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Choosing with confidence: Self-efficacy and preferences for choice

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Abstract

Previous research on the role of choice set size in decision making has focused on decision outcomes and satisfaction. In contrast, little is known about interindividual differences in preferences for larger versus smaller choice sets, let alone the causes of such differences. Drawing on self-efficacy theory, two studies examined the role of decision-making self-efficacy in preferences for choice. Using a correlational approach, Study 1 (n = 89) found that decision-making self-efficacy was positively associated with preferences for choice across a range of consumer decisions. This association was found both between- and within-subjects. Study 2 (n = 65) experimentally manipulated decision-making self-efficacy for an incentive-compatible choice among photo printers. Preferences for choice and pre-choice information seeking were significantly lower in a low-efficacy condition compared to a high-efficacy condition and a control group. Future research directions and implications for decision-making theory and public policy are discussed.

Keywords: choice, decision making, self-efficacy, individual differences, consumer decisions.

1 Introduction

From the supermarket to the hospital, consumers are faced with more choice than ever before (for a discussion, see Schwartz, 2004). Previous research on this phenomenon has focused almost exclusively on the *consequences* of having more versus less choice (for a review, see Scheibehenne, Greifeneder, & Todd, 2010). In contrast, very few studies have investigated *preferences for choice*, that is, how much choice people actually *want*. The limited research in this area suggests that, while larger choice sets are generally more enticing (Bown, Read, & Summers, 2003; Chernev, 2006; Iyengar & Lepper, 2000), there are significant inter- and intra-individual differences. Empirically, preferences for choice were found to vary across decision domains, age groups, and even nationalities (Reed, Mikels, & Simon, 2008; Rozin, Fischler, Shields, & Masson, 2006). Although the underlying mechanisms that drive preferences for choice have not been systematically explored, converging evidence points to a key role of decision-making self-efficacy (DMSE). Drawing on self-efficacy theory, the present research employs correlational (Study 1) and experimental approaches (Study 2) to systematically examine the proposed link between DMSE and preferences for choice.

Self-efficacy, which refers to the belief in one's ability to succeed in a given task (Bandura, 1997), drives individuals to prefer more challenging tasks and persist more in the face of such challenges (for a review, Bandura & Locke, 2003). Two streams of recent empirical work suggest that DMSE, which entails confidence in the ability to make effective decisions, may affect preferences for choice.

First, individuals with higher versus lower DMSE prefer decisions that are more challenging and complex (Tabernero & Wood, 2009), and seek more information when making decisions (Seijts, Latham, Tasa, & Latham, 2004). The latter effect has been demonstrated across multiple domains ranging from consumer choices (Hu, Huhmann, & Hyman, 2007) to career selection (Blustein, 1989) and health-related decisions (Woodward & Wallston, 1987). Since DMSE engenders preferences for complex decisions and increased information, and information and complexity are part and parcel of increased choice, it is plausible that DMSE would also be associated with preferences for larger choice sets.

Additional support for this notion stems from the finding that individuals prefer more choice when decisions are relatively simple as compared to more challenging—conditions that, in theory, generate high versus low levels of DMSE, respectively. For example, individuals are more likely to prefer larger versus smaller choice sets when there are fewer versus more attributes to consider, or when dominating alternatives are present versus absent (Chernev, 2006; Chernev & Hamilton, 2009). One study involving hypothetical decisions among consumer

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products demonstrated that individuals prefer larger assortments when they assume that the options within the assortments will be ordered based on their preferences (i.e., from most to least preferred) versus not (Chernev & Hamilton, 2009). In a similar vein, individuals prefer increased choice when their choice-relevant preferences are highly accessible (Chernev, 2003). In combination, these findings suggest that individuals prefer more choice when they expect to be able to make effective decisions.

