

Thinking Deeply and Feeling Depressed:
The Affective Costs of Elaborating on Too Much Choice

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We examine how the size of an option set and the mode in which the options are processed interact to influence the experience of making a choice. Two studies show that elaborative processing enhances positive affect when consumers choose from limited options but depletes positive affect when consumers choose from extensive options. In addition, although elaboration increases outcome confidence, choosing from extensive options decreases outcome confidence. Taken together, these results suggest a catch-22 for consumers facing extensive choice: While elaborating on their options will diminish their positive mood, failing to elaborate will diminish their confidence in the outcomes they choose.

As consumers, we are often confronted with abundant choice, from the many options we encounter on a trip to buy groceries to the hundreds of options we encounter on a trip to the mall. Nowadays, extensive choice even typifies domains in which our options were once quite limited. For example, in the 1920's, consumers wishing to purchase adhesive bandages had only one option: Band-Aids. But consumers today can choose from dozens of options ranging in features from waterproof to heavy-duty, and ranging in styles from *Spider-Man* to clear. Band-Aid brand alone offers numerous options, including flexible, large, extra large, fabric, sheer, and specialized for knuckles and fingertips. Likewise, when Coca-Cola was introduced in 1886, consumers could choose just one flavor. By contrast, consumers today can choose from among 25, including Diet Coke, New Coke, Cherry Coke, Vanilla Coke, Coca-Cola C2, Coca-Cola Zero, Coca-Cola Citra, and Coca-Cola Light. And whereas television viewers in the 1940's could choose from just a few channels, television viewers today can choose from hundreds. Moreover, consumers who look to the Internet can find an even greater abundance of options online. For example, at RoadrunnerSports.com, customers can choose from over 320 varieties of men's sneakers. Netflix offers its subscribers over 25,000 movies. And the iTunes store boasts that its shoppers can browse over 11,000 audiobooks, 25,000 podcasts, and an astounding 2 million songs. In short, consumers today routinely confront sets of options that are larger than ever before.

In response to this explosion in choice, a growing body of research has sought to examine the consequences for choosers. By and large, this research has found that extensive options can elicit a host of undesirable effects, such as decreased confidence in the chosen outcome and demotivation to choose (e.g., Dhar 1997; Iyengar and Lepper 2000). However, with the notable exception of work by Chernev (2003b), there has been little research on how choice set size

interacts with additional factors when producing these effects. In the present studies we address this issue by examining the moderating role of elaboration, an effortful mode of cognitive processing marked by thoughtful analysis and a thorough scrutiny of the options (e.g., Chaiken 1980; Petty and Cacioppo 1986a, 1986b). Indeed, recent research on process-induced affect suggests that the impact of choice set size on the experience of choosing may depend on the extent of elaboration. We therefore examine how elaborating on the options and the size of the option set interact to predict the affective experience of making a choice. We propose that whereas elaborating on limited options enhances positive affect, elaborating on extensive options does the reverse. However, we also propose that elaborating on the options enhances confidence in the chosen outcome, regardless of choice set size. This poses a dilemma for consumers who face extensive options: They can mitigate decreased confidence in their choice by elaborating while they choose – but only at the expense of their positive mood.

NEGATIVE OUTCOMES ASSOCIATED WITH CHOICE OVERLOAD

Offering increased choice is a common tactic used by marketers in attempts to get consumers to buy their products, and is even specifically invoked in slogans such as “Have it your way” from Burger King and “Get ready for more choice” from Sprint. However, a growing body of research suggests that increasing choice by adding to the number of available options does not always produce desirable results.

Most notably, studies find that as attractive alternatives are added to their set of options, consumers feel increasingly conflicted about how they should choose. As a result, they opt to search for new alternatives, defer the choice, or forgo the choice altogether (Dhar 1997; Shafir,

Simonson, and Tversky 1993; Tversky and Shafir 1992). For example, Iyengar and Lepper (2000) observed the inhibiting effects of increased choice on shoppers in a grocery store. Although a small display of six jams attracted fewer shoppers than a large array of 24 jams, shoppers were nearly 30% more likely to purchase jam if they had experienced the smaller display. The extensive choice set was initially appealing to customers but less likely to motivate a purchase. Likewise, in a subsequent study, participants were over 30% more likely to purchase a box of Godiva chocolates if they had first sampled from a small array of six chocolates than if they had first sampled from a larger array of 30.

Increasing the set of options can even inhibit choosing in contexts that offer considerable economic incentives for making a choice. For example, Iyengar, Jiang and Huberman (2004) found that the number of employees who participate in their 401(k) retirement plan decreases as the number of options offered in the plan increase. Choosing not to participate in a 401(k) is financially costly because participation offers employees tax-deferred income, and employers will often match their employees' contributions. However, despite these financial costs, as the number of funds increased from five to 56, participation rates dropped from 72% to 61%. Indeed, for every ten options added to the 401(k) plan, there was a 2% drop in participation.

Taken together, these studies suggest that extensive choice is bad for those who react to the increased conflict by choosing not to choose. But is extensive choice bad for those who are able to overcome the conflict in order to choose from among their numerous options? We might assume that in cases where consumers are able to choose, doing so from a larger set of options would make the trouble worth it. After all, choosing from a larger set of options offers the opportunity to find a superior item or an item that better matches one's personal preferences. This improved opportunity to preference match may serve to enhance consumers' confidence in

the outcomes they choose. However, contrary to this assumption, research has found that increasing the number of available options actually decreases confidence in chosen outcomes (Chernev 2003a; Iyengar and Lepper 2000; Iyengar, Wells, and Schwartz 2006). Thus the drawbacks associated with increased options surprisingly seem to include diminished confidence in the final choice. Nevertheless, consumers faced with extensive options may be able to bolster their choice confidence by elaborating on their options before they choose.

COGNITIVE ELABORATION

Elaboration is an effortful process marked by a comprehensive examination of the available information and a careful consideration of relevant issues (Chaiken 1980; Chaiken, Liberman, and Eagly 1989; Meyers-Levy and Malaviya 1999; Petty and Cacioppo 1986a, 1986b; Petty and Wegener 1998). Accordingly, choices made at high levels of elaboration are based on thoughtful analysis and a thorough scrutiny of the options. By comparison, choices made at low levels of elaboration involve a less effortful process; for example, they are based on only a subset of the available information, or are based primarily on salient or heuristic cues.

The extent to which a consumer elaborates is an integral component of the choice process. Indeed, a number of both internal and external factors can prompt elaboration in consumer choice settings. For example, consumers will tend to elaborate more extensively if they are high in need for cognition (Cacioppo, Petty, and Morris 1983; Haugtvedt, Petty, and Cacioppo 1992), motivated to be accurate (Cacioppo et al. 1986; Darke et al. 1998), or think they will be held accountable for their choice (Tetlock 1983). When choosers have not fully articulated their preferences before they encounter a choice they will also engage in a more

thorough examination of their options (Chernev 2003a). In addition, high personal relevance can increase elaboration, suggesting that consumers will elaborate on their options for choices they find interesting or view as important (Petty and Cacioppo 1979, 1990; Petty, Cacioppo, and Schumann 1983). There are therefore many reasons why consumers may elaborate on a choice, ranging from a general penchant to think deeply about most issues to a desire to choose the best option in a valued domain.

Importantly, decisions and attitudes arrived at through a process of elaboration tend to be stronger, more enduring, and more resistant to change (Cialdini, Petty, and Cacioppo 1981; Haugtvedt and Petty 1992; Petty, Haugtvedt, and Smith 1995; Petty and Krosnick 1995). This suggests that elaboration can enhance consumers' confidence in the options they choose. However, there is reason to suspect that elaborating on extensive options negatively impacts the experience of making a choice. In particular, studies of process-induced affect suggest that increased elaboration will lead to decreased positive affect for consumers who must choose from abundant options.

PROCESS-INDUCED AFFECT

Affect is process-induced when it is generated as a byproduct of performing a cognitive task (e.g., Garbarino and Edell 1997; Luce 1998). The kinds of cognitive tasks that can lead to process-induced affect include many of those associated with elaboration, such as thoroughly examining information or carefully evaluating options. However, studies suggest that the increased effort used to perform these cognitive tasks can elicit process-induced negative affect. For example, Garbarino and Edell (1997) found that, as participants exerted more cognitive

effort in order to evaluate an option, they experienced more negative affect and were less inclined to choose the option over an equally valued alternative. Participants even reported a willingness to pay more for options that required less effort to evaluate. Research using both physiological and self-report measures of affect has also found that participants respond with more positive affect when stimuli are easier to process (Winkielman and Cacioppo 2001). These studies suggest that if elaborating on more numerous options necessitates more cognitive effort, consumers who elaborate on more numerous options will experience more negative affect.

Additional support for the hypothesis that elaboration decreases positive affect in conditions of extensive choice comes from research on trade-off confrontation. Studies suggest that, much like cognitive effort, trade-off confrontation can elicit process-induced negative affect (e.g., Luce 1998). Confronting trade-offs requires the consumer to give-up maximizing one valued attribute in order to maximize another. For example, a consumer may have a choice between two homes, one that is close to work and another that is far away but less expensive. This choice requires the consumer to trade-off one of two valued goals – the goal of avoiding a long commute or the goal of saving money. Luce and colleagues have found that confronting these kinds of trade-offs causes distress at the thought of relinquishing a valued goal and thereby increases the consumer's negative affect (Drolet and Luce 2004; Luce 1998; Luce, Payne, and Bettman 1999). Yet confronting tradeoffs offers a way of carefully evaluating the costs and benefits associated with various options; compared to less effortful modes of processing, elaborative processing is more likely to include explicit considerations of trade-offs. It follows that consumers who elaborate on extensive choice may experience more negative affect due to the increased opportunity to confront trade-offs among many attractive options.

