrated that positive affect enhances the objective quality (e.g. efficiency and accuracy) of complex decision making (see Isen, 2004, for a review). However, relatively little is known about the influence of positive affect on decision satisfaction. Related social psychological research on satisfaction suggests that thorough, deliberate decision-making may actually impair satisfaction for complex decisions (e.g. Wilson, Lisle, Schooler, Hodges, Klaaren, & LaFleur, 1993; Dijksterhuis & van Olden, 2006). The present study tested the hypothesis that positive affect would buffer against dissatisfaction for complex decisions. Seventy-nine undergraduate students, randomly assigned to receive a positive affect induction or not, completed a hypothetical decision using a decision matrix and completed a subsequent measures of satisfaction. Results failed to support the hypothesis. Limitations and potential follow-up studies are discussed.

## BIOGRAPHICAL SKETCH

Andrew Reed is currently a third-year M.A./Ph.D. student in Developmental Psychology in the Department of Human Ecology. He received his B.A. with High Honors in History and Psychology from Swarthmore College in 2005, where his senior comprehensive project examined impression formation of individuals displaying genuine versus posed smiles. His current research examines emotion-cognition interactions in decision-making from a life-span perspective.

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## CHAPTER ONE

### INTRODUCTION

Imagine that you are trying to purchase a new home theater system. You walk into your local electronics mega-store and see no fewer than twenty options, each of which can be assessed on at least 30 objective attributes, ranging from the number of digital audio inputs to the subwoofer wattage. With over 600 potential pieces of information to process in this decision and a minimal probability of selecting the best system by chance alone, would careful consideration of your options enhance the quality of your eventual choice? The short answer, according to normative models of decision making which focus on objective decision quality (i.e. accuracy), is a resounding yes. However, the notion that more information about options will improve decision making has recently been called into question by social psychological research examining subjective decision quality, or satisfaction.

An overwhelming amount of research evidence suggests that acquiring and deliberating over vast amounts of information while making a decision may undermine resulting satisfaction with one's choice (e.g. see Wilson et al., 1993; Dijksterhuis & van Olden, 2006; Schwartz, Ward, Monterosso, Lyubomirsky, White, & Lehman, 2002). What remains unclear is a panacea for the deleterious effects of 'overthinking' in decision making, aside from reverting to heuristic approaches to deciding.

Research on pre-decisional affect states may offer alternative solutions to the paradox of complex decisions, that more choices, and thus more information, may result in dissatisfaction. In particular, positive affect may hold the key to preserved satisfaction given that it has been shown to engender flexible, efficient, and accurate

patterns of decision-making (e.g. Isen & Means, 1983; Isen, Rosenzweig, & Young, 1991). However, while the flexible and broad cognitive processing afforded by positive affect has been shown to enhance the objective quality, i.e. accuracy, of decisions, no known study has examined the influence of positive affect on subjective decision quality, i.e. satisfaction. Would positive affect also counteract the ill effects of complex decision making on satisfaction? The present study tested this very notion.

Post-decision satisfaction is attenuated by conscious, deliberate, and maximizing strategies. For example, Dijksterhuis and van Olden (2006) demonstrated how conscious evaluation of choices can undermine satisfaction. In their study college students were presented with hypothetical decisions for one of four apartments, each defined by 12 attributes presented one-by-one at random on a computer screen. After viewing the information for the apartments, individuals were either given 4 minutes to engage in conscious deliberation about the options, or they completed a cognitively demanding distracter task (N-Back) for an equivalent period of time. Participants in the deliberation group were significantly less satisfied with their choices than those in the distraction group, even though they, ostensibly, had more resources to 'choose wisely.' In another line of research, Wilson and colleagues (1993) found that introspection, that is, consciously deliberating over the reasons for selecting one option over another, can significantly reduce satisfaction vis-à-vis snap judgments. In their study, college students who introspected about their choices after selecting posters were less satisfied than those who did not introspect. Experimental findings such as these are complemented by studies on stable patterns of decision-making which demonstrate that individuals who habitually engage in such effortful consideration of alternatives before and after deciding--so-called maximizers--report being significantly less satisfied with their choices (e.g. Iyengar, Wells, & Schwartz, 2006). Although self-reported maximizers made objectively better decisions when



choosing jobs (as evidenced by greater salaries), they were ultimately less satisfied with their choices than their satisficing counterparts—individuals who habitually chose a ‘good enough’ option.

Whereas such forms of 'overthinking' have deleterious effects on satisfaction, contrasting strategies, including snap judgments (Wilson et al., 1993), unconscious processing (Dijksterhuis & van Olden, 2006), and satisficing, or choosing options which reach a threshold of acceptability (Schwartz et al., 2002), have been found to increase satisfaction. These findings suggest that for certain decisions, the use of "fast and frugal heuristics" (e.g. see Gigerenzer, Todd, & the ABC Research Group, 1999) may not only enhance the objective accuracy of decisions, but also the subjective quality.