Although previous research is consistent with predictions derived from self-efficacy theory, the association between DMSE and preferences for choices has—to the best of our knowledge—not been systematically examined. To address this research gap, we conducted two studies to investigate the role of DMSE in consumer decision making. Study 1 examined correlations between self-report measures of DMSE and preferences for choice across multiple consumer domains. Study 2 assessed the effect of experimental manipulations of DMSE on preferences for choice and information-seeking in a complex decision scenario with realistic outcomes. Based on self-efficacy theory and the prior research reviewed above, we predicted that highly efficacious individuals, relative to those with low efficacy, would prefer more choice and seek more information when making complex decisions.

2 Study 1

In Study 1 we examined the relationship between DMSE and preferences for choice using self-report measures and a correlational design. To examine the association between the two constructs at both the inter- and the intra-individual level, subjects were asked to rate DMSE and choice preferences across 12 common consumer choice domains. Drawing on the theoretical considerations outlined above, we hypothesized that (1) at the inter-individual level, subjects with lower levels of DMSE prefer less choice than those with higher levels of DMSE across all domains, and (2) at the intra-individual level, subjects prefer more choice in domains for which they report higher levels of DMSE.

2.1 Method

2.1.1 Subjects and procedure

Eighty-nine undergraduate students (70 female, aged 18–23, M = 19.82 years old) participated in exchange for course credit. Responses to demographic questionnaires indicated that 47.2% of subjects were White, 22.5% Asian-American, 16.9% African-American, 7.9% Hispanic, and 5.6% other racial minorities. Subjects' average reported socioeconomic status level was 3.31 out of 5 (SD = .82) with 1 representing "lower income", 3 representing "middle income" and 5 representing "upper income").

Subjects completed the target measures as part of a questionnaire packet examining different aspects of decision making. Questionnaires were completed in group testing sessions, each of which lasted approximately 30 minutes.

2.1.2 Measures

Decision-making self-efficacy (DMSE) was measured across 12 domains of consumer choice using a measure adapted from Löckenhoff and Carstensen (2007) and Finucane and Gullion (2010). Choice domains included 6 everyday domains (apartments, vacations, restaurants, cars, cellular phones, varieties of jam), and 6 healthcare domains (hospitals, health insurance plans, physicians, hearing aids, prescription drug plans, nursing homes). For each domain, subjects indicated their confidence in their ability to select the best option using a 7-point scale (1 – not at all confident to 7 – extremely confident). The self-efficacy measure demonstrated adequate internal consistency across domains (Cronbach's alpha = .87), supporting our view that DMSE is a unidimensional construct. Consistent with previous work (Finucane & Gullion, 2010; Löckenhoff & Carstensen, 2007), we averaged responses across domains into a single composite variable of DMSE to facilitate between-subjects comparisons.

Preferences for choice. Subjects completed a choice preference measure (adapted from Reed et al., 2008) in which they indicated how many options they would prefer when making decisions in the 12 domains listed above. For each domain, subjects indicated their preferred number of choices, from 2 to 30 options in increments of 4 (i.e., 2, 6, 10, etc.). Because this measure was designed as a general assessment of choice preferences, we did not specify any characteristics about the actual decisions (aside from domain) or the relative composition of the choice sets. The choice preferences measure demonstrated high internal consistency (Cronbach's alpha = .90), suggesting a single underlying dimension of choice preferences. Consistent with our previous work (Reed et al., 2008), we averaged responses across domains into a composite variable.

To control for the potential influence of *domain familiarity* on self-efficacy and choice preferences, subjects reported their familiarity with making decisions in each of the 12 target domains using a 7-point scale (1 – not at all familiar to 7 – extremely familiar).[1]

[1]Subjects also completed a 6-item measure of maximizing versus satisficing (Nenkov, Morrin, Ward, Schwartz, & Hulland, 2008) and the rational-experiential inventory (REI; Pacini & Epstein, 1999). However, the maximization scale was unreliable (Cronbach's alpha = .49)

2.2 Results

Gender, race (White vs. non-White), and socioeconomic status were not significantly related to choice preferences or self-efficacy, and will not be discussed further.

