

Running head: CONFIDENCE, FLUENCY, AND CONSTRUAL LEVEL

**On the Psychology of Confidence –
The Effects of Fluency and Construal Level on Confidence Judgments**

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Abstract

We propose that confidence judgments are systematically influenced by fluency (retrieval fluency and processing fluency). The fluency effects, however, are moderated by levels of construal, which evoke different theories to interpret the subjective experience of fluency. At low construal levels, fluency informs the feasibility of achieving the outcome but at high construal levels fluency informs the desirability of the outcome. In three studies, we manipulated fluency by asking participants to think of a few vs. many reasons for their choice (studies 1 and 3) or by presenting descriptions of products in a standard vs. blurry font (study 2). As predicted, fluency increases confidence for people processing at lower construal levels, but it decreases confidence for those processing at higher construal levels.

Prior research suggests that it is not just what people think they like or what they believe that influences their behavior but also how confident they are in their likes and beliefs. In many situations, ranging from financial investments and medical dilemmas to poker games, the degree of confidence in a judgment determines the actions people take. Confidence refers to people's perceptions of the accuracy of their preferences and beliefs. In particular, researchers have demonstrated that confidence predicts consumer choices (Cowley 2004), delays in purchasing (Greenleaf and Lehmann 1995) and the amount of money bet on sports teams (Simmons and Nelson 2006; Tsai, Klayman, and Hastie 2008). Further, the correspondence between attitudes and actual behavior depends on the degree of confidence or certainty with which the attitudes are held (Bizer et al. 2006; Fazio and Zanna, 1978; Rucker and Petty 2004; Tormala and Petty 2002a, 2002b). Confidence increases attitudinal persistence (Bassili 1996) and increases resistance to persuasive attacks (Tormala and Petty 2004; Wu and Shaffer 1987; Kelley and Lamb 1957).

Despite the importance of confidence, it has resulted in far less exploration than primary cognitions such as preference or belief. Tsai, Klayman, and Hastie (2008) suggest that there are two important classes of cues that determine people's confidence. The first are the properties of available information when making a judgment, and the second are meta-cognitive cues, that is, the subjective evaluation of the processing that is used in forming the judgment or decision (Schwarz 2004). Past work on confidence has focused on the first class of cues, for example, amount of available information and its subjective validity (Tsai et al. 2008), redundancy (Goethals and Nelson 1973; Kahneman and Tversky 1973; Maines 1990; Slovic 1966), consistency (Peterson and Pitz 1988), coherence (Bell and Loftus 1989; Pennington and Hastie 1991; Swann and Gill 1997),

and task difficulty (Braun and Yaniv 1992; Brenner et al. 1996; Griffin and Tversky 1992; Klayman et al. 1999).

The present research extends these prior findings by exploring the influence of the meta-cognitive cues on consumers' confidence judgments. In particular, this research examines the influence of fluency on confidence judgments of consumer's choice based on preference predictions. In addition, this work proposes an important moderator for the effect of fluency on confidence judgments, specifically, construal level (Trope and Liberman 2003). We find that when consumers adopt a low construal level, which highlights the feasibility of an outcome, fluency increases confidence. However, when consumers adopt a high construal level, which highlights the desirability of an outcome, fluency decreases confidence. We trace this latter effect, a reversal of prior findings regarding the role of fluency, to lay theories regarding the relationship between outcome desirability and effort.

CONFIDENCE AND FLUENCY

Prior research suggests that two of the key meta-cognitive cues, accessibility experiences and processing fluency, are highly influential on preferences and choice (Novemsky et al. 2007). Accessibility experiences pertain to the subjective ease or difficulty with which people can retrieve information from memory or generate relevant arguments (i.e., retrieval fluency, Schwarz 2004). By contrast, processing fluency pertains to the ease or difficulty with which external information can be processed (Winkielman et al. 2003). The degree of processing fluency arises from perceptual

variables such as figure-ground contrast or stimulus clarity (i.e., perceptual fluency, Jacoby, Kelley, and Dywan 1989) or from semantic variables such as the identification of stimulus meaning and its relation to semantic knowledge structures (i.e., conceptual fluency, Whittlesea 1993). We realize the distinction between perceptual processing fluency and conceptual processing fluency is relevant to some theoretical issues (Kelley and Rhodes 2002). However, they have parallel effects for the issues of interest to the present research (Winkielman et al. 2003a, 2003b) and thus we will use the generic term processing fluency in the remaining article for effects related to external information. Similarly, we will use the even more generic term fluency when we discuss the general effects of retrieval fluency for internal information and processing fluency for external information on confidence judgments.

Although the relationship between retrieval fluency and confidence has not been examined empirically, several researchers suggest that it might influence confidence judgments (Alba and Hutchinson 2000; Kelley and Lindsay 1993; Koriat 2000; Koriat, Lichtenstein, and Fischhoff 1980). Findings on judgments of risk and frequency also imply that confidence may increase with retrieval fluency. For example, Rothman and Schwarz (1998) have demonstrated when participants without a family history of heart disease were asked to generate three factors that may increase the risk of developing heart disease (leading to high retrieval fluency), they predicted greater chance of suffering from heart disease than those who were asked to generate eight factors (leading to low retrieval fluency). Similarly, retrieval fluency has been found to increase the frequency judgment for an event (Wänke, Schwarz, and Bless 1995), the likelihood for a given

outcome (Sanna, Schwarz, and Stocker, 2002) and certain social behaviors (Rothman and Hardin 1997), and attitude certainty for public policies (Haddock et al. 1999).