Research on process-induced affect therefore suggests that a number of factors may combine to produce an increase in negative affect for consumers when they elaborate on extensive choice. These factors include the mental effort involved in the elaborative process and the increased confrontation of difficult trade-offs. Accordingly, we predict that increased elaboration in conditions of extensive choice will serve to decrease the chooser's positive affect. However there is also reason to predict that, in conditions of limited choice, increased elaboration will have the reverse effect. In particular, research on Mandler's (1982) theory of incongruity suggests that elaboration in less demanding conditions actually enhances process-induced positive affect.

Mandler (1982) argued that perceived incongruities between objects and their overarching categories elicit increased elaboration. He further argued that this boost in elaboration elicits positive affect when the incongruity is moderate and easy to resolve, but negative affect when the incongruity is extreme and hard to resolve. A number of studies have found support for Mandler's hypotheses (e.g., Meyers-Levy, Louie, and Curren 1994; Meyers-Levy and Tybout 1989; Miller and Kahn 2005; Stayman, Alden, and Smith 1992). For example, products that are moderately incongruent with their brand or product category are preferred over products that are perfectly congruent and products that are extremely incongruent. Meyers-Levy and colleagues find evidence that this preference is due to the extent of elaborative processing and the degree to which the incongruity can be resolved (Meyers-Levy et al. 1994). Products that are moderately incongruent are favored because they prompt elaboration and are easily resolved. By comparison, products that are perfectly congruent are easily resolved but prompt very little elaboration; and products that are highly incongruent prompt elaboration but are very difficult to resolve. This research suggests the interesting possibility that Mandler's core ideas

extend to the domain of choice. In the domain of choice, elaborative processing is put towards resolving choice conflict rather than resolving incongruities between objects and categories. The extension of Mandler's theory to this domain suggests that elaboration invested in resolving moderate choice conflict will enhance positive affect, while elaboration invested in resolving extreme choice conflict will deplete positive affect. Because extensive choice amplifies conflict, in the present research we test the following hypothesis:

H1: In conditions of limited choice, elaborative processing of the options increases positive affect. Conversely, in conditions of extensive choice, elaborative processing of the options decreases positive affect.

One might argue that any decrease in positive affect suffered by those who elaborate on extensive options will be offset by their increased confidence in the choices they make. After all, prior research has found that elaborative processing can bolster decision confidence. However, prior research has also found that increasing the number of available options *decreases* confidence in chosen outcomes. Furthermore, research on maximization preliminarily suggests that decreases in outcome confidence resulting from extensive choice occur even when consumers have engaged in elaboration. Maximizers are in search of the very best. They are therefore more likely to pursue additional options in order to expand their choice set, and more likely expend considerable time and energy elaborating on their options before they decide (Schwartz et al. 2002). However, in striving to choose the best, maximizers experience more negative affect during the decision-making process and feel less confident in the superiority of their choice (Iyengar and Lepper 2000; Iyengar et al. 2006). Indeed, maximizers' increased

efforts to choose optimally lead to decreases in choice confidence even when it seems their efforts have paid off. Iyengar, Wells and Schwartz (2006) found that graduating college seniors with maximizing tendencies pursued more job opportunities, received more job offers, and secured jobs with 20% higher salaries. Nevertheless, these seniors felt more negatively throughout their job search, were less satisfied with the job they chose, and were less convinced that they had chosen the right option. It seems that choosing from a larger set of options was associated with decreased confidence, even after extended elaboration. We therefore examine the following final hypothesis:

H2: Elaboration increases confidence in the chosen outcome regardless of choice set size, but choosing from an extensive choice set decreases confidence in the chosen outcome regardless of the extent of elaboration.

This hypothesis predicts two main effects: a main effect of elaboration such that increased elaboration increases confidence, and a main effect of choice set size such that increased choice decreases confidence. Thus the consumers who feel the most confident in their choices will be those who elaborate when choosing from a limited array. And the consumers who feel the least confident in their choices will be those who fail to elaborate when choosing from an extensive array.

Taken together, hypotheses 1 and 2 suggest a catch-22 for consumers facing real-world conditions of extensive choice: While elaborating on a large number of options may diminish their positive mood, failing to elaborate on their options may diminish their confidence in the outcomes they choose. In two studies, we examine how the extent to which choosers elaborate

on their options impacts their positive affect and their outcome confidence in conditions of limited and extensive choice. We index elaborative processing by measuring the extent to which choosers seek to uncover additional information about their options (experiments 1 and 2), and the extent to which they confront trade-offs among options or attributes (experiment 2). In conditions of limited choice, we predict that elaborative processing of the options *increases* positive affect. However, in conditions of extensive choice, we predict that elaborative processing of the options *decreases* positive affect. Finally we predict that, although elaboration will increase choosers' confidence in their outcomes, it will fail to fully mitigate decreases in outcome confidence that are due to choice overload.

METHOD OVERVIEW

Participants in both experiments chose a Manhattan restaurant from a list of options. This choice of restaurant involved many conditions common to the kinds of choices consumers make on a daily basis. For example, consumers choosing where to eat, what movie to see, or which product to buy, often choose among options that feature unique bundles of attributes. This was certainly the case in the present paradigm, where participants chose among options such as a Pan Asian restaurant in Soho with charming décor and affordable prices, a French restaurant in the Upper East Side with expensive but outstanding entrées, a Spanish restaurant in Chelsea with excellent seafood in hearty portions, and an Indian restaurant in Midtown with a popular lunch buffet. It is also often the case that consumers choose among options that will satisfy some preferences but not others, or satisfy some preferences at the expense of others, (e.g., satisfy a preference for good food at the expense of affordable cost). In addition, consumers are often

familiar with some of their preferences but unfamiliar with their options, as when, in the present paradigm, a participant knew she liked Italian food even though she had not dined at any of the listed Italian restaurants. The choice of a restaurant can also involve hedonic considerations, (e.g., How do I feel about the type of food served?), as well as utilitarian considerations, (e.g., How close is the restaurant to a movie theater?). And, like many other decisions we make day-to-day, the choice of a restaurant is made repeatedly on different occasions, often in the face of numerous options, sometimes with a familiar option chosen and sometimes not. We therefore feel that a choice among restaurants is highly generalizable. Furthermore, in order to imbue the choice with a level of consequentiality, all participants chose their restaurant in the knowledge that they would be entered into a raffle for a \$125 gift certificate to the restaurant that they chose. All participants were currently living in or near Manhattan and would therefore be able to redeem the gift certificate at any of the restaurants listed among their options.

EXPERIMENT 1

In experiment 1, participants chose a restaurant from either a limited or an extensive set of options. We measured the extent to which participants elaborated on their options by measuring how much utilized all of the available information when making their choice, especially the kinds of information they had to expend more effort to obtain. We use results from this experiment to examine the hypothesis that elaborating on a choice has a differential impact on positive affect depending on the relative number of options. More specifically, we hypothesize that increased elaboration *increases* positive affect for those choosing from a small set of options, but *decreases* positive affect for those choosing from a large set of options.

Additionally we predict that, while elaboration may increase confidence in chosen outcomes, choosing from a large set of options decreases confidence in chosen outcomes compared to choosing from a smaller array.

METHOD

Participants

Ninety-one participants signed up for a study on consumer choice. The participant sample included 51 women and 40 men with a mean age of 23. Fifty percent of participants described themselves as Caucasian, 25% as Asian American, 12% as African American, 8% as Hispanic, and the remaining 5% as Other.

Stimulus Materials

As stimuli for these studies we created advertisements for New York City restaurants. The ad for each restaurant included: its name and location; its Zagat ratings for food, décor, service, and average cost; the written review of the restaurant from Zagat (www.zagat.com); and the written review of the restaurant from City Search (www.citysearch.com).

We also developed a standard format for the restaurant advertisements such that certain attributes were salient, (i.e., easy to find and evaluate), while other attributes were non-salient, (i.e., harder to find and evaluate). Salient attributes were easy for participants to discern as they perused the restaurant listings. These included the Zagat ratings, the average price, and the name

of the restaurant, all of which were highly visible. The Zagat ratings and average price were also easy to compare across restaurants. Non-salient attributes were more difficult to discern, and more difficult to compare across restaurants. These were attributes that participants could only discover by reading the written reviews. They included a number of food-related attributes, such as the restaurant's specialty dishes, the menu variety, the method of food preparation, and whether the food could satisfy dietary preferences such as vegetarianism. They also included attributes such as style of décor, type of clientele, level of formality, quality of service, and reputation. To validate this categorization of attributes as either salient or non-salient we conducted a pilot study. Fifteen participants read a representative sample of the restaurant advertisements and rated the salience of each attribute on a scale from 1 (not very salient) to 9 (very salient). The instructions described very salient attributes as "highly visible and easy to ascertain," and less salient attributes as "less visible and more difficult to ascertain." The t-test comparing average ratings of salient attributes to average ratings of non-salient attributes was highly significant ($t(14) = 18.09, p < .001$); means were 4.14 for non-salient attributes compared to 8.57 for salient attributes.

We used the distinction between salient and non-salient attributes in the restaurant advertisements as a means of measuring the extent to which participants elaborated on their options. Elaborative processors are more likely to seek out additional information regarding their options rather than rely only on the most salient information, or the information that is easiest to obtain (e.g., Petty and Cacioppo 1986a, 1986b). We thus expected all participants to utilize salient attributes. As our index of cognitive elaboration, we examined the degree to which participants considered non-salient attributes when making their choice. We describe our calculation of this index in detail below (see Measures).

We piloted an initial pool of 147 restaurant advertisements for use in these experiments. Restaurants selected for inclusion were rated as highly appealing and lacked name recognition so that participants could not rely on prior knowledge to make their choice. Sample advertisements are provided in the appendix.