Between-subjects analyses. At the inter-individual level, DMSE was positively correlated with choice preferences (r = .25, p < .05, two-tailed). Consistent with predictions, individuals who were more confident in their decision-making abilities desired more choice than those who lacked confidence.

Within-subjects analyses. For each of the 12 domains, we normalized the measures of DMSE and choice preferences by subtracting the overall mean (across subjects) from each subject's score. We then computed for each subject the correlation coefficient (Spearman's rho) between the normalized averages of DMSE and choice preferences across the 12 domains. Consistent with our hypothesis, the average domain-level correlation between DMSE and choice preferences was significantly positive (*mean* r = .09, *SD* = .34, *one-sample* $t(88)$ = 2.40, p < .05, two-tailed), suggesting that subjects preferred more choice in decision domains for which they had higher versus lower DMSE. However, when domain familiarity was controlled for in a partial correlation analysis, the average within-subjects association between self-efficacy and choice preferences was no longer significant (*mean* r = .05, *SD* = .33, *one-sample* $t(88)$ = 1.55, p < .07, one-tailed).

2.3 Discussion

Results of Study 1 supported our hypotheses: Overall, individuals with higher DMSE preferred more choice than those with lower DMSE. Moreover, subjects preferred more choice in domains for which they had relatively higher as compared to lower DMSE, although this effect was no longer significant when controlling for domain familiarity.

Although these results support the proposed association between DMSE and choice preferences, the correlational nature of this study precludes causal conclusions and does not rule out the possibility of a third variable (e.g., general cognitive abilities) contributing to the effects. In addition, because the choice preferences measure used in this study involved hypothetical decisions, these findings may not generalize to real-world decision making. Finally, although the results demonstrate that DMSE relates to preferences for choice, an aspect of second-order decision making, they do not address how DMSE influences the means by which individuals choose (i.e., first-order decision making). Study 2 was designed to address these limitations.

and neither it nor any of the REI subscales (Rational Ability, Rational Engagement, Experiential Ability, and Experiential Engagement) were related to choice preferences. As such, we do not report them with our results.

3 Study 2

Whereas Study 1 examined the association between DMSE and choice preferences using a correlational design, self-report measures, and hypothetical decisions, Study 2 used a novel experimental manipulation of DMSE, an incentive-compatible decision scenario with realistic outcomes, and a process-tracing approach to assess decision strategies (e.g., Luce, Bettman, & Payne, 1997). This allowed us to draw conclusions about causal relationships between DMSE and choice preferences. Further, by tracing actual decision-making patterns, we were able to examine whether the effects of DMSE extend beyond choice preferences to patterns of information search. Based on self-efficacy theory, we hypothesized that individuals whose self-efficacy levels were experimentally elevated would desire more choice and seek more information relative to those individuals whose efficacy levels were reduced.

Again we examined a choice in the consumer domain. Specifically, we examined choices among photo printers because pilot testing indicated that most undergraduate students were moderately familiar with them, although the vast majority did not actually own one.

3.1 Method

3.1.1 Subjects

Sixty-five undergraduate students (48 female, aged 18–26, M = 19.98 years) participated in exchange for course credit. Subjects were 50% White, 33.3% Asian-American, 9.1% African-American, and 7.6% other minority. Approximately 6% of the sample identified as Hispanic, and the mean socioeconomic status level of the sample was 3.26 out of 5 (SD = 1.01).

Eleven subjects were excluded from the analyses because they failed to comply with instructions or expressed suspicion regarding the experimental manipulation upon debriefing (final N = 54).[2]

3.1.2 Measures

As part of the experimental manipulation, all subjects completed a background questionnaire under the premise that their responses would help determine how easy or difficult the subsequent decision task would be. These measures included the 6-item *Maximization Scale*

[2]Exclusion of these subjects did not significantly influence the reported results.