An argument can also be made for an effect of processing fluency on confidence judgments by drawing on findings with respect to judgments of truth. When the objective truth of a statement is difficult to evaluate, people often draw on social consensus information (e.g., familiarity) to arrive at a judgment – after all, if many believe it, it is probably true (Festinger 1954). Hence, people are more likely to accept a statement as “true” when it seems familiar rather than novel. The statement’s perceived familiarity, however, is a function of how fluently it can be processed. To the extent that the perceived truth of the statement aligns with confidence, these findings support an effect of processing fluency on confidence. For example, variables such as exposure frequency (Begg, Anas, and Farinacci 1992; Hawkins and Hoch 1992) and figure-ground contrast (Reber and Schwarz 1999) have been shown to improve fluency and reliably increase the likelihood that a given statement is accepted as true. Hence, prior research suggests that fluency may directly influence confidence in judgments and choice. However, we examine a potential moderator of this effect in the following section.

MODERATING EFFECT OF CONSTRUAL LEVEL

Recent research has shown that fluency may not always have a positive effect on the underlying judgment, depending on the extent to which meta-cognitive experiences are judged to be diagnostic, the judgmental heuristics or theories used to interpret the subjective experiences of ease, and processing motivation. For example, it has been

shown that retrieval fluency does not affect frequency judgments when people are provided an alternative attribution for the accessibility experiences, rendering the experience of fluency nondiagnostic (Schwarz et al. 1991). The effect of fluency may also depend on the use of simplifying heuristics. In most work on retrieval fluency, the effects have been assumed to operate according to the availability heuristic (Tversky and Kahneman 1973). The accessibility experience affects inferences about the amount of information available, which in turn serves as a judgment heuristic. Accordingly, it has also been posited that the retrieval fluency effects would disappear or reverse when people's motivation or ability to think about issue-relevant information is high (Chen and Chaiken 1999; Haddock 2000). Consistent with this hypothesis, Rothman and Schwarz (1998) have demonstrated that participants with a family history of heart disease predicted greater chance of suffering from heart disease when they were asked to generate eight risky behaviors relative to those who were asked to report only three, reversing the fluency effect observed for participants who lacked motivation to process carefully. In contrast with this view, however, Tormala, Petty, and Briñol (2002b) have shown that the retrieval fluency effects occurred for participants with high processing motivation and the effects were reversed for participants with low processing motivation, suggesting a complex relationship between meta-cognitive influences and heuristic processing.

The present research adds to this emerging literature by positing that people interpret feelings of ease differently depending on construal level. According to construal level theory (CLT) (Liberman and Trope 1998; Trope and Liberman 2003), the same event or object can be represented at multiple levels. Lower-level construals highlight the

means and the feasibility of an event, whereas higher-level construals highlight the central goals and the desirability associated with the event. Feasibility refers to the ease or difficulty of reaching the end state, desirability refers to the value of the end state. For example, Trope and Liberman (1998) gave students two choices for their homework assignment, one easy yet boring, and the other interesting yet difficult. They observed that if the choice was construed at lower levels, students placed greater weight on feasibility and chose the easy assignment despite its boring topic. Conversely, if the choice was construed at higher levels, students chose the interesting, yet difficult assignment. In addition to risk-free choices, CLT has also been extended to judgment under uncertainty, which is very relevant to confidence judgment. For example, it has been shown that when choosing gambles, preferences for gambles were primarily based on the probability of winning when they were construed at lower levels, whereas preferences for gambles were primarily based on the payoff when they were construed at higher levels. This is because people conceive of probabilities of winning as subordinate to payoffs (Sagristano, Trope, and Liberman 2002).

In light of this research, we hypothesize that people will interpret feelings of ease differently depending on whether they are focused on feasibility or desirability. When people think about feasibility, that is, at a low construal level, feelings of subjective ease should bolster confidence. Greater ease logically signals greater likelihood of achievement. By contrast, when thinking about desirability, that is, at a high construal level, people will reverse the effect. When people are confident that an outcome is desirable, they are willing to allocate more resources to achieving that outcome (Simmons and Nelson 2006; Tsai et al. 2008) and would probably put forth greater effort.

Hence, they may reverse this association and interpret greater effort to reflect greater confidence in the outcome.

Other research has demonstrated that people may adaptively substitute cues and reverse associations (Kahneman and Frederick 2002). For example, Faro, Leclerc, and Hastie (2005) have shown that people may reverse the relationship between time as a cue to causation by interpreting causation as a cue to time, judging the time interval between causally related events shorter than non-causal events. Even more pertinent, Labroo and Kim (2009) hypothesize that people may reverse the relationship between instrumentality and effort in the domain of goal pursuit. Specifically, instead of seeing greater instrumentality as deserving greater effort people may see greater effort as indicative of greater instrumentality and hence value. Consistent with this view, these authors report that when primed with an “aim for pleasure” goal, people interpret lower processing fluency (i.e., greater processing effort) to reflect greater instrumentality and hence greater value of chocolate. This effect is only observed when the relevant goal is primed (e.g., greater processing effort leads to greater value for chocolate when pursuing pleasure, but not when thinking about fitness).