Procedure

Participants arriving for the study were randomly assigned to either the limited or extensive choice condition. Upon arrival, they received a packet that included either 10 (limited choice) or 30 (extensive choice) restaurant listings with these instructions on the cover: “The following pages show listings for ten(thirty) Manhattan restaurants. The listings include descriptions of the restaurants as well as their Zagat ratings. (All Zagat ratings are out of 30 points). If you were to win \$125.00 to spend at any of these restaurants, which one would you choose?” The instructions also informed participants that their names would be put into a raffle, and that if they won the raffle they would receive a \$125.00 gift certificate for the restaurant that they chose. Versions of the limited and extensive choice packets counterbalanced the order in which the restaurants were presented. In addition, each restaurant listed in the extensive choice packet was also listed in at least one version of the limited choice packet, thus the options used in the limited choice condition represented the full range of options used in the extensive choice condition.

Participants took as much time as they needed to examine their options and make a choice, after which they completed a follow-up questionnaire probing their choice-making

experience. The experiment ended after they completed and turned in their follow-up questionnaire.

Measures

Choice Confidence. In the follow-up questionnaire, participants were asked: “How clear was the best choice?” and “How confident are you that you chose the best option?” They responded on scales ranging from 1 (not very clear/confident) to 9 (very clear/confident). We averaged these scores to create an overall index of participants’ confidence in their choice ($\alpha = .83$).

Positive Affect. High positive affect is marked by enjoyment and high energy whereas low positive affect is marked by sadness and fatigue (Watson, Clark, and Tellegen 1988; Watson and Tellegen 1985). Thus, in the follow-up questionnaire, we asked participants to indicate the degree to which they felt Cheerful, Energetic, Alert, Depressed, Miserable, and Weary, all on a scale from 1 (not at all) to 6 (very much). We then averaged these ratings (with Depressed, Miserable and Weary reverse-scored) to create a composite index of Positive Affect ($\alpha = .74$).¹ This attribute rating method has been used successfully in prior studies of process-induced affect (e.g., Luce 1998).

¹ We treat positive affect and choice confidence as separate constructs for two reasons. First, whereas positive affect describes the valence of the chooser’s feelings or emotional state, choice confidence describes the chooser’s belief that the chosen outcome represents the best choice from among the available options. Second, we hypothesize based on prior research that observed changes in positive affect will be process-induced, (i.e., attributable to the elaborative process of making the choice). By contrast, we hypothesize that differences in choice confidence will be due to evaluations of choice outcomes. In some situations these two constructs are likely to be interdependent. However, in support of our distinction, choice confidence and positive affect were correlated at low magnitudes across both experiments: $r(91) = .26, p < .05$ for experiment 1, and $r(107) = .09, p = .35$ for experiment 2.

Extent of Elaboration.

We measured participants' level of cognitive elaboration by examining the types of considerations they factored into their choice. In the follow-up questionnaire, participants responded to the following prompt: "Please list all of the features you took into account when making your choice, ranked in order from the most important to the least." As a measure of cognitive elaboration, we analyzed the contents of these lists. Two judges blind to hypotheses and conditions coded each of the considerations listed by participants as describing one of forty restaurant attributes, (e.g., Zagat ratings, type of food, style of décor, clientele, exclusivity). The coders disagreed on less than 2% of their observations; disagreements were resolved through discussion. Each of these coded attributes was further categorized as either salient or non-salient as described above (see Stimulus Materials). We expected participants at all levels of elaboration to utilize salient attributes such as the Zagat ratings. The salient attributes offered relevant information and were easier to find relative to the non-salient attributes. They were also easier to compare across restaurants due to the common scales used for the Zagat ratings and the average price. However, participants at low levels of elaboration should be less likely to search beyond this salient information, whereas participants at high levels of elaboration should broaden their search to include other relevant attributes – even when the attributes are not as easily observed or not as easily compared across options (e.g., Petty and Wegener 1998). As an index of cognitive elaboration, we therefore measured the degree to which participants utilized non-salient attributes when making their choice. Specifically, we measured the total number of non-salient attributes participants listed among their considerations. This method is in accordance with prior research that has analyzed participants' self-reported thoughts and considerations as a

means of measuring their extent of elaboration (Baumgartner, Sujan, and Bettman 1992; Burnkrant and Howard 1984; Darke et al. 1998; Harkins and Petty 1981; Meyers-Levy and Maheswaran 2004; Meyers-Levy and Tybout 1989; Petty and Wegener 1998).

RESULTS

Effects of Extent of Choice and Elaboration on Positive Affect

How does elaborating on the options by going beyond the most salient information effect how choosers feel after making their choice? As predicted, elaboration had reverse consequences for those choosing from 10 options as compared to those choosing from 30. For those who chose from 10 options, the more they elaborated, the more positively they felt after making their choice. Conversely, for those who chose from 30 options, the more they elaborated, the less positively they felt after making their choice. As our measure of elaboration we calculated the number of non-salient attributes each participant considered when making his or her choice. We first examined the correlations between this index of elaborative processing and positive affect for participants in the limited and extensive choice conditions. For participants in the limited choice condition, positive affect was positively correlated with the number of non-salient attributes they considered ($r(44) = .31, p < .05$). Conversely, for participants in the extensive choice condition, positive affect was negatively correlated with the number of non-salient attributes they considered ($r(43) = -.39, p < .01$). We then regressed positive affect on choice (limited = 0; extensive = 1), the number of non-salient attributes listed among participants' considerations, and their interaction. Results from this regression yielded an

effect of non-salient attributes ($B = .25, SE = .11, p < .05$), qualified by the predicted interaction between choice and the number of non-salient attributes considered, ($B = -.51, SE = .15, p < .001$). This interaction, illustrated in figure 1, shows that increased reliance on non-salient attributes was associated with increased positive affect for participants in the limited choice condition. By contrast, increased reliance on non-salient attributes was associated with decreased positive affect for participants in the extensive choice condition.

[Click for link to Figure 1](#)

Results from the previous analyses found that elaborating by utilizing hard-to-obtain information about the options predicted decreased positive affect for participants choosing from a large array. But how did the use of more salient, easy-to-obtain information influence participants' positive affect? As predicted, the use of salient attributes such as the Zagat ratings did not differentially impact positive affect for participants in the two choice conditions. Indeed, positive affect and the number of salient attributes considered were non-significantly correlated for participants in the limited choice condition, $r(44) = .09, p = .56$, and participants in the extensive choice condition, $r(43) = -.03, p = .85$. In addition, regressing positive affect on choice (limited = 0; extensive = 1), the number of salient attributes listed among participants' considerations, and their interaction, yielded no significant effects. These results are illustrated in figure 2.

Click for link to Figure 2

Results from these analyses suggest that choosing based on salient information involves relatively low effort and low conflict regardless of the number of options in the choice set. By contrast, elaborating by using additional information that is more effortful to obtain is associated with less positive affect when the chooser is given extensive choice.

Effects of Extent of Choice and Elaboration on Choice Confidence

How does elaborating on the options by going beyond the most salient information effect choosers' confidence in their choices? We predicted that elaboration would increase choosers' confidence in their chosen outcomes. However, following prior research on too much choice, we also predicted that the presence of more numerous options would decrease choosers' confidence in their chosen outcomes. In accordance with the latter, participants who chose from among 30 options felt less confident in their choices than participants who chose from among 10. However, our results did not support the predicted increase in choice confidence as a factor of increased elaboration. As our measure of elaboration, we again used the number of non-salient attributes participants considered when making their choice. We then regressed participants' confidence in their chosen outcomes on choice (limited = 0; extensive = 1), the number of non-salient attributes listed among participants' considerations, and their interaction. This regression yielded only the predicted effect of choice such that participants who chose from extensive sets

reported less choice confidence than participants who chose from limited sets ($B = -.79$, $SE = .40$, $p = .05$). The effect of elaboration and the choice by elaboration interaction were non-significant.

Results from this experiment replicate the finding that increasing the number of available options actually decreases consumers' confidence in the choices they make (e.g., Iyengar and Lepper 2000). Indeed, participants in the extensive choice condition reported less confidence in the restaurants they chose ($M = 5.71$) than participants in the limited choice condition ($M = 6.51$, $t(89) = 2.03$, $p < .05$). Results from this experiment failed to replicate the finding that increased elaboration increases consumers' confidence in the choices they make. However, the failure to replicate this finding may be due to differences between the types of choosers who tend to elaborate on their options and the types of choosers who do not. For example, choosers who tend to elaborate more extensively on their options may also tend to be less confident in their ability to make the best choice. Thus increased elaboration would not have been associated with increased confidence in the final choice. We address this issue in experiment 2. Nevertheless, results from this experiment preliminarily suggest that, even when choosers thoroughly examine the information available on their options, this does not help to mitigate the negative impact of extensive choice on their outcome confidence.

DISCUSSION

Results from experiment 1 suggest that choosers who elaborate on a small number of options experience increased positive affect while choosers who elaborate on a large number of options experience decreased positive affect. In addition, replicating prior studies of choice

overload, participants who chose from a large number of options reported less confidence in their choices than those who chose from a small number of options. However, for participants in both the limited and extensive choice conditions, increased elaboration failed to augment choice confidence. The implications of the latter may be particularly bleak for consumers who feel less confident in their choices as a consequence of having chosen from a large set of options.

On the whole, these results are very much in line with our hypotheses. However, these results are also primarily correlational: Participants who tended to elaborate on their options also tended to feel more positively when they chose from a small array, but less positively when they chose from a large array. It is therefore possible that another factor correlated with the tendency to elaborate – and not the act of elaborating, as we predict – caused the observed effects on positive affect. We address this concern in experiment 2 by randomly assigning participants to conditions in which we manipulate both the extent of elaboration and extent of choice. Thus, whereas experiment 1 relied on individual differences, experiment 2 isolates the impact of elaboration on positive affect in conditions of limited and extensive choice.