Additionally, decision satisfaction may be attenuated by mounting decision complexity. In a series of elegant studies, Iyengar and Lepper (2000) demonstrated that college students in an ostensibly neutral mood were less satisfied when making decisions with an extreme number of choices (e.g. 24 varieties of jam) than were other students who chose from a more limited set of options (6 varieties). Schwartz (2000) proposed that complex decisions impair satisfaction through a variety of means, from overwhelming information processing capacity to enhancing perceived opportunity costs to raising expectations for the quality of the eventual selection. Given the increasing complexity of modern decision making, is there any hope for preserved satisfaction aside from reverting to a heuristic approach? The answer may lie not in the cognitive strategy one uses to approach a decision, but rather one's mood at the time of choosing.

Positive affect has been shown to activate a wider network of cognitions available to consciousness (e.g. Fredrickson & Branigan, 2005) and promote flexible and open thinking in general. Individuals experiencing experimentally induced mild

positive affect demonstrate improved cognitive flexibility through varied and non-typical responses to neutral words (Isen, Johnson, Mertz, & Robinson, 1985), flexible, broadened categorizations of words (Isen & Daubman, 1984), and inclusive categorizations of individuals (Dovidio Gaertner, Isen, & Lowrance, 1995). Positive affect also enhances creative thinking, as evidenced by improved performance on the Remote Associates Test (RAT; Mednick, Mednick, & Mednick, 1964), and fosters innovative solutions to tests of functional fixedness (Isen, Daubman, & Nowicki, 1987).

More specifically, research by Isen and colleagues suggests that positive affect enhances the quality and efficiency of complex judgments and decisions. For example, college students under positive affect making hypothetical decisions about cars were more likely to engage in an elimination-by-aspects strategy (Isen & Means, 1983). That is, participants induced to feel positive affect implemented a decision strategy that required fewer cognitive resources and less time than a maximizing strategy, and enabled them to rule out alternatives which did not pass a threshold of acceptability for important attributes. Crucially, although individuals who were induced to feel good engaged in quasi-satisficing and processed less information than those who were in a neutral mood, their accuracy did not suffer, indicating that their decisions were made in a more efficient manner. A later study by Isen, Rosenzweig, and Young (1991) found that positive affect likewise enhanced the efficiency, though not accuracy, of physicians who were asked to diagnose lung cancer in hypothetical patients. Positive affect subjects arrived at the correct answer faster than participants in the control condition, and they were more thorough than their neutral counterparts, as evidenced by their willingness to complete additional diagnoses beyond those in the experimental task.

Would the flexible and efficient form of thinking engendered by positive affect

buffer against dissatisfaction that is the sometimes by-product of complex decision-making? The present study tested this hypothesis using an experimentally induced mood state and a controlled decision task. Of particular interest was the impact of mild positive affect, a common and seemingly innocuous mood that no doubt tinges numerous decisions and has been shown to enhance cognitive abilities in a variety of domains (for a review see Isen, 2004).

In the present study, college students were asked to choose one of four hypothetical vacations after selecting and reading information about the vacations. Half of the participants were randomly assigned to receive a positive affect induction, a bag of candy, while the other half did not receive the manipulation. Additionally, participants were randomly assigned to complete either a relatively simple decision (4 options with 4 attributes per option) or a complex decision (4 options with 12 attributes per option). It was predicted that as the amount of information available to, or acquired by, participants increased, satisfaction would not suffer for participants under positive affect as it would for participants in a relatively neutral state.

## CHAPTER TWO

### METHOD

#### *Participants*

Seventy-nine undergraduate students (63 females, 16 males) participated in exchange for course extra credit. Participant ages ranged from 18-23 years ( $M = 19.81$  years). Participants were recruited via in-class announcements and a recruitment website for a study on decision-making.

#### *Materials*

*Apparatus.* Participants completed all study materials on a desktop computer with a 17" LCD monitor (Dell E177) running E-Prime Software (version 2.0 Beta). Responses were made using a keyboard and touchscreen affixed to the monitor (KeyTec Magic Touch 1700).

#### *Measures*

*Affect.* Participants' affect was assessed immediately prior to, and following, the decision task using an electronic version of the Affect Grid (Russell, Weiss, & Mendelsohn, 1989), a single-item measure of valence and arousal. Affect was operationalized as the summed composite of valence and arousal.