(Nenkov et al., 2008)—see Study 1), as well as the 60-item *NEO Five-Factor Inventory* (NEO-FFI; McCrae & Costa, 2007), which assesses the personality traits of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness.[3]

Self-Efficacy Manipulation Check. Consistent with guidelines for assessing self-efficacy recommended by Bandura (2006), subjects indicated how confident they were in their ability to select the best possible photo printer on a scale from 0% (not at all confident) to 100% (very confident). This measure, used as a manipulation check, was administered at two separate times following the experimental manipulation (see procedure for details). Because the two manipulation checks were highly correlated ($r = .81$, $p < .001$), we averaged them into a composite measure.

3.1.3 Materials

Information Grid. All subjects completed a decision among 20 photo printers using a standard computerized information grid (adapted from Luce et al., 1997, see Figure 2), presented via E-Prime 2.0 experimental software. The information grid contained real printer model names and information (retrieved from retailers' and manufacturers' websites) for the following six attributes: Black print resolution (DPI), color print resolution (DPI), feed capacity (i.e., maximum number of sheets of paper), maximum media size, memory card reader, and print noise level (dBA).[4]

Attributes were selected based on information commonly provided by consumer electronics websites. Pilot testing with 49 undergraduate students confirmed that the attributes were judged as moderately important (memory card reader) to very important (color print resolution).

As depicted in Figure 1, each piece of information was contained in a separate cell within the grid. All information was initially hidden from subjects, who were instructed to use the computer mouse to click on a cell to reveal the corresponding information. Each piece of information remained visible until the subject clicked on another cell, at which point the initial information would disappear. Thus, only one piece of information was visible at any time, though subjects were allowed to revisit any cell. Subjects were allowed to view as much information as they desired, and were given unlimited time to search for information within the grid prior to selecting a printer.

[3]Because responses to these background measures did not affect the results, we do not discuss them further.

[4]We deliberately chose to omit pricing information from the grid so that subjects did not simply select the most expensive printer. For some printers it was not possible to obtain full information for all six attributes—in these cases the mean value for all other printers was used as a substitute.

Information Sheet. To ensure that subjects were able to make an informed decision among the photo printers, each subject was provided with an information sheet prior to making the decision. This sheet was modeled after information provided by consumer recommendation sources (e.g., Consumer Reports and Amazon.com) and contained explanations for each of the decision attributes. For instance, the explanation for the feed capacity attribute read as follows: "The feed capacity is the maximum number of sheets of paper that can fit in the printer. The higher the feed capacity, the less often the printer paper will need to be refilled."