In addition, in experiment 2, we complement the measure of elaboration we used in Experiment 1 with a measure of trade-off confrontation. In Experiment 1, we limited our investigation to one aspect of elaboration: the extent to which participants relied upon additional information that was effortful to obtain when making their choice. In experiment 2, we supplement this measure with a measure of the extent to which participants weigh trade-offs as part of their decision-making process. Confronting tradeoffs represents yet another means of carefully contemplating the costs and benefits associated with various options. For example, a participant might spend time deciding whether he would prefer a restaurant with outstanding food over a restaurant with inferior food at more affordable prices, a restaurant with exceptional

décor over a restaurant with plain décor but exceptional service, or a restaurant with his favorite cuisine over a restaurant located in his favorite part of Manhattan. Prior work on the difficulty of making trading-offs has found that trade-off confrontation decreases positive affect – especially when both attributes are valued, such as high quality and low price (e.g., Luce et al. 1999). Therefore, if extensive choice sets present more opportunities to confront difficult trade-offs, choosers who elaborate on extensive options by confronting trade-offs may experience less positive affect. We examine this possibility in experiment 2.

EXPERIMENT 2

In experiment 2, participants were again asked to choose a Manhattan restaurant from a list of options. In this experiment, we crossed two levels of choice (limited and extensive) with two levels of time constraint (limited and extended). Specifically, participants in experiment 2 chose a restaurant from either a limited (15) or extensive (45) set of options, within either a limited (3 minutes) or an extended (15 minutes) amount of time. We manipulated time constraints as a means of manipulating elaboration. Prior studies have found that limiting the time in which participants must form an opinion inhibits elaborative processing whereas allowing them ample time induces further elaboration (e.g., De Dreu 2003; Dhar and Nowlis 1999; Heroux, Laroche, and McGown 1988; Kruglanski 1989; Kruglanski and Freund 1983). We therefore extended results from experiment 1 by randomly assigning participants to conditions in which we manipulated their extent of elaboration.

In addition, in experiment 2, we extended results from experiment 1 by incorporating additional measures of elaborative processing. In this experiment, we measured elaboration in

three ways. First, we used the time condition (limited versus extended) as a broad proxy for how much participants elaborated on their options. We then narrowed our examination to two specific components of elaboration: As in experiment 1, we measured the extent to which participants relied on additional, non-salient information when making their choice. In addition, we measured the extent to which participants confronted trade-offs during their decision-making process. We expected these three indices of elaboration to yield convergent support for our hypothesis that elaboration increases positive affect when choosing from small sets of options, but decreases positive affect when choosing from large sets of options. We also used results from this experiment to conduct a more rigorous examination of our second hypothesis: that elaboration increases confidence in the chosen outcome regardless of choice set size, but that choosing from an extensive choice set decreases confidence regardless of extent of elaboration.

METHOD

Participants

One hundred and sixteen participants attended one of 15 sessions advertised as a study on consumer choice. The advertisement made clear that participants would be choosing from among a list of Manhattan restaurants and that they would earn \$10 in cash plus a chance for a \$125.00 gift certificate to the restaurant that they chose. Five participants were excluded for not following directions during their session. The remaining 111 participants included 63 women and 48 men with a mean age of 21.12. Forty-four percent of participants described themselves as

Caucasian, 33% as Asian American, 11% as African American, 7% as Hispanic, and the remaining 5% as Other.

Procedure

As in experiment 1, participants in experiment 2 chose a Manhattan restaurant from a list of options. This experiment used a 2 Choice (limited, extensive) X 2 Time (limited, extended) between-subjects design. Participants were run in sessions, each of which was randomly assigned to one condition: limited choice/limited time, limited choice/extended time, extensive choice/limited time, or extensive choice/extended time. In the limited choice conditions participants chose from a list of 15 restaurants, whereas in the extensive choice conditions participants chose from a list of 45 restaurants. In the limited time conditions participants were forced to choose their restaurant after taking only 3 minutes to examine their options, whereas in the extended time conditions participants were given a full 15 minutes to examine their options before making their choice. Participants in the extended time conditions were thus able to process their options more elaboratively than participants in the limited time conditions. As with Experiment 1, versions of the limited and extensive choice questionnaires counterbalanced the order in which the restaurants were presented, and each restaurant that appeared among the options in extensive choice packets also appeared in at least one version of the limited choice packet.

At the start of each session the experimenter gave participants their packet of restaurant listings. The cover page included instructions matching the instructions used in Experiment 1 with the addition of instructions pertaining to the time condition. Participants in the limited time

condition were told, “You will have only three minutes to look through the entire list of restaurants and make your choice.” Participants in the extended time condition were told, “You will have a full fifteen minutes to examine the list of restaurants before you are asked to decide.” Participants in all conditions were asked to wait until the experimenter instructed them to begin. After all participants had read the instructions, the experimenter verbally reiterated them, set a timer to either 3 minutes (for limited time conditions) or 15 minutes (for extended time conditions), and then told participants to begin. Participants turned the page and began perusing their options. They worked independently of one another but were kept on the same time schedule so that the experimenter could monitor the time they spent examining their options before making their choice. When the timer went off, participants wrote the name of their final restaurant choice on the cover of their packet and turned it in to the experimenter before completing a follow-up questionnaire. The follow-up questionnaire probed their choice-making experience, including their confidence that they had chosen the best option, their choice-making process, and their post-choice affect. The experiment ended after participants completed and turned in this questionnaire.

Measures

Choice Confidence. The items measuring choice confidence in experiment 2 were identical to those used in experiment 1 ($\alpha = .78$).

Positive Affect. The items measuring positive affect in experiment 2 were also identical to those used in experiment 1 ($\alpha = .71$).

Extent of Elaboration. In the follow-up questionnaire for experiment 2, participants responded to the same prompt asking them to list the attributes they considered when making their choice as used in experiment 1. In addition, they responded to the following: “We are trying to understand consumer choices. What were the considerations you took into account when making your choice? Please describe your thought process for us in as much detail as possible.” They were given a half-page to record their descriptions. We used their responses to these questions to assess two components of elaborative processing: reliance on non-salient attributes and confrontation of trade-offs.

Our measure of reliance on non-salient attributes was similar to that used in experiment 1. We first calculated measures of the extent to which participants relied on salient and non-salient attributes when making their choice by summing the number of salient and non-salient attributes they included in their lists of considerations. We then calculated additional measures by summing the number of salient and non-salient attributes they discussed in their written descriptions as factoring into their decision-making process. In calculating both types of measures, two judges coded each attribute as falling into one of forty categories, which were then further categorized as salient or non-salient as described in the method for experiment 1. The coders disagreed on less than 2% of their observations; disagreements were resolved through discussion. Regression analyses using both types of measures (i.e., those derived from participants’ lists and those derived from their written descriptions) yielded equivalent results. We therefore averaged these measures to create a single composite index of the extent to which participants considered salient attributes, and a single composite index of the extent to which participants considered non-salient attributes. As in experiment 1, we expected all participants to

utilize salient attributes. As a measure of extent of elaboration we focused on participants' use of non-salient attributes.

In addition to examining the extent to which participants elaborated on their options by utilizing non-salient information, we examined the extent to which participants confronted trade-offs. Confronting trade-offs represents an aspect of elaborative processing that is conceptually distinct from the extent to which choosers seek out additional information. To assess trade-off confrontation, two independent coders examined participants' written descriptions of their decision-making process and recorded the number of steps that involved making trading-offs (e.g., Drolet and Luce 2004, experiment 1). Examples of decision-making steps in which participants confronted trade-offs are: "I had to find a balance between comfort and elegance and cost," "My choice came down between a place with amazing food and great service, and a place that had a very chic atmosphere with ok food," and "I wanted to choose a restaurant that had the best possible food for the least possible money." The judges' observations of trade-offs were correlated at .76. The judges' ratings were then averaged to create a final index of the number of trade-offs confronted by each participant.

RESULTS

Manipulation Check on Extent of Elaboration

Did our manipulation of time constraints manipulate the extent to which participants elaborated on their options? We expected that participants in the extended time conditions, who were given a full fifteen minutes to make their choice, would elaborate more extensively on their

options compared to participants in the limited time conditions, who were forced to make their choice within 3 minutes. Consistent with this expectation, the Choice (limited, extensive) X Time (limited, extended) ANOVAs on the specific measures of elaboration revealed only the predicted main effects of time. Compared to participants in limited time conditions, participants in extended time conditions were more likely to consider non-salient features when making their choice, ($F(1,103) = 10.08, p < .01; M = 4.59$ and 2.26 for the extended and limited time conditions, respectively). In addition, compared to participants in limited time conditions, participants in extended time conditions were more likely to weigh trade-offs, ($F(1,103) = 4.32, p < .05; M = .60$ and $.32$ for the extended and limited time conditions, respectively). As in experiment 1, we expected all participants to utilize salient attributes regardless of their extent of elaboration. In accordance with this assumption, the Choice X Time ANOVA on salient attributes yielded no significant effects. Therefore, as expected, participants in the limited and extended time conditions were equally reliant on salient attributes such as the Zagat ratings. However, as we would also expect if the time constraint manipulation worked, participants in limited time conditions evidenced less reliance on non-salient information and less confrontation of trade-offs than participants in extended time conditions.