In line with this theorizing and prior research, our central hypotheses are as follows.

- H1a:** When fluency is high, people at lower construal levels tend to interpret the subjective experience of ease as an indicator of outcome feasibility (being able to make a choice) and thus feel more confident in choice.
- H1b:** When fluency is low, people at higher construal levels tend to justify the subjective experience of difficulty as the confirmation of outcome

desirability (being able to choose the option with the greatest benefits or payoff) and thus feel more confident in choice.

Taken together, these hypotheses imply an interaction of fluency and construal level on confidence. This prediction distinguishes our work from two alternative explanations, sunk cost fallacy and cognitive dissonance. Sunk-cost effects involve the over-application of the heuristic “waste not” (Arkes and Ayton, 1999). In situations where future benefits are independent of past investment, over-application of the “waste not” rule leads people to base their judgment erroneously on the already sunk investment (e.g., effort). Similarly, cognitive dissonance theory (Aronson and Mills 1959; Festinger 1957) asserts that the need for consistency can influence people’s judgment. This view may cause people to align their evaluations with effort level. Both of these accounts predict a main effect, that is, greater effort leads to greater confidence in choice, consistent with hypothesis 1b but not hypothesis 1a.

We tested our proposition in two ways. In studies 1 and 3, we manipulated retrieval fluency by asking participants to think either of a few (easy) or many (difficult) reasons for their choice. In study 2, we manipulated processing fluency and presented a choice set using either an easy or a difficult to read typeface. Across all studies, we manipulated people’s construal levels using a modified procedure based on the process versus outcome simulation procedure in Taylor, Pham, Rivkin, and Armor (1998). We asked participants to either construct a detailed study plan for the final exam of an important class (lower construal levels) or list the benefits of doing well in the final exam of an important class (higher construal levels). When asked to generate a study plan, participants were expected to focus more attention on feasibility and thus process

information at lower construal levels. On the other hand, when asked to list the benefits of doing well in a class, participants were expected to focus more attention on desirability and thus process information at higher construal levels. We purposely used a priming task that appears to be irrelevant to the choice task to avoid confounding variables such as goal activation and/or goal pursuit (Labroo and Kim 2009). We also controlled for motivation by having all participants think about doing well in an important exam. Participants thus differed only on the thought content (study plan for vs. benefits of excelling in an exam) and we expected the level of motivation to remain approximately the same across conditions in the subsequent choice task.

STUDY 1: CHOOSING A CAMERA (THOUGHT LISTING VS. CONSTRUAL LEVEL)

Method

Participants. Undergraduate business students from a large North American university were asked to make a hypothetical choice between two digital cameras (N = 107) as part of a long questionnaire completed for course credit. We excluded 18 participants from data analysis because they rated their chosen alternative lower than the rejected alternative. It could be that participants misunderstood the questions, did not pay attention, or simply made a mistake. Nonetheless, it is difficult to interpret the inconsistent ratings so they were excluded.

Design, stimuli, and task. Study 1 used a 2 (construal level: lower vs. higher construal levels) x 2 (retrieval fluency: two vs. ten reasons for choice) between-subjects factorial design. In the main choice task, participants were presented descriptions of two digital cameras commonly seen in major electronic stores and asked to choose a camera based on the product information available in the study, and assess their confidence in their choice by indicating the chance (from 50% to 100%) that they would actually like the chosen alternative better during consumption. The test materials were adapted from study 3 in Novemsky et al. (2007) (see appendix A). The half-range confidence judgment for two-alternative choice tasks is a popular research paradigm in calibration research (Soll 1996, Tsai et al. 2008). The confidence measure was restricted to the range from 50% to 100%, because a “rational” participant would never indicate confidence less than 50% for a chosen alternative (Soll 1996). If their confidence for choice is lower than 50%, it implies that they are more than 50% sure that they actually prefer the rejected alternative and thus they should have chosen the rejected alternative.

Procedure. Participants first completed the priming task. Half of the participants were asked to generate a detailed study plan for the final exam of a very important class (lower construal levels) and the remaining participants were told to list the benefits of doing well in that exam (higher construal levels). Once participants completed the priming task, they proceeded to the main study, which appeared to be a separate choice task, unrelated to the preceding exam study. In the main study, they viewed the product information and photos of the cameras and then generated either two or ten reasons for preferring one camera to the other. They then chose the camera that they would like

better and indicated their level of confidence in their choice. Lastly, they were asked to rate the chosen and the rejected alternatives on a scale from one (do not like it at all) to seven (like it very much), and rate the difficulty of generating two or ten reasons as a manipulation check on a seven-point scale ranging from very easy to very difficult to read.