3.2 Procedure

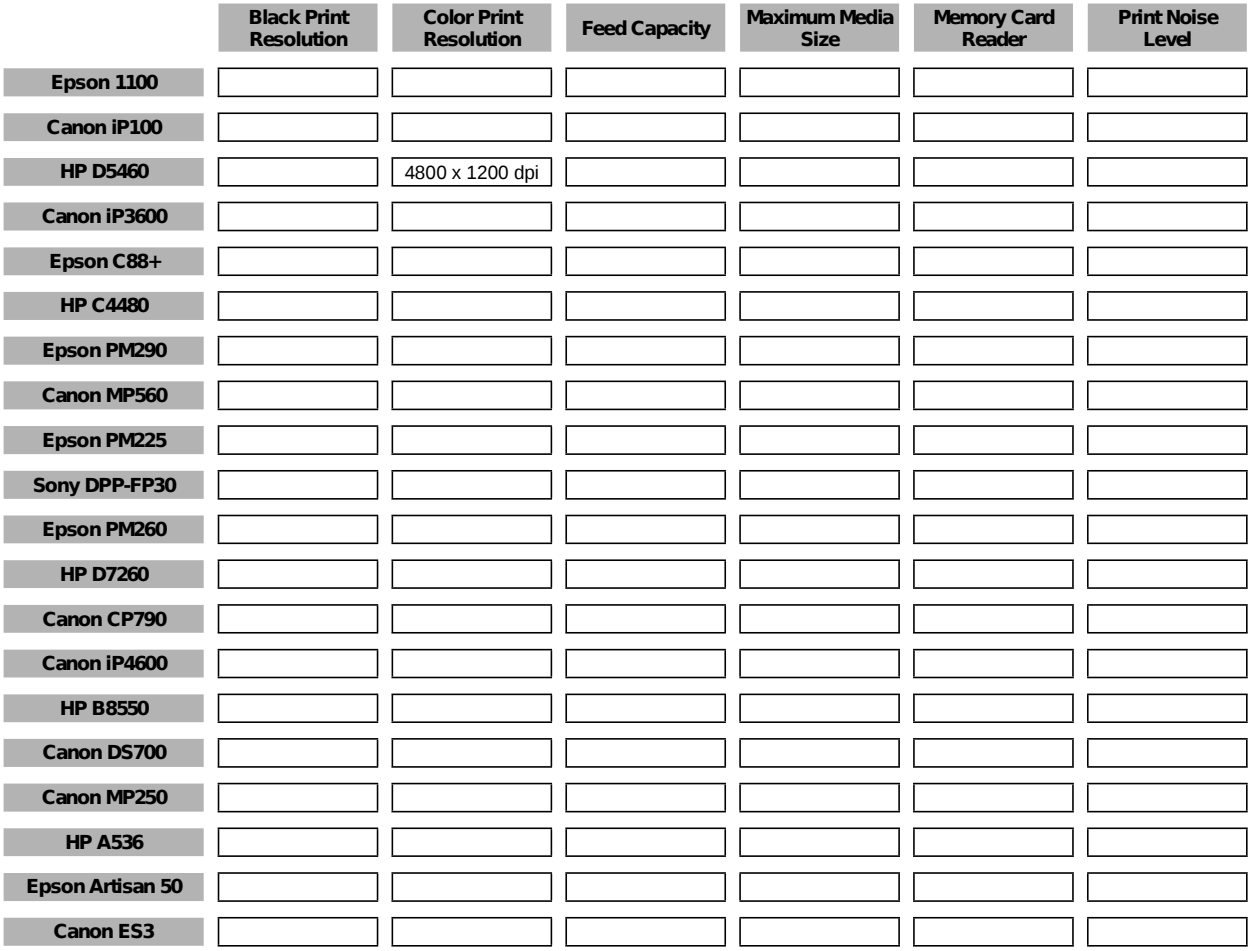
Subjects were randomly assigned to one of three conditions: High self-efficacy, low self-efficacy, and control. At the onset of the study, all subjects were informed that they would be making a decision among photo printers. They were instructed to treat this decision as real because one subject would be randomly selected via lottery to receive the printer of his or her choice.

Next, subjects were asked to complete a series of background measures, including the Maximization Scale (Nenkov et al., 2008) and the NEO-FFI (McCrae & Costa, 2007).[5] They were told that their responses to the measures would provide an indication of their ability to complete the subsequent decision task. Upon completion of the background measures, subjects in the experimental conditions saw a screen indicating that the computer was currently analyzing their responses. Next, subjects in the experimental conditions received false feedback that, based on their responses, the decision would be easy (high self-efficacy condition) or difficult (low self-efficacy condition) for them to make. In reality, this feedback was unrelated to the background variables and was simply designed to alter confidence levels. Subjects in the control condition received no feedback.

All subjects then completed the first manipulation check, and selected the number of photo printers they wished to choose from, ranging from 4 to 20 options in increments of 4 (i.e., 4, 8, 12, 16, or 20). In order to mitigate the potential influence of expectations about differences between the choice sets, we explicitly instructed subjects that the smaller choice sets consisted of randomly selected options from the larger choice sets. After selecting their preferred choice set, subjects were provided with instructions regarding the decision task, including details on how to navigate the information grid. Immediately prior to the decision task, subjects in the experimental conditions were reminded of their purported

[5]Because neither of these measures was significantly related to choice preferences or information search, we do not discuss them in the results.