As an additional test of the extent to which participants elaborated, we also examined the Zagat ratings associated with the restaurants they chose. Because the Zagat ratings were salient attributes, we might expect participants in limited time conditions to choose restaurants with higher Zagat ratings compared to participants in extended time conditions who, through a process of elaboration, relied less exclusively on salient cues. In support of this prediction, Choice X Time ANOVAs yielded main effects of time such that participants in limited time conditions chose restaurants with higher Zagat ratings for food, décor, and service compared to

participants in extended time conditions, (Zagat Food $M = 25.28$ and 24.15 for limited and extended time conditions, $F(1,107) = 7.42, p < .01$; Zagat Décor $M = 22.77$ and 21.50 for limited and extended time conditions, $F(1,107) = 45.52, p < .05$; and Zagat Service $M = 23.07$ and 21.10 for limited and extended time conditions, $F(1,107) = 5.35, p < .05$).²

Interestingly, the Zagat ratings associated with participants' chosen restaurants also suggest that participants in extended time conditions were able, through further elaboration, to choose restaurants that offered them a better bang for their buck. The Choice X Time ANOVA on the ratio of ratings to cost, (calculated as the sum of the chosen restaurant's Zagat Food, Décor and Service ratings divided by the restaurant's average cost), found a significant effect of time, $F(1,107) = 5.18, p < .05$. This effect showed that participants in extended time conditions chose restaurants with higher ratings-to-cost ratios ($M = 1.32$) as compared to participants in limited time conditions ($M = 1.20$). Thus participants in extended time conditions appear to have chosen restaurants of a better overall value.

Taken together, these results converge to suggest that manipulating the amount of time allotted to participants to make their choice (limited versus extended time) served to manipulate the extent to which participants elaborated on their options (limited versus extensive elaboration). These results are in accordance with prior studies that have also manipulated time constraints as a means of manipulating extent of elaboration (e.g., De Dreu 2003; Kruglanski and Freund 1983).

² The analyses of the Zagat ratings included results from 4 participants who are not included in other analyses because they did not complete the follow-up questionnaire.

Effects of Extent of Choice and Elaboration on Positive Affect

How does elaboration affect the way choosers feel after making their choice? As predicted, elaboration had the opposite effect under limited as compared to extensive choice: Among those who chose from 15 options, the more they elaborated, the more positively they felt. Conversely, among those who chose from 45 options, the more they elaborated, the less positively they felt.

Results using time as a measure of elaboration. To examine the impact of elaboration on positive affect, we first used the time conditions (limited versus extended) as a proxy for extent of elaboration. As predicted, our results found that elaboration increased positive affect for participants who chose from a limited array, but decreased positive affect for participants who chose from an extensive array. The Choice X Time ANOVA on the positive affect index yielded a significant effect of extent of choice ($F(1,103) = 6.77, p < .05$) qualified by the predicted choice by time interaction ($F(1,103) = 6.60, p < .05$). This interaction is illustrated in figure 3. Participants in the limited time (low elaboration) conditions reported similar levels of positive affect regardless of whether they chose from among 15 or 45 options, (M were 4.45 for both the limited and extensive choice conditions, $F(1,103) = .001, ns$). However, among participants in the extended time (high elaboration) conditions, participants who chose from 15 options reported more positive affect compared to participants who chose from 45, (M were 4.69 and 4.00 for the limited and extensive choice conditions respectively, $F(1,103) = 47.88, p < .001$). In addition, participants in the limited choice conditions reported *more* positive affect when they chose within an extended amount of time ($M = 4.69$) as compared to a limited amount of time ($M =$

4.45, $F(1,103) = 5.75, p < .05$). By contrast, participants in the extensive choice conditions reported *less* positive affect when they chose within an extended amount of time ($M = 4.00$) as compared to a limited amount of time ($M = 4.45, F(1,103) = 20.05, p < .001$). Results from analyses that use time as a proxy for extent of elaboration therefore support our hypothesis. For participants choosing from a limited array, elaboration increased positive affect. By contrast, for participants choosing from an extensive array, elaboration decreased positive affect.

Click for link to Figure 3

We next examined the effects of elaboration on affect using more precise measures of the extent to which participants elaborated on their options. Using the amount of time participants were given to make their choice as a proxy for their extent of elaboration is likely to have captured a range of decision-making behaviors that contribute independently to the elaborative process. In addition, the time variable may have captured other processes not typically associated with elaboration that may have also contributed to the foregoing results. Therefore, in the following analyses, we use measures that index elaboration at the individual level and that focus more narrowly on two components of the process. Specifically, we use measures of the extent to which participants processed non-salient information about their options, and the extent to which they weighed trade-offs while making their choice.

Results using reliance on non-salient information as a measure of elaboration. One hallmark of elaboration is a more comprehensive use of the available information. We thus predicted that participants in limited choice conditions would feel *more* positively the more they utilized non-salient attributes, whereas participants in extensive choice conditions would feel *less* positively the more they utilized non-salient attributes. Our results support this prediction. We regressed positive affect on choice (limited = 0; extensive = 1), the number of non-salient attributes considered, and their interaction. Results from this regression yielded an effect of choice ($B = -.37, SE = .13, p < .01$), and an effect of non-salient attributes ($B = .20, SE = .09, p < .05$), qualified by the predicted interaction between extent of choice and the number of non-salient attribute considerations, ($B = -.44, SE = .13, p < .01$). As expected, for participants in high choice conditions, increased use of non-salient attributes decreased their positive affect. Conversely, for participants in low choice conditions, increased use of non-salient attributes increased their positive affect. These results are illustrated in figure 4.

Click for link to Figure 4

We also examined results for participants' reliance on salient attributes. We expected that all participants would make use of salient attributes, including those who elaborated and those who did not. We thus predicted that the use of salient attributes would not differentially impact positive affect for participants in the two choice conditions. Our results were consistent with this prediction. Regressing positive affect on choice (limited = 0; extensive = 1), the

number of salient attributes considered, and their interaction, yielded only a significant effect of choice such that participants in the limited choice conditions reported more positive affect compared to those in extensive choice conditions ($B = -.37, SE = .14, p < .01$). Effects for the use of salient attributes were non-significant; the use of salient attributes showed no observable impact on participants' post-choice affect. These results are illustrated in figure 5. Results for the use of both salient and non-salient attributes therefore replicate our results from experiment 1. In both experiments, using salient information had no apparent influence on positive affect, while elaborating through the use of non-salient information decreased positive affective for participants who chose from among large sets of options.

 Click for link to Figure 5

Results using trade-off confrontation as a measure of elaboration. Another hallmark of elaboration involves confronting trade-offs by weighing the costs or benefits of various options or attributes against one another. We thus predicted that participants in limited choice conditions would feel *more* positively the more they confronted trade-offs, whereas participants in extensive choice conditions would feel *less* positively the more they confronted trade-offs. Again, our results support this prediction. We regressed positive affect on choice (limited = 0; extensive = 1), the number of times the participant confronted trade-offs, and their interaction. Results from this regression yielded an effect of choice ($B = -.38, SE = .13, p < .01$), and the predicted interaction between extent of choice and the number of confronted trade-offs, ($B = -.32, SE =$

.14, $p < .05$). These results are illustrated in figure 6. For participants in limited choice conditions, weighing increased numbers of trade-offs led to increases in positive affect. However, for participants in extensive choice conditions, weighing increased numbers of trade-offs led to sharp decreases in positive affect.

Click for link to Figure 6

In sum, analyses using three different measures of elaboration yielded the same results: The effect of elaboration on how positively participants felt after making their choice depended on the number of options from which they chose. Participants who elaborated on a small number of options felt better after making their choice whereas participants who elaborated on a large number of options felt worse. Increased time in which to elaborate led to increased positive affect when choosing from a small array, but decreased positive affect when choosing from a large array. Increased use of non-salient information led to increased positive affect when choosing from a small array, but decreased positive affect when choosing from a large array. And finally, increased trade-off confrontation led to increased positive affect when choosing from a small array, but decreased positive affect when choosing from a large array.

Effects of Extent of Choice and Elaboration on Choice Confidence

How does elaboration affect choosers' confidence in their choices? As predicted, elaborating on the options led participants to feel more confident in the choices they made. However, also as predicted, choosing from an extensive choice set led participants to feel less confident in the choices they made.

To test the hypothesis that elaborative processing of the options increased participants' confidence in their choices, we used the manipulation of time as our index of elaboration. Participants in the extended time conditions were more likely to elaborate by recruiting non-salient information confronting trade-offs as shown in the manipulation check on elaboration. It is also likely that participants in the extended time conditions used additional methods of elaboration that we did not specifically examine in the context of these experiments. Using limited versus extended time to index extent of elaboration thus allowed for a broader range of elaborative methods to show an effect on improving choice confidence. The Choice X Time ANOVA on choice confidence yielded only the predicted main effects for extent of choice, $F(1,103) = 6.13, p < .05$, and extent of time, $F(1,103) = 3.98, p < .05$. As illustrated in figure 7, participants who had little time to elaborate on their options felt less confident in their choices than participants who had ample time to elaborate on their options ($M = 4.90$ and 5.61 for the limited and extended time conditions respectively). In addition, participants who chose from a large set of options felt less confident than participants who chose from a small set of options ($M = 4.81$ and 5.70 for the extensive and limited choice conditions respectively).

Click for link to Figure 7

These results show that elaborating on their options helped to bolster participants' confidence that they made the best choice. However, as shown in figure 7, increased elaboration failed to fully mitigate the decrease in choice confidence associated with choosing from among large sets of options. Participants in extensive choice conditions were the least confident in their choices regardless of how much they elaborated prior to choosing, and the least confident of all were those who had very little time in which to elaborate. This suggests that, for consumers confronting numerous options, while elaborating on these options may diminish their positive mood, failing to elaborate may diminish their confidence in the outcomes they choose. Indeed, the best means of increasing choice confidence for consumers may involve providing them with more limited options.

GENERAL DISCUSSION

Summary and Implications

In the present studies, we extend prior research on extent of choice by exploring the moderating role of elaboration. Results from two studies found that cognitive elaboration increased positive affect in conditions of limited choice, but decreased positive affect in conditions of extensive choice. Furthermore, although elaboration helped to bolster outcome confidence, it failed to fully mitigate the decrease in confidence associated with choosing from extensive options (Chernev 2003a; Iyengar and Lepper 2000). These results deepen our understanding of the problems posed by too much choice. Indeed, results from these studies uncover a catch-22 for consumers who face extensive options: If they process their options at

low elaboration they will feel less confident in their choice, but if they process their options at high elaboration they will feel less positive emotion. By comparison, those who face limited options fare much better. In fact our results suggest that, when consumers choose from limited options, elaboration both bolsters confidence and increases positive affect.