Results and Discussion

As expected, participants rated the task of generating ten reasons for their choice as more difficult than generating two reasons (5.88 vs. 3.89), ($F(1, 86) = 18.74, p < .001$). A 2 x 2 ANOVA revealed a significant interaction on confidence between construal level and processing fluency ($F(1, 86) = 11.43, p = .001$), confirming hypotheses 1a and 1b. The simple effects were also significant. Participants at lower construal levels reported greater confidence when processing was easy (87.0% vs. 76.7%), ($F(1, 86) = 8.53, p = .01$), whereas participants at higher construal levels reported lower confidence when processing was easy (82.1% vs. 87.8%), ($F(1, 86) = 3.72, p = .05$). The results are presented in figure 1. We did not expect and did not observe differences in choice across conditions ($F_s < 1, NS$).

 Insert figure 1 about here

Prior research suggested that motivation can moderate the fluency effects (Rothman and Schwarz 1998). Although we did not anticipate varying construal levels would affect motivation or level of involvement, we did not have empirical evidence to

assess their effects in study 1. Thus we addressed this issue in study 2 by measuring motivation and involvement. In addition, this second study manipulated processing fluency by varying the typeface in which the product information was presented (standard font vs. blurry font).

STUDY 2: CHOOSING A CAMERA (TYPEFACE VS. CONSTRUAL LEVEL)

Method

Participants. Participants were 146 undergraduate and graduate students at the same North American university. Participants were paid to complete a long questionnaire that included the present study. The whole study took about 30 minutes to complete and participants were paid \$5. We excluded 19 participants from the data analysis because they either failed to complete the priming task or reported inconsistent ratings for the chosen option and the rejected alternative.

Design and stimuli. The design was similar to study 1 with two modifications. First, we manipulated processing fluency by varying the typeface; half the participants were given written descriptions of the two cameras in a standard font and the other half were presented the descriptions in an embossed italicized gray font (see appendix B). This latter font has been shown to be fairly difficult to read, though it can be read accurately with some effort (Epley and Norwick 2009). Second, we replaced the cameras

used in study 1 with a pair of waterproof digital cameras to further generalize our findings.

Procedure. Participants first completed the priming task (same as study 1) and then worked on the main task in which they reviewed two cameras, chose a camera, indicated their confidence in their choice and rated both cameras, and rated the difficulty of viewing the product information. Finally they completed several questions that measured their level of motivation and involvement. In particular, they reported processing motivation by rating how important it was to think about the choice problem carefully and the relevance of the choice problem, on a seven-point scale (1 = not at all; 7 = extremely). They also reported the level of involvement by rating how absorbed, stimulated, and involved they felt during the decision making process, also on a seven-point scale.

Results and Discussion

The manipulation of fluency was successful as shown by the ratings of difficulty. As expected, the materials shown in appendix B was rated significantly more difficult to read than the same materials presented in a standard font (4.78 vs. 2.37), ($F(1, 123) = 2.81, p < .001$). A 2 x 2 ANOVA showed that there was a significant interaction on confidence between construal level and processing fluency ($F(1, 123) = 4.85, p = .008$), confirming hypotheses 1a and 1b. Participants at lower construal levels reported greater confidence when processing was easy (87.6% vs. 81.1%), ($F(1, 123) = 4.58, p = .03$),

whereas participants at higher construal levels reported lower confidence when processing was easy (81.1% vs. 87.9%), ($F(1, 123) = 3.92, p = .04$). The results are presented in figure 2. We did not expect and did not observe differences in choice across conditions, $F_s < 1$.

 Insert figure 2 about here

The ratings for task importance, task relevance, and feelings of involvement, absorption and stimulation during decision making were highly correlated, all $p_s < .001$. Thus we created a motivation-involvement index by taking the mean of the ratings and conducted a 2 x 2 ANOVA. Overall, level of motivation and involvement was high and did not differ across conditions ($M = 6.00, 6.20, 6.09, 6.07, F_s < 1, NS$), suggesting construal level manipulation did not alter motivation, nor did it affect involvement. The results corroborated prior research that fluency effects may occur when processing motivation is high (Tormala and Petty 2002). Moreover, study 2 also provided evidence to show that the reversal of the fluency effects occurs when processing motivation is high (Rothman and Schwarz 1998). However, the motivation account only explains part of the results in study 2.

The next step is to further test hypotheses 1a and 1b. Although the results obtained in studies 1 and 2, along with those observed in the fluency literature, indicate that subjective experiences associated with the typeface and the thought listing task can affect confidence in choice, the hypothesized mechanism has not been tested directly. If these findings are indeed influenced by an individual's subjective experiences in processing and integrating information, the inclusion of a misattribution manipulation,

designed to undermine the diagnosticity of the subjective experience, should produce different effects.

STUDY 3: MISATTRIBUTION, TYPEFACE, AND CONSTRUAL LEVELS

The objective of study 3 was to obtain direct evidence for the role of retrieval fluency and construal level. To accomplish this goal, we used a misattribution paradigm that has been used successfully in prior research to demonstrate the mechanism of retrieval fluency on judgment (Rothman and Hardin 1997, Study 2; Schwarz et al. 1991, Study 3). For example, Schwarz et al. (1991, Study 3) observed that participants did not rely on their accessibility experience when its diagnosticity was called into question. In their study, Schwarz et al. asked participants to recall six (easy) or 12 (difficult) examples of assertive behaviors and informed participants that music played during the recall task might render recall easy or difficult. As expected, the retrieval fluency effect disappeared when the alleged side effect of the music matched the accessibility experience, thus rendering them nondiagnostic. Participants based their assertiveness judgments on the content of recall and reported higher assertiveness after recalling 12 examples of assertive behaviors than they did after recalling six.