Figure 1: Sample information grid for Study 2: The grid depicts open cell corresponding to Color Print Resolution for Canon iP3600 printer. Only one cell was visible at a time.



skill levels (subjects in the control condition received no such reminder), and all subjects completed a second manipulation check. All subjects, independent of their reported choice preferences, then completed the decision task using the 20-option information grid, and selected their desired printer.[6] Finally, subjects were checked for suspicion and debriefed.

All study components were completed using a desktop computer running E-Prime 2.0 experimental software, and the entire experimental session lasted approximately 30 minutes. After data collection was completed, one subject was randomly selected and received the printer of his choice.

[6]We deliberately imposed a 20-option decision on all subjects to ensure that choice preferences and information seeking would not be confounded. This ensured that the total amount of available information was identical across subjects (i.e., 120 total attributes). Alternatively, had we allowed subjects to make decisions within their desired choice sets, individuals who selected smaller choice sets would have had fewer pieces of information to view than those who selected larger choice sets.

3.3 Results

Gender, race (White vs. non-White), ethnicity (Hispanic vs. non-Hispanic) and socioeconomic status were not significantly related to any of the outcome measures, and will not be discussed further.

To test our hypothesis that individuals in the high-efficacy condition would prefer more choice and seek more information than individuals in the low-efficacy condition, we used independent-samples t-tests with one-tailed significance tests.

Manipulation Checks. As illustrated in Table 1, subjects assigned to the low-efficacy condition reported significantly lower levels of efficacy than subjects in the high-efficacy condition ($t(34) = -2.51$, $p < .01$, $d = .87$) or control condition ($t(34) = -3.23$, $p < .005$, $d = 1.12$). However, reported efficacy did not differ between the high-efficacy and control conditions, $t(34) = -.57$, n.s.

Choice Preferences. As depicted in Table 2, subjects in the low-efficacy condition preferred significantly fewer

Table 1: Dependent measures by condition in Study 2. Different superscript letters within a given row indicate significantly different means.

	Condition					
	Low efficacy (n=18)		High efficacy (n=18)		Control (n=18)	
Variable:	*M*	*SD*	*M*	*SD*	*M*	*SD*
Self-efficacy composite	65.2[a]	13.7	76.6[b]	12.6	78.8[b]	10.2
Preferred choice set	8.2[a]	3.8	13.8[b]	5.5	13.8[b]	6.3
Information viewed	134.1[a]	82.9	206.7[b]	109.4	197.7[b]	100.4

options than subjects in the high-efficacy or control conditions, ts(34) $\leq$ 3.21, ps < .005, ds > 1.07. Subjects in the high-efficacy and control conditions preferred equivalent amounts of choice, $t(34) = .00$, n.s.

Information-seeking. Consistent with our hypotheses, subjects in the low-efficacy condition viewed significantly fewer pieces of information within the decision grid than subjects in the high-efficacy or control conditions, ts(34) ≤ -2.07, ps < .05, ds > .69, as depicted in Table 2. However, information-seeking did not differ significantly between the high-efficacy and control conditions, $t(34) = .26$, $p = .40$.

3.4 Discussion

Consistent with our hypotheses, subjects whose self-efficacy levels were experimentally reduced desired fewer options and sought less information relative to individuals whose efficacy levels were relatively high. These results suggest that deficits in self-efficacy may impede motivation to consider multiple alternatives and to engage in thorough information seeking while making complex decisions. Due to random assignment, there is no reason to assume that subjects in the experimental conditions differed in their *actual* decision-making abilities. Thus, between-condition differences in decision-making can be attributed to efficacy beliefs alone.

In addition to demonstrating a causal influence of DMSE on choice preferences, the present findings add to the literature by suggesting that DMSE also affects decision search strategies.

Although the experimental manipulation succeeded in reducing self-efficacy in the low-efficacy group, no significant differences were observed between the high-efficacy and control conditions. This may reflect high default confidence levels among the study population (i.e., college students) with respect to decision making in the target domain (photo printers).