Why does elaborating on extensive options result in more negative affect? We suggest that this is because the difficulty of elaborating on a given choice increases in proportion with the number of available alternatives. Take the example of RoadrunnerSports.com, an online store where shoppers can choose from more than 320 varieties of men's sneakers. Elaborating on this choice would call for a systematic analysis of many, if not most, of these 320 options. Shoppers would need to examine each variety; find out how the varieties differ; weigh a number of tradeoffs (e.g., between high comfort and high cost); and consider any number of novel attributes such as "shox columns," "waffle outsoles," "crash pads," and "vented midfoot saddles." Therefore a shopper who elaborates on this choice would have to work hard in order to uncover the attributes that distinguish the options, weigh the relative importance of these attributes, and process novel attributes they may not have initially factored into their preferences.

In sum, whereas choosers in limited choice conditions can systematically process their options with relative ease, choosers in extensive choice conditions face a much more wearying experience. That this wearying experience serves to decrease positive affect is very much in line with recent research on the effects of effortful cognitive processing (e.g., Garbarino and Edell 1997; Meyers-Levy et al. 1994; Winkielman and Cacioppo 2001). As the present studies show, under high choice conditions, the benefits of an elaborative approach may include enhanced confidence in the chosen pair of sneakers, but the drawbacks will include less positive affect. In

addition, the shopper's confidence is still likely to be less strong than had he elaborated on, and chosen from, a smaller set of options.

The effects observed in the present studies may also contribute to the demotivating effects of choice overload documented by prior research (e.g., Iyengar and Lepper 2000). In the present studies, participants who elaboratively processed extensive options experienced less positive affect and, regardless of mode of processing, reported lower choice confidence than participants in conditions of limited choice. These outcomes might independently or in combination lead people to forgo choosing when they are faced with extensive choice. Indeed, many choosers who neglect or defer a choice may be shying away from the burden of systematically processing overwhelming numbers of options – and there is already some research pointing to a role for process-induced negative affect in motivating choice avoidance (e.g., Luce 1998).

This analysis suggests that the repercussions of too much choice are of high significance for marketers. After all, many brands and products that once faced limited levels of competition now find themselves among vast sets of alternatives. In addition, the experiments reported here suggest that choice situations that prompt consumers to elaborate may inadvertently elicit negative affect, which may in turn elicit unwanted consequences. For example, prior research suggests that process-induced affect can motivate a preference for a specific choice, a preference for no choice, or a specific strategy for choosing (e.g., Garbarino and Edell 1997; Luce, Payne, and Bettman 2000). Consumers' more negative affect may therefore impact the way in which they construct their preferences, and may even diminish their attachment to the brand or product they choose. Indeed, if consumers misattribute their affective state to a chosen item (Schwarz and Clore 1983), they may be more likely to return it or less likely to purchase the same brand or

item again. From the perspective of the marketer, it may be of the utmost importance to estimate both the extent to which most consumers will elaborate on an advertisement and the number of alternative options consumers may face.

Limitations and Further Research

In the present research, we were unable to assess the affect or satisfaction participants felt after actually experiencing the option they chose. We were therefore unable to examine whether decreased confidence and positive affect after making a choice can impact the actual experience of the choice outcome. In the present paradigm, testing this question would have entailed treating nearly two hundred participants to dinner in Manhattan restaurants. However, these and other long-term effects of low and high elaboration in conditions of extensive choice are important areas left to further research.

In addition, we suggest that future research examine the factors that contribute to decreased outcome confidence in conditions of extensive choice (e.g., Chernev 2003a; Iyengar and Lepper 2000). In particular, we suggest an investigation of the interplay between choosers' extent of elaboration and the degree to which they start with articulated preferences. Prior research has found that choosers with less articulated preferences process options more elaboratively compared to those with more articulated preferences, but feel less confident in their choices when they choose from an extensive array (Chernev 2003b, 2003a). On the surface this seems to conflict with the present results, which found that elaboration increased choosers' confidence even when they chose from extensive options. The resolution to this paradox may lie in choosers' initial articulation of their preferences.

In the present research, choosers were likely to have developed articulated preferences prior to making their choice. All participants had chosen a restaurant before and were generally familiar with what they liked to eat. This suggests that, in the present research, choosers elaborated in order to find an option that best matched their pre-established preferences. By contrast, choosers without articulated preferences must elaborate in order to *construct* preferences before they can find a match (Chernev 2003a). And while elaboration may increase choice confidence through an enhanced sense of having explored all possible matches for a set of pre-established preferences, it may also decrease choice confidence by complicating the process of preference construction. Taking the example of RoadrunnerSports.com, consumers who elaborate on their options in order to construct (rather than merely match) their preferences may easily get caught up in minor details they would otherwise have ignored, such as the function or desirability of “waffle outsoles.” Thus, if one were to manipulate elaboration and preference articulation in conditions of extensive choice, we might predict that elaboration would increase choice confidence for those with more articulated (as compared to less articulated) preferences, but decrease choice confidence for those with less articulated (as compared to more articulated) preferences. Such results would further reveal the complicated interplay of factors that interact with assortment size to determine the consumer experience.

Conclusion

Real-world situations involving extensive choice are more common now than ever and mark domains ranging from breath mints and breakfast cereals to homes and healthcare. Even the new expansion of Medicare offers beneficiaries upwards of thirty-five prescription drug plans

– a development that has left many beneficiaries feeling overwhelmed by their choice (Pear 2005). In addition to mounting evidence that choice overload entails a multitude of negative effects, the present research reveals a unique dilemma for consumers who face extensive options: The more they elaborate on their options the less they will experience positive emotion, but the less they elaborate on their options the less confident they will be in their choice. Moving forward, it will be important to further our understanding of the mediators and moderators associated with choice overload. Results from the present research demonstrate that uncovering the basic effects of extensive choice was just the beginning in our endeavor to understand how choice set size can impact the modern consumer experience.

APPENDIX

Sample Restaurant Listings

Le Bernardin

West 50s

155 W. 51st St. (bet. 6th & 7th Aves.) New York, NY, 10019 (212) 554-1515

Revered old-line French favorite dishes out elegant seafood with class and consistency.

Zagat Ratings			
Food	Decor	Service	Cost
28	27	27	\$95

It simply doesn't get any better for transcendent seafood than at Maguy LeCoze's Midtown French dream, where chef Eric Ripert's beyond-sublime cuisine (ranked No. 1 in this Survey) continues to astound, while a formal pro staff serves with seemingly effortless perfection in hushed, elegant quarters; such incredible dining experiences are sure to sweep you off your feet – as may the seriously pricey bill, but acolytes advise just take out a loan and go for a life-fulfilling experience.

The Scene: A soaring teak ceiling, ocean-on-a-cloudy-day walls, commodious and well-spaced tables and dramatic, life-sized paintings of fish and fishermen contribute to an impressive setting. The incongruous mixture of diners ranges from wide-eyed out-of-towners to Chanel-quilted doyennes on the Republican fundraising circuit. Commendably, both camps receive the same impeccable service.

The Food: Chef Eric Ripert cooks in an elegant manner, content to use as few accouterments as possible to enhance the natural flavor of seafood. His prix fixe menu offers choices from both the "Simply Raw" and "Lightly Cooked" categories. Highlights include yellowfin tuna carpaccio with a light ginger-lime mayonnaise, a deceptively simple-sounding smoked salmon gravlax and the lightly spiced sevice of scallops--a sublime progression of smooth, tangy and refreshing sensations.

Zagat Ratings			
Food	Decor	Service	Cost
23	20	22	\$48

A.O.C. Bedford

Greenwich Village

14 Bedford St. (bet. Downing & Houston Sts.) New York, NY, 10014 (212) 414-4764

A romantic neighborhood destination for Spanish fare with high-end origins.

They pay attention to details at this Village neighborhood boîte where the sophisticated Southern European menu is exceptionally well crafted and wine pairings are taken very seriously; service is attentive and if the rustic quarters feel tight, that adds to the romantic mood.

The Scene: Exposed brick, beamed ceilings, linen napkins and tapered candles make it obvious that this is a restaurant for romance. Servers swing from being attentive to patrons to being chatty with each other and stranding tables. Despite the small dining room, diners are not rushed.

The Food: The Spanish menu is based on the premise that quality ingredients taste best when left to shine on their own. Simple dishes, like tender, thinly sliced octopus seasoned and drizzled with fruity olive oil and tagliatelle with sautéed wild mushrooms and fresh peas, are a study in understated richness. Keeping with the romantic theme, the satisfying house paella--a wealth of mussels, prawns and clams resting on fragrant al dente rice--is served for two. Meat lovers should opt for the nicely charred, expertly cooked steak. The cheese selection is fine, though a bit pedestrian, while the duo of desserts changes daily.