We adapted this paradigm for study 3. The procedure in study 3 was similar to study 1; however, participants completed the choice task while listening to a selection of music. Some participants were led to believe that the music would facilitate information processing, whereas other participants were led to believe that the music would inhibit information processing. Learning that the music would facilitate processing should

reduce the perceived diagnosticity associated with having had an easy time generating two reasons. Similarly, learning that the music would inhibit processing should reduce the perceived diagnosticity associated with having had a difficult time generating ten reasons. The remaining combinations of these variables (learning that music inhibits processing but having had an easy time generating two reasons or learning that music facilitates processing but having had a hard time generating ten thoughts) should lead participants to perceive the accessibility experiences to be highly diagnostic. Consistent with the findings of Schwarz et al. (1991, Study 3), we expected our participants to draw on their accessibility experiences when their diagnosticity was not called into question but to draw on the content of product information when their accessibility experiences were rendered nondiagnostic. Our hypothesis is as follows.

H2: When fluency is perceived to be nondiagnostic, it has no effect on confidence in choice.

However, when fluency is perceived to be diagnostic, we expect to replicate the results of study 1.

Method

Participants. Participants were 73 undergraduate and graduate students at the same North American university. Participants were paid to complete a long questionnaire that included the present study. The whole study took about 35 minutes to complete and participants were paid \$6. We excluded two participants from data analysis because they failed to complete the priming task.

Design and stimuli. Study 3 used a 2 (retrieval fluency: two vs. ten reasons for choice) x 2 (diagnosticity of accessibility experiences: diagnostic vs. nondiagnostic) between-subjects design. Study 3 was similar to study 1 with two modifications. First, we only included higher-level-construal conditions in study 3. As reviewed earlier, when accessibility experiences are rendered nondiagnostic, fluency has no effects on judgments of risk or frequency. Thus, we are confident that the misattribution manipulation would also attenuate the fluency effects in the lower-construal-level conditions and decided not to duplicate the effort. Second, we chose another product category, films, to better generalize our findings. Participants reviewed information about two new movie releases, such as the cast, director, and screen play (see appendix C for the test materials). The movies included in the present study were *Bedtime Stories* and *He's Just Not That Into You*. These movies had not yet been released when the study was conducted and none of the participants had seen them.

Procedure. All participants were first asked to list the benefits of excelling at an important final exam in order to prime higher construal levels. When participants worked on the main study, they were misinformed that past research had revealed that listening to certain types of music facilitates or inhibits information processing and that during a certain part of the experimental session they would be asked to complete a task while listening to a selection of music. On the cover page of the experiment booklet, participants were provided with four pieces of information about their musical selection. The first three pieces of information were constant across participants. All participants

learned that the music would play throughout the session, would be a classical selection, and would be played at a medium volume. The fourth piece of information provided the misattribution manipulation. Half of the participants learned that the music would facilitate information processing, whereas the remaining participants learned that the music would inhibit information processing. After reading this information, the music was started and participants proceeded with the task. Participants viewed information about the two movies and generated two or ten reasons for preferring one movie over the other. They then chose which movie they predicted they would enjoy more and would be more likely to see in the movie theater, and indicated confidence in their choice. Finally, they rated the movies, rate the difficulty of generating two or ten reasons, and completed several questions about the music played during the experimental session.

Results and Discussion

Manipulation of retrieval fluency was successful. Overall, participants felt it required more effort and it was more difficult to generate ten reasons relative to two reasons (6.00 vs. 2.29 for the effort rating, 5.67 vs. 2.00 for the difficulty rating), both p s $< .001$. A 2 x 2 ANOVA showed a significant interaction between retrieval fluency and diagnosticity ($F(1, 67) = 3.69, p = .05$), confirming hypothesis 2. When the accessibility experiences was diagnostic (i.e., music hurt processing but processing was actually easy; music improved processing but processing was actually hard), confidence was lower when participants had to generate only two reasons than ten reasons (73.9% vs. 83.7%), ($F(1, 67) = 3.82, p = .05$). But when accessibility experiences were rendered

nondiagnostic (i.e., music hurt processing and processing was hard; music improved processing and processing was easy), retrieval fluency had no effect on confidence (80.6% vs. 76.5%), ($F < 1$, NS). The means are presented in figure 3. We did not expect and did not observe differences in choice across conditions ($F_s < 1$, NS).

 Insert figure 3 about here

GENERAL DISCUSSION

The central findings of the present research indicate that meta-cognitive experiences during processing are important determinants of confidence judgments. Across three studies, we demonstrated that fluency leads to high confidence for people at lower construal levels. Conversely, fluency renders confidence low for people at higher construal levels. The results of study 1 demonstrated this principle using a manipulation of thought listing task. Study 2 replicated study 1 with a different manipulation of fluency, focusing on the ease of processing information rather than the ease of thought generation. Study 3 not only replicated study 1 for people processing at higher construal levels but also showed that the effects of subjective difficulty and construal level on confidence were moderated by the interpretation of that feeling. When participants attributed difficulty to the background music rather than the decision, the effects of retrieval fluency on confidence were eliminated.