4 General discussion

Converging results from both studies support the hypothesis that higher levels of DMSE engender preferences for increased choice. This effect was found both within and between individuals, across a variety of decision domains, and for both hypothetical and realistic decisions. Moreover, results from Study 2 provide novel evidence that preferences for choice at the onset of a decision are associated with information seeking strategies during the decision process. Taken together, our findings have implications for research and theories of decision-making as well as public policy.

First, the studies add to the limited research on the role of self-efficacy in decision making. Whereas prior research indicated that high DMSE is associated with a preference for more complex decisions (Tabernero & Wood, 2009), Study 1 extends these findings across a wide range of consumer domains and examines them at both inter- and intra-individual levels. In addition, whereas prior studies demonstrated associations between DMSE and information seeking (Seijts et al., 2004), Study 2 is the first to replicate these findings using an experimental design involving realistic outcomes. Thus, our findings add ecological validity towards a better understanding of consumer decisions in real life.

From a methodological point of view, our results underscore the importance of psychometric precision when assessing preferences for choice. Previous studies exclusively relied on dichotomous choices between large and small choice sets (e.g., Chernev, 2006; Dar-Nimrod, Rawn, Lehman, & Schwartz, 2009). The present studies incorporated more fine-grained measures of choice preferences and suggest that previous research may have overestimated the average preferred choice set size: Moderately-sized sets may be most appealing of all.

Of course, the present studies have some important limitations which need to be acknowledged. First, both studies used undergraduate student samples, which represented a very narrow age range. Given evidence of sub-

stantial age differences in choice preferences (e.g., Reed et al., 2008), a replication of the present studies with varied age groups is recommended. In addition, the high-efficacy manipulation in Study 2 did not elevate DMSE relative to the control condition. At first glance, this result may seem incongruous with previous demonstrations of experimentally-induced high versus low self-efficacy in the related domain of problem solving (e.g., Bouffard-Bouchard, 1990). However, it should be noted that the latter study used an unfamiliar task (i.e., figuring out which word to substitute for a nonsense word in a series of sentences, such that the sentences become meaningful) and *post-hoc* false feedback after preliminary trials, whereas our study incorporated a familiar task (i.e., choosing among consumer electronics) and *a-priori* false feedback. Thus, while subjects in the Bouffard-Bouchard (1990) study had little to base their efficacy judgments on aside from false feedback, subjects in our study were likely influenced by their pre-existing decision experience with consumer electronics. Future research would benefit from examining more challenging or unfamiliar decision domains, and/or recruiting samples with lower rates of baseline self-efficacy. Further, although Study 2 implemented a realistic outcome, the decision grid could be revised to bear closer resemblance to the information displays commonly found on consumer websites such as Amazon.com.

In spite of these limitations, our findings have potential implications for public policy—most notably with regard to health-related and financial decision making. Prior research indicates that giving people too many options may prompt them to avoid consequential decisions such as choosing 401k investments or Medicare Part D prescription drug plans (Boatwright & Nunes, 2001; Reed et al., 2008; Tanius, Wood, Hanoch, & Rice, 2009). Results from the present studies suggest that lack of interest in larger choice sets may reflect low levels of DMSE. Consequently, successful interventions aimed at increasing DMSE might increase individuals' motivation to engage in complex, choice-laden decisions. As a first step in this direction, future research might aim to identify individuals whose low efficacy levels put them at risk of making sub-optimal decisions or avoiding choices altogether.

At the outset of this paper we questioned whether DMSE influences preferences for choice. Results of the present studies suggest that, indeed, efficacious individuals desire more choice and seek more information relative to people with lower self-efficacy. Importantly, our research also suggests that DMSE is relatively malleable, and altering people's confidence in their decision-making abilities affects the decisions they prefer *and* the means by which they make decisions. Although additional research is needed to fully elucidate the effects of self-efficacy on decision-making, the present studies suggest that, when it comes to preferences for choice, confidence is key.

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