REFERENCES

- Baumgartner, Hans, Mita Sujan, and James R. Bettman (1992), "Autobiographical memories, affect, and consumer information processing," *Journal of Consumer Psychology*, 1 (1), 53-82.
- Burnkrant, Robert E. and Daniel J. Howard (1984), "Effects of the use of introductory rhetorical questions versus statements on information processing," *Journal of Personality and Social Psychology*, 47 (6), 1218-1230.
- Cacioppo, John T., Richard E. Petty, Chuan Feng Kao, and Regina Rodriguez (1986), "Central and peripheral routes to persuasion: An individual difference perspective," *Journal of Personality & Social Psychology*, 51 (5), 1032-1043.
- Cacioppo, John T., Richard E. Petty, and Katherine J. Morris (1983), "Effects of need for cognition on message evaluation, recall, and persuasion," *Journal of Personality & Social Psychology*, 45 (4), 805-818.
- Chaiken, Shelly (1980), "Heuristic versus systematic information processing and the use of source versus message cues in persuasion," *Journal of Personality and Social Psychology*, 39 (5), 752-766.
- Chaiken, Shelly, Akiva Liberman, and Alice H. Eagly (1989), "Heuristic and systematic information processing within and beyond the persuasion context," in (1989). *Unintended thought*, ed. James S. Uleman, New York, NY: Guilford Press, 212-252.
- Chernev, Alexander (2003a), "Product assortment and individual decision processes," *Journal of Personality and Social Psychology*, 85 (1), 151-162.

- _____ (2003b), "When more is less and less is more: The role of ideal point availability and assortment in consumer choice," *Journal of Consumer Research*, 30 (2), 170-183.
- Cialdini, Robert B., Richard E. Petty, and John T. Cacioppo (1981), "Attitude and attitude change," *Annual Review of Psychology*, 32, 357-404.
- Darke, Peter R., Shelly Chaiken, Gerd Bohner, Sabine Einwiller, Hans-Peter Erb, and JDouglas Hazlewood (1998), "Accuracy motivation, consensus information, and the law of large numbers: Effects on attitude judgment in the absence of argumentation," *Personality & Social Psychology Bulletin*, 24 (11), 1205-1215.
- De Dreu, Carsten K. W. (2003), "Time pressure and closing of the mind in negotiation," *Organizational Behavior & Human Decision Processes*, 91 (2), 280-295.
- Dhar, Ravi (1997), "Consumer preference for a no-choice option," *Journal of Consumer Research*, 24 (2), 215-231.
- Dhar, Ravi and Stephen M. Nowlis (1999), "The effect of time pressure on consumer choice deferral," *Journal of Consumer Research*, 25 (4), 369-384.
- Drolet, Aimee and Mary Frances Luce (2004), "The rationalizing effects of cognitive load on emotion-based trade-off avoidance," *Journal of Consumer Research*, 31 (1), 63-77.
- Garbarino, Ellen C. and Julie A. Edell (1997), "Cognitive effort, affect, and choice," *Journal of Consumer Research*, 24 (2), 147-158.
- Harkins, Stephen G. and Richard E. Petty (1981), "Effects of source magnification of cognitive effort on attitudes: An information-processing view," *Journal of Personality and Social Psychology*, 40 (3), 401-413.

- Haugtvedt, Curtis P. and Richard E. Petty (1992), "Personality and persuasion: Need for cognition moderates the persistence and resistance of attitude changes," *Journal of Personality & Social Psychology*, 63 (2), 308-319.
- Haugtvedt, Curtis P., Richard E. Petty, and John T. Cacioppo (1992), "Need for cognition and advertising: Understanding the role of personality variables in consumer behavior," *Journal of Consumer Psychology*, 1 (3), 239-260.
- Heroux, Lise, Michel Laroche, and KLee McGown (1988), "Consumer product label information processing: An experiment involving time pressure and distraction," *Journal of Economic Psychology*, 9 (2), 195-214.
- Iyengar, Sheena S., Wei Jiang, and Gur Huberman (2004), "How much is too much: Determinants of individual contributions in 401k retirement plans," in *Pension design and structure: New lessons from behavioral finance*, eds. Olivia S. Mitchell and Stephen Utkus, Oxford: Oxford University Press, 83-97.
- Iyengar, Sheena S. and Mark R. Lepper (2000), "When choice is demotivating: Can one desire too much of a good thing?," *Journal of Personality and Social Psychology*, 79 (6), 995-1006.
- Iyengar, Sheena S., Rachael E. Wells, and Barry Schwartz (2006), "Doing Better but Feeling Worse: Looking for the "Best" Job Undermines Satisfaction," *Psychological Science*, 17 (2), 143-150.
- Kruglanski, Arie W. (1989), "The psychology of being "right": The problem of accuracy in social perception and cognition," *Psychological Bulletin*, 106 (3), 395-409.

- Kruglanski, Arie W. and Tallie Freund (1983), "The freezing and unfreezing of lay-inferences: Effects on impressional primacy, ethnic stereotyping, and numerical anchoring," *Journal of Experimental Social Psychology*, 19 (5), 448-468.
- Luce, Mary Frances (1998), "Choosing to avoid: Coping with negatively emotion-laden consumer decisions," *Journal of Consumer Research*, 24 (4), 409-433.
- Luce, Mary Frances, John W. Payne, and James R. Bettman (1999), "Emotional trade-off difficulty and choice," *Journal of Marketing Research*, 36 (2), 143-159.
- _____ (2000), "Coping with unfavorable attribute values in choice," *Organizational Behavior & Human Decision Processes*, 81 (2), 274-299.
- Mandler, George (1982), "The structure of value: Accounting for taste," in *Affect and Cognition: The 17th Annual Carnegie Symposium on Cognition*, eds. Margaret S Clarke and Susan T Fiske, Hillsdale, NJ: Erlbaum, 3-36.
- Meyers-Levy, Joan, Therese A. Louie, and Mary T. Curren (1994), "How does the congruity of brand names affect evaluations of brand name extensions?," *Journal of Applied Psychology*, 79 (1), 46-53.
- Meyers-Levy, Joan and Durairaj Maheswaran (2004), "Exploring message framing outcomes when systematic, heuristic, or both types of processing occur," *Journal of Consumer Psychology*, 14 (1-2), 159-167.
- Meyers-Levy, Joan and Prashant Malaviya (1999), "Consumers' processing of persuasive advertisements: An integrative framework of persuasion theories," *Journal of Marketing Research*, 63, 45-60.
- Meyers-Levy, Joan and Alice M. Tybout (1989), "Schema congruity as a basis for product evaluation," *Journal of Consumer Research*, 16 (1), 39-54.

Miller, Elizabeth G. and Barbara E. Kahn (2005), "Shades of Meaning: The Effect of Color and Flavor Names on Consumer Choice," *Journal of Consumer Research*, 32 (1), 86-92.

Pear, Robert (2005), "Confusion is rife about drug plan as sign-up nears," *The New York Times*, November 13, National Desk.

Petty, Richard E. and John T. Cacioppo (1979), "Issue involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses," *Journal of Personality & Social Psychology*, 37 (10), 1915-1926.

_____ (1986a), *Communication and persuasion: Central and peripheral routes to attitude change*, New York: Springer.

_____ (1990), "Involvement and persuasion: Tradition versus integration," *Psychological Bulletin*, 107 (3), 367-374.

_____ (1986b), "The Elaboration Likelihood Model of persuasion," in *Advances in experimental social psychology*, Vol. 19, ed. L. Berkowitz, New York: Academic Press, 123-205.

Petty, Richard E., John T. Cacioppo, and David Schumann (1983), "Central and peripheral routes to advertising effectiveness: The moderating role of involvement," *Journal of Consumer Research*, 10 (2), 135-146.

Petty, Richard E., Curtis P. Haugtvedt, and Stephen M. Smith (1995), "Elaboration as a determinant of attitude strength: Creating attitudes that are persistent, resistant, and predictive of behavior," in *Attitude strength: Antecedents and consequences Ohio State University series on attitudes and persuasion, Vol 4*, eds. Richard E. Petty and Jon A. Krosnick, Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc, 93-130.

Petty, Richard E. and Jon A. Krosnick Eds. (1995), *Attitude strength: Antecedents and consequences*. Mahwah, NJ: Erlbaum.

- Petty, Richard E. and Duane T. Wegener (1998), "Attitude change: Multiple roles for persuasion variables," in *The handbook of social psychology, Vol 1 (4th ed)*, eds. Daniel T Gilbert and Susan T Fiske and Lindzey Gardner, New York, NY: McGraw-Hill, 323-390.
- Schwartz, Barry, Andrew Ward, John Monterosso, Sonja Lyubomirsky, Katherine White, and Darrin R. Lehman (2002), "Maximizing versus satisficing: Happiness is a matter of choice," *Journal of Personality and Social Psychology*, 83 (5), 1178-1197.
- Schwarz, Norbert and Gerald L. Clore (1983), "Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states," *Journal of Personality and Social Psychology*, 45 (3), 513-523.
- Shafir, Eldar, Itamar Simonson, and Amos Tversky (1993), "Reason-based choice," *Cognition*, 49 (1-2), 11-36.
- Stayman, Douglas M., Dana L. Alden, and Karen H. Smith (1992), "Some effects of schematic processing on consumer expectations and disconfirmation judgments," *Journal of Consumer Research*, 19 (2), 240-255.
- Tetlock, Philip E. (1983), "Accountability and complexity of thought," *Journal of Personality & Social Psychology*, 45 (1), 74-83.
- Tversky, Amos and Eldar Shafir (1992), "Choice under conflict: The dynamics of deferred decision," *Psychological Science*, 3 (6), 358-361.
- Watson, David, Lee A. Clark, and Auke Tellegen (1988), "Development and validation of brief measures of positive and negative affect: The PANAS scales," *Journal of Personality & Social Psychology*, 54 (6), 1063-1070.
- Watson, David and Auke Tellegen (1985), "Toward a consensual structure of mood," *Psychological Bulletin*, 98 (2), 219-235.

Winkielman, Piotr and John T. Cacioppo (2001), "Mind at ease puts a smile on the face:

Psychophysiological evidence that processing facilitation elicits positive affect," *Journal of Personality and Social Psychology*, 81 (6), 989-1000.