The present studies tested our hypotheses in two distinctive domains, one utilitarian (digital cameras) and the other hedonic (movies), using two ways to

manipulate fluency, retrieval fluency and processing fluency. We also directly tested whether these findings were indeed mediated by an individual's subjective experiences in processing and integrating information. These design features provide strong evidence that the phenomenon is substantial and reliable.

These findings provide a clearer picture of how fluency affects confidence judgments and identify construal level as an important moderator. To the extent that choices vary in their mode of presentation and that consumers vary in their internal states, the fluency experienced during choice and levels of construal will also vary. This variation will induce changes in confidence in choice and thus affect actual purchase decisions and the amount that consumers are willing to pay for an item.

The present studies are part of a larger, ongoing effort to understand the processes that underlie confidence judgments (Doherty, Gettys, and Ogden 1999; Gigerenzer, Hoffrage, and Kleinbolting 1991; Griffin and Tversky 1992; Juslin and Olsson 1997; Klayman et al. 2006). The picture that emerges is that confidence judgments are complex and multiply determined. This is to be expected, given that forming a confidence judgment involves acquisition, comprehension, integration, and evaluation of cues, and translation into action. Two important classes of cues that determine people's confidence are the properties of the information available in making a judgment, and the meta-cognitive cues, that is, the judge's subjective evaluation of the mental processing that goes into forming the judgment or decision. A great deal of research in psychology and some in marketing has shown that confidence judgments can be affected by the first class of cues, including amount, validity, redundancy, consistency of, or coherence of the information. In the present research, we are the first to formally document the effects of

meta-cognitive cues on confidence judgments about choices based on preference predictions. We also identify construal level as an important moderator.

Future Directions

The present findings lead to a number of further questions about causes and generality. For example, in addition to levels of construal, we suspect that there might be more factors that can moderate the fluency effects. Deliberative and implementation mind-sets may play a role (Gollwitzer 1999; Gollwitzer and Bayer 1999; Gollwitzer, Heckhausen, and Steller 1990; Heckhausen and Gollwitzer 1987). Gollwitzer et al. (1990) suggest that deliberative mindset involves comparing and evaluating alternative goals and that it affects goal setting, whereas implementation mindset involves comparing and evaluating alternative means or plans and that it affects goal pursuit. Although the goal pursuit literature did not imply that ease leads to greater (perceived) chance of goal attainment for people with the implementation mindset, ease is likely to increase their confidence in choice, given the similarity between implantation mindset and processing at lower construal levels. Similarly, subjective experiences of difficulty might also increase confidence for people with the deliberation mindset as it does for people at higher construal levels. Prior research on goal setting (Gollwitzer 1990) suggests that people tend to think that the likelihood of choosing the right goal should be enhanced when the individual thoroughly ponders the attractiveness of the expected consequences of these goals. It is an empirical question whether people perceive careful deliberation to

be difficult. If they do, difficulty might increase confidence for people with deliberation mindset, reversing the typical fluency effects.

Despite their similarity (i.e., mind-set oriented), the implementation-deliberation mindset effects and construal level effects are probably governed by different psychological mechanisms. Construal level effects involve the switch in the focus of attention between feasibility and desirability considerations, which in turn determines the naïve theory that comes to mind for confidence judgment. The implementation-deliberation mindset effects, however, involve the phases of a course of action, that is, goal setting (predecisional phase, deliberation) versus goal pursuit (post decisional phase, implementation). CLT predicts differences in construal when time perspective is varied within the same stage, pre- or postdecisional, and it does not require a decision on goals, whereas the switch in mindsets requires goal setting.

While it may be important to understand whether fluency also affects accuracy and hence overconfidence and whether fluency is a valid cue to confidence, it is beyond the scope of the present research. Our findings do show that holding everything else constant, fluency can increase or decrease confidence, depending on the level of construal. Confidence in turn influences both actual purchase decisions and delays in decision making. Understanding the impact of fluency and construal level provides important insights into consumer choice.

Managerial Implications

The present research also has important implications for practitioners, consumers, and public policy makers. Much of the academic and applied marketing research has focused on ways to help marketers sell their products (e.g., persuasive ads, tiered pricing, or product assortment). The present research highlights the importance of a new class of tactics that can increase purchases without changing the actual products or the pricing strategy. Specifically, our findings imply that marketers should not blindly promote fluency in the hope of increasing sales and should take consumers' construal level into consideration. This is particularly important because the purchase can be construed at higher or lower construal levels, depending on the timing of purchase, occasion of usage, or the nature of the product.

For example, real estate investment or life insurance is likely to be construed at higher levels because people expect to have profits or claim insurance in the distant future and their purchase decisions are based on the outcome considerations (payoff), whereas shopping for fresh produce or having meals during weekdays is usually construed at lower levels because people expect to consume them in the near future and their purchase decisions are based on the means considerations (convenience, price). In natural settings, many market place decisions are perceived very difficult by consumers. Marketers can vary construal levels to help consumers avoid procrastinating on making a decision through advertising messages or interactions between sales people and consumers.