*Subjective Decision Quality.* A single-item measure of choice satisfaction was administered immediately after participants completed their selections: "How satisfied are you with your choice?" Participants indicated their responses using a 7-point Likert scale, from 1 - "not at all" to 7 - "extremely satisfied."

*Revised Maximization Scale.* A six-item version of Schwartz's Maximization Scale (Schwartz et al., 2002) was administered to participants at the end of the study to assess their habitual approaches to decision making in relation to their observed

strategies on the decision task. Schwartz and colleagues (2002) have demonstrated that individuals who report maximizing tendencies in decision making—who habitually seek the best possible alternative—experience reduced satisfaction with their decisions relative to individuals who report satisficing, or choosing options based on a threshold of acceptability.

*Decision Matrix.* Participants acquired information and made their decisions using an electronic decision matrix with vacation options presented along the x-axis and attributes along the y-axis (see Appendix). Participants viewed information for 4 hypothetical vacations (Vacation A, B, C & D), each defined by either 4 attributes (simple decision) or 12 (complex). The options were designed such that there was one dominating alternative (vacation B) with 75% positive attributes, 2 options (Vacations A & C) with 50% positive attributes, and one dominated alternative (Vacation D) with 25% positive attributes. Initially, the information within the grid was concealed; however, upon selecting a cell via the touchscreen the corresponding information displayed for 3 seconds before disappearing. Each participant was given an unlimited amount of time to gather information about the options by touching the space in the grid corresponding to the option and attribute of interest. Additionally, participants were able to view as many or as few pieces of information (including repeats) as they wished. Participants indicated their desired choice by selecting the corresponding option name on the touchscreen.

### ***Procedure***

Participants were seated individually in front of a computer and informed that all instructions and components of the study would be presented via the LCD monitor. Participants randomly assigned to the positive affect condition then received a small gift of 10 assorted hard candies wrapped in a cellophane bag as a token of appreciation for participating. Participants in the neutral condition received no such gift prior to the

study. All participants then completed an electronic Affect Grid (Russell et al., 1989) as a manipulation check. Next, each participant was provided on-screen instructions for the decision grid and completed the decision task. Upon making their decision, participants rated their satisfaction and affect (using the Affect Grid), and provided demographic information. Participants then completed the revised Maximization Scale (Schwartz et al., 2002). Finally, participants were thanked and debriefed, and participants assigned to the neutral affect condition received a bag of candy before leaving the experiment room. The total duration of the study was approximately 15 minutes.

## CHAPTER THREE

### RESULTS

#### *Data Analysis*

No effects of gender or age were predicted or observed, and will not be discussed further.

#### *Affect (Manipulation Check)*

Affect was operationalized as the composite (sum) of valence and arousal as measured by the Affect Grid, with higher ratings indicating more positive affect. As expected, participants who received a bag of candy prior to the study reported more positive affect ( $M = 11.34$ ,  $SD = 2.25$ ) than those who did not receive the candy ( $M = 10.41$ ,  $SD = 2.44$ );  $t(1, 77) = 1.76$ ,  $p < .05$  (one-tailed). Further analysis indicated a marginally significant difference in valence between the positive affect conditions ( $M = 6.45$ ,  $SD = 1.69$ ) and the neutral conditions ( $M = 5.85$ ,  $SD = 1.67$ );  $t(1, 77) = 1.57$ ,  $p = .06$  (one-tailed). However, the positive affect group did not differ from the neutral affect group in terms of reported arousal ( $Ms = 5.47$  &  $5.02$ ,  $SDs = 1.61$  &  $1.96$ , respectively);  $t(1, 77) = 1.11$ , n.s.

#### *Proportion of Information Viewed*

A two-way analysis of variance (ANOVA) conducted on the proportion of information viewed in the decision matrix yielded no main effect of affect;  $F(1, 77) = .07$ , n.s. Participants in the neutral condition viewed no less information ( $M = .68$ ,  $SD = .31$ ) than those in the positive affect condition ( $M = .72$ ,  $SD = .36$ ). Additionally, subsequent analyses indicated no main effect of affect nor an affect by complexity interaction on the amount or proportion of unique vs. repeated information viewed in the decision grid.

### ***Satisfaction***

It was predicted that participants who did not receive the positive affect induction would report reduced satisfaction for complex relative to simple decisions. A two-way analysis of variance indicated no main effects of affect or complexity on satisfaction. Participants in the control condition did report reported reduced satisfaction for complex decisions ( $M = 5.50$ ) relative to simple decisions ( $M = 5.89$ );  $t(1, 39) = 1.63$ , n.s. Participants under positive affect were likewise equally satisfied when making complex decisions ( $M = 5.90$ ) versus simple decisions ( $M = 5.78$ );  $t(1, 36) = -.28$ , n.s.