FIGURE 1

EXTENT OF CHOICE * USE OF NON-SALIENT ATTRIBUTES ON POSITIVE AFFECT

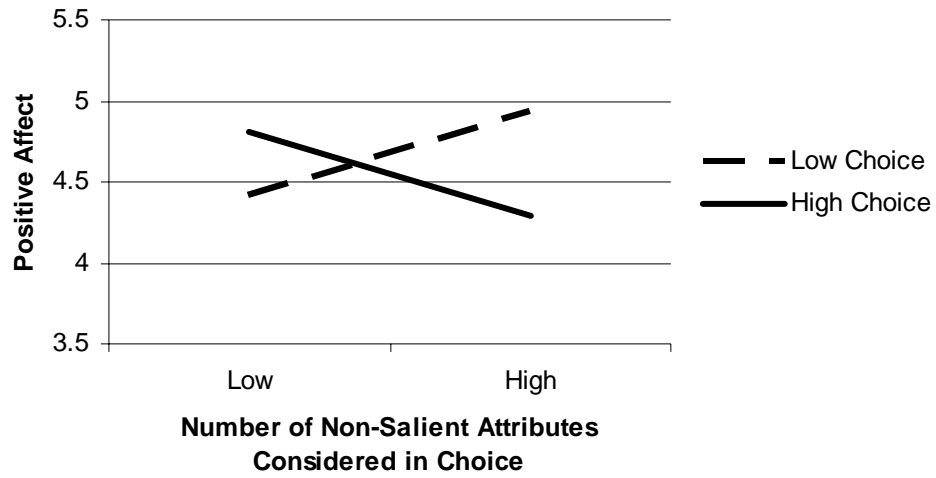


FIGURE 2

EXTENT OF CHOICE * USE OF SALIENT ATTRIBUTES ON POSITIVE AFFECT

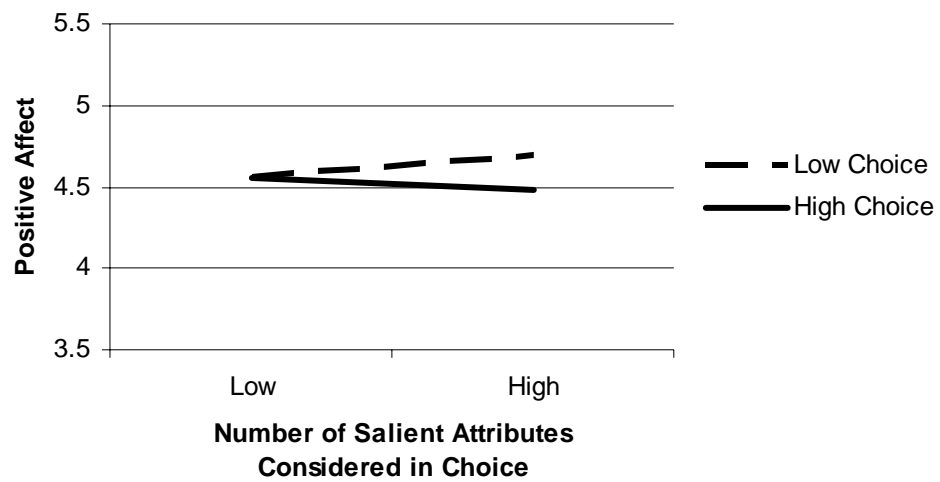


FIGURE 3

EXTENT OF CHOICE * EXTENT OF TIME ON POSITIVE AFFECT

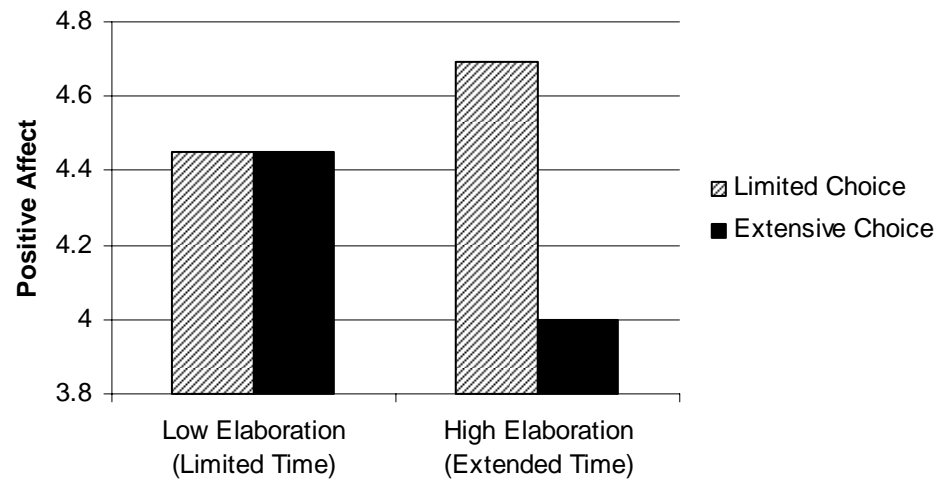


FIGURE 4

EXTENT OF CHOICE * USE OF NON-SALIENT ATTRIBUTES ON POSITIVE AFFECT

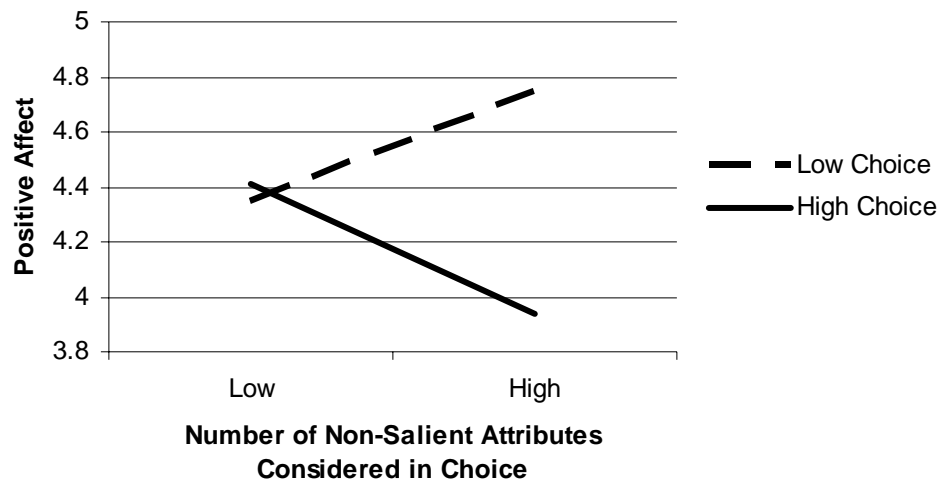


FIGURE 5

EXTENT OF CHOICE * USE OF SALIENT ATTRIBUTES ON POSITIVE AFFECT

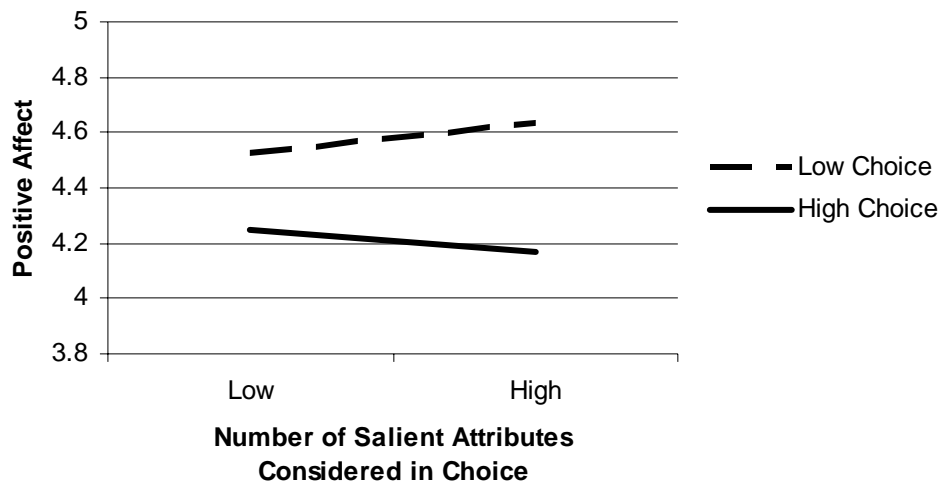


FIGURE 6

EXTENT OF CHOICE * USE OF TRADE-OFF CONFRONTATION ON POSITIVE AFFECT

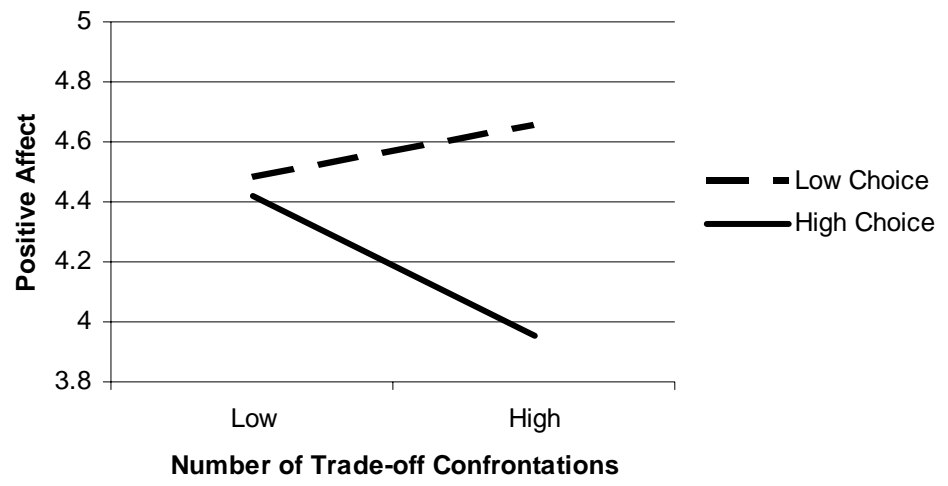


FIGURE 7

EXTENT OF CHOICE * EXTENT OF TIME ON CHOICE CONFIDENCE