Consumers can also benefit from understanding the effects of construal level and fluency. Prior research has demonstrated that purchase deferral and choice of the compromise option are both consequences of difficult decisions (Dhar 1997; Kivetz,

Netzer, and Srinivasan 2004; Simonson 1989; Tversky and Shafir 1992) and preference fluency is a key variable that causes deferral and compromises (Novemsky et al. 2007). Our findings imply that the issues of deferral and compromise might be mitigated through varying people's construal level.

From a public policy and societal well-being standpoint, the contributions of the proposed research are obvious. Economic interventions and life-changing events (e.g., the blackout of 2003 in the east coast or the recent oil crisis) have not helped people change their behaviour in energy conservation as much as we would like to see. For example, choosing between a conventional and a hybrid car involves tradeoffs such as oil dependency (desirability) and cost (feasibility). People at higher construal levels might be more willing to make changes to their life and commit to options with long-term benefits despite short-term inconvenience. The societal benefits for that would be enormous.

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FIGURE 1

STUDY 1: CONFIDENCE RATINGS (%)

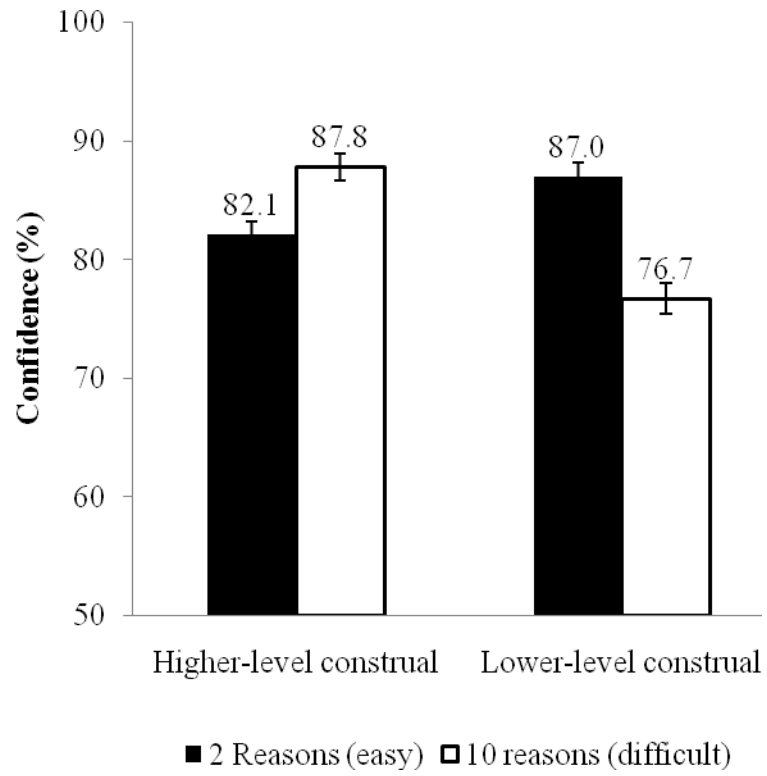


FIGURE 2

STUDY 2: CONFIDENCE RATINGS (%)

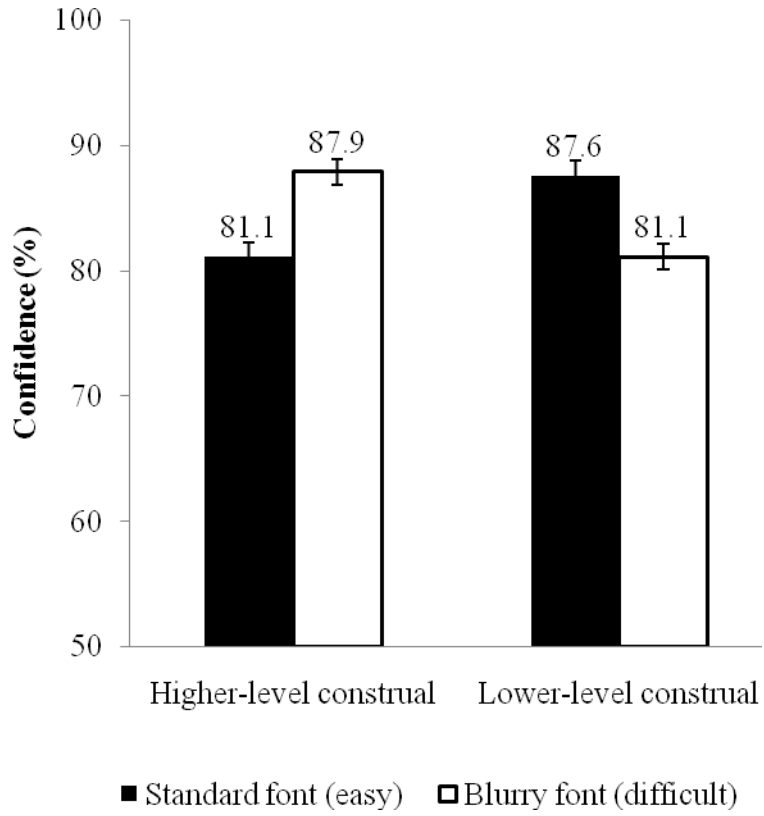
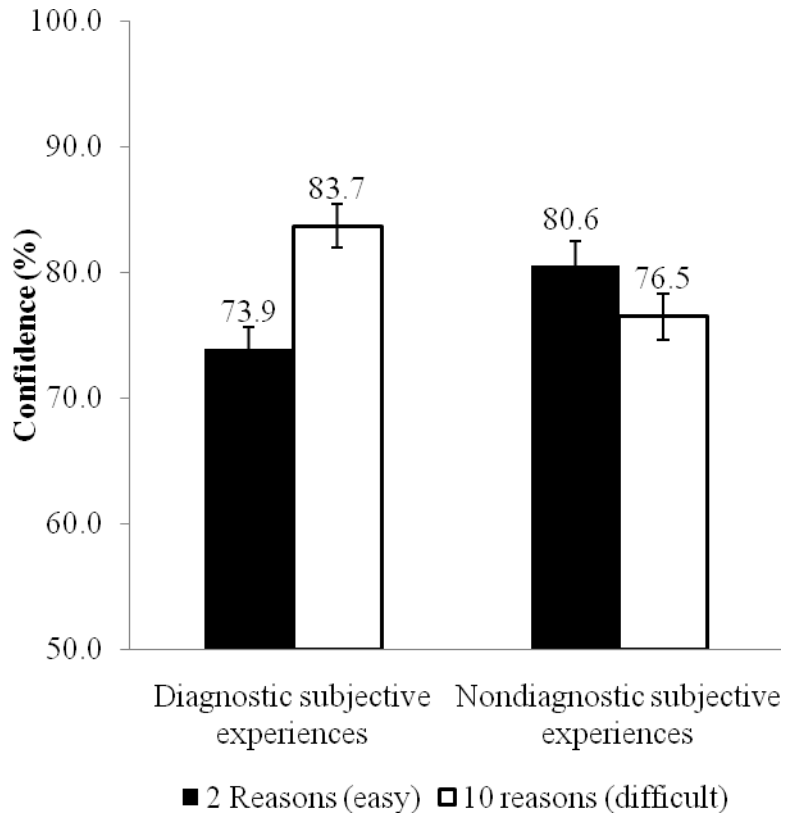