While the hypothesis of the present study addressed the interaction of affect with the amount of attributes presented to individuals, it became apparent during data analysis that a second type of complexity may have influenced individuals' satisfaction with their choices: The amount of information participants selected to view. To investigate the potential interaction between positive affect and the amount of information viewed in the decision grid, separate linear regression analyses were conducted for each decision condition. As expected, the impact of viewing additional information on satisfaction diverged significantly between the affect conditions for complex decisions;  $F(1, 34) = 8.38$ ,  $p < .01$ . Participants in the neutral affect condition who viewed more information in the decision matrix were less satisfied than those who viewed less information ( $\beta = -.42$ ,  $p = .06$ ). By contrast, satisfaction was positively associated with viewing additional information ( $\beta = .35$ ,  $p < .005$ ) for participants under positive affect.

### ***Maximizing/Satisficing***

To examine the relationship between participants' habitual approaches to decision making and their behavior in the decision task, an affect by complexity ANOVA was conducted on a composite measure of maximizing. No main effect of



affect nor an affect by complexity interaction emerged. Unexpectedly, a main effect of complexity emerged such that participants who completed a relatively complex decision (12 attributes per option) reported greater maximizing in daily life ( $M = 4.83$ ,  $SD = .69$ ) than those who completed a relatively simple decision ( $M = 4.47$ ,  $SD = .82$ ),  $F(1, 78) = 4.33$ ,  $p < .05$ . However, these results should be taken with caution since the reliability of the six-item scale was poor (Cronbach's  $\alpha = .42$ ).

## CHAPTER FOUR

### DISCUSSION

The hypothesis of the present study, that positive affect would buffer against dissatisfaction as decision complexity increased, was not supported by the data. Participants in both the positive affect and control conditions did not report reduced satisfaction when the number of dimensions within the decision task was increased from 4 to 12. This finding is inconsistent with previous work by Iyengar and Lepper (2000) which demonstrated that increased choice complexity undermines satisfaction. However, this seeming contradiction in results may stem from a crucial difference in the type of complexity manipulated in the present study—whereas the aforementioned studies manipulated the number of choices available, the present study manipulated the number of attributes. Future research would benefit from exploring potential differences in the influence of attribute versus choice complexity on subjective decision quality.

An unexpected secondary result was the finding that, in the neutral condition, participants who viewed additional information were less satisfied with their choices, while participants who had received a positive affect induction were more satisfied when they viewed more information. This result suggests that the impact of decision complexity, as measured in terms of total amount of information available from which to base one's decision, may differ from that of complexity in terms of information selected or viewed by the participant. This result may also qualify previous research findings (e.g. Schwartz et al., 2002) that thorough and complex decision-making has a uniformly negative impact on satisfaction.

Results of the present study further indicate that the six-item Maximization

Scale (Schwartz et al., 2002) may be a poor measure of individual differences in decision strategy. In particular, participants' reported maximizing/satisficing was substantially altered by the complexity of the decision they had completed prior to the scale. However, these results are tempered by the low reliability of the revised scale, suggesting that future studies should implement the full scale instead.

Another limitation of the present study was the marginal efficacy of the affect induction. Although this trend was likely due to the relatively positive mood of participants in the neutral condition, incorporating a baseline measure of affect to the design, thus allowing within-subjects analysis of mood change, would rule out this possibility. However, the potential drawbacks of such a design are substantial: Completing pre- and post-induction affect measures could weaken the effect of the induction, since labeling emotions may reduce their influence on cognition (Keltner, Locke, & Audrain, 1993).

While the present study compared positive affect against an ostensibly neutral control condition, other approaches examine affect at the level of discrete emotions (e.g. Lerner & Keltner, 2000). In light of mounting emphasis among affect researchers on greater specificity in analyzing emotions, future research would benefit from isolating the effects of discrete emotions through alternative affect inductions such as validated film clips (e.g. Fredrickson & Branigan, 2005). Additionally, in the present study complexity was examined only in terms of added attributes. Another source of complexity in decision making is having too many choices, which has been shown to reduce both motivation to choose and resulting satisfaction (Iyengar & Lepper, 2000). Future research might examine whether positive affect would alleviate these effects of excessive choice on subjective decision quality.

Results from the present study failed to support the hypothesis that positive affect would buffer against reduced satisfaction for complex decisions. However,

future research employing alternative affect inductions, and manipulating choice complexity as well as attribute complexity is necessary before drawing conclusions as to the impact of affect on subjective decision quality.

## APPENDIX

	Vacation A	Vacation B	Vacation C	Vacation D
Nightlife				
Travel Time				
Location		Good		
Company				
Cost				
Hotel Quality				
Duration				
Timing				
Weather				
Activities				
Food				
Famous Sites				

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