FIGURE 3

STUDY 3: CONFIDENCE RATINGS (%) AT HIGHER CONSTRUAL LEVELS



Appendix A

Item A: Canon PowerShot



PRODUCT FEATURES

- 2.31 megapixel resolution
- 2x digital zoom
- 1.75" LCD screen with magnification for previewing photos
- 8MB internal flash memory; CompactFlash memory card expansion slot for additional memory
- Automatic focus, exposure and image controls
- USB connection directly to PC or Mac
- Price: \$199

Item B: Hewlett-Packard PhotoSmart



PRODUCT FEATURES

- 4 megapixel CCD for high resolution images
- 3x optical/3.6x digital zoom lens
- 1.8" color LCD monitor
- Take stills or record AVI movies
- Through the lens (TTL) autofocus, AF lock and manual focus
- Shooting modes: pan focus, portrait, landscape, night scene and auto plus these photo effects: sepia, vivid, neutral and black-and-white
- Built in flash with red eye reduction
- Store images on CompactFlash memory cards
- USB connection directly to PC or Mac

Price: \$799

Appendix B

Item A: Olympus Stylus 790SW



PRODUCT FEATURES

- 7.1 megapixel resolution
- 3x optical zoom /5x digital zoom
- 2.5in LCD screen
- 14.7MB xD internal memory card
- Automatic focus and macro focus available; manual focus not available
- Waterproof up to 10 m for one hour, Shockproof from height of 1.5 m, Crushproof up to 100 kg, Freezeproof up to -10C *
- 92 x 59 x 21 mm

- Price: \$299.99

*According to Olympus test conditions

Item B: Pentax Optio W10



PRODUCT FEATURES

- 6.5 megapixel
- 3x optical/4x digital zoom
- 2.5in color LCD monitor
- 15MB SD/MMC internal memory card
- Automatic focus and manual focus available
- Water Resistant; 6 m for 45 min
- 107 x 54.5 x 23mm

-Price \$209.95

Appendix C

<p>Title: Bedtime Stories</p> <p>Release: December 2008</p> <p>Director: Adam Shankman (Hairspray, Catch Me If You Can, The Wedding Planner)</p> <p>Writer: Matt Lopez and Tim Herlihy (Mr. Deeds, Saturday Night Live)</p> <p>Cast: Adam Sandler, Keri Russell, Guy Pearce</p> <p>Plot: A family comedy about a hotel handyman whose life changes when the lavish bedtime stories he tells his niece and nephew start to magically come true.</p> <p>Genre: Comedy Family Fantasy</p>	<p>He's Just Not That Into You</p> <p>February 2009</p> <p>Ken Kwapis (License to Wed, The Office)</p> <p>Abby Kohn and Marc Silverstein (Never Been Kissed)</p> <p>Ginnifer Goodwin, Jennifer Aniston, Jennifer Connelly, Scarlett Johansson, Drew Barrymore</p> <p>The Baltimore-set movie of interconnecting story arcs deals with the challenges of reading or misreading human behaviour. In the film, a woman who can't seem to get a grip on the men in her life pursues an advice columnist who never quite knew what he wanted in a relationship.</p> <p>Comedy</p>
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