Research Article

The Malleable Meaning of Subjective Ease

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ABSTRACT—*People can generate the same thoughts or process the same information with different degrees of ease, and this subjective experience has implications for attitudes and social judgment. In prior research, it has generally been assumed that the experience of ease or fluency is interpreted by people as something good. In the two experiments reported here, the meaning or value of ease was directly manipulated, and the implications for evaluative judgments were explored. Across experiments, we replicated the traditional ease-of-retrieval effect (more thought-congruent attitudes when thoughts were easy rather than difficult to generate) when ease was described as positive, but we reversed this effect when ease was described as negative. These findings suggest that it is important to consider both the content of metacognition (e.g., "those thoughts were easy to generate") and the value associated with that content (e.g., "ease is good" or "ease is bad").*

Metacognition refers to people's thoughts about their own thoughts or thought processes. Recently, psychologists have become increasingly interested in the role of metacognition in judgment and behavior (e.g., Bless & Forgas, 2000; Jost, Kruglanski, & Nelson, 1998; Koriat & Goldsmith, 1996; Nelson & Narens, 1994;Petty, Briñol, Tormala, & Wegener, in press; Yzerbyt, Lories, & Dardenne, 1999). One metacognition that has received considerable attention is the subjective experience of ease with which information can be processed or generated (e.g., Bornstein, 1989; Jacoby, 1983; Schwarz et al., 1991). Researchers have discovered that a person can generate the same thoughts, or process the same information, with different degrees of perceived ease, and this can have important judgmental implications (for reviews, see Schwarz, 1998, 2004, and Winkielman, Schwarz, Fazendeiro, & Reber, 2003).

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Within the attitudes domain, effects of ease have been examined primarily with respect to two phenomena: ease of retrieval (e.g., Tormala, Petty, & Briñol, 2002; Wänke, Bless, & Biller, 1996) and general processing fluency (e.g., Bornstein, 1989; Jacoby, 1983). These are related phenomena that essentially map onto different sources of cognitive ease (see Schwarz, 2004). That is, the feeling of ease can arise because thoughts are easy to retrieve or generate, or because stimuli or other information is easy to process or perceive. Although these phenomena have traditionally been studied in different literatures, they have many commonalities. Most crucial for the present concerns, they are bound by a common assumption regarding the meaning of ease: Researchers have either explicitly (in the case of processing fluency) or implicitly (in the case of ease of retrieval) assumed that the feeling of ease or fluency is interpreted as something good. In the present research, we examined the malleability of this interpretation and sought to determine the implications for attitudes.

According to the ease-of-retrieval notion, the easier it is for one to generate arguments in favor of an object or issue, the more favorable one's attitudes toward that object or issue will be. In the original research in this area, Schwarz and his colleagues (1991) asked participants to rate themselves on assertiveness after recalling 6 or 12 examples of their own assertive behaviors. People rated themselves as more assertive after recalling 6 rather than 12 examples. Schwarz et al. reasoned that the participants' judgments reflected the subjective experience they had in recalling instances of assertive behavior. They experienced greater ease in generating 6 assertive behaviors and, thus, decided that they must be rather assertive. This effect has been explained by noting that people can interpret the ease of thought generation as reflecting the plentiful nature of the thoughts available (Schwarz et al., 1991) or the confidence they should have in the thoughts generated (Tormala et al., 2002). Since this discovery by Schwarz et al., the ease-of-retrieval effect has been found to influence a wide variety of judgments (see Schwarz, 2004).

According to the processing-fluency notion, the easier it is to process a given stimulus, the more favorable one's evaluation of

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that stimulus will be (e.g., Jacoby, 1983). One phenomenon that has been studied extensively in this regard is mere exposure (e.g., Zajonc, 1968), which occurs when attitudes toward a stimulus become more favorable following repeated presentations of that stimulus. The dominant explanation for this effect is that repeated exposure makes the stimulus easier to process, and this feeling of ease is either positive itself or confused with a favorable evaluation (Bornstein, 1989; Jacoby, Kelley, Brown, & Jasechko, 1989). Research has shown that virtually any method of making information easier to process can lead to more positive judgments. Indeed, ease of processing is affected not only by exposure frequency, but also by exposure duration, visual clarity, contrast, simplicity, symmetry, balance, prototypicality, priming, context congruity, and rhyme (for reviews, see, e.g., Bornstein, 1989; Jacoby, 1983; Schwarz, 2004; Winkielman, Schwarz, Fazendeiro, & Reber, 2003). In each case, processing fluency has been shown to translate into favorable judgments and feelings, including judgments of familiarity, truth, positive affect, liking, and beauty (e.g., Harmon-Jones & Allen, 2001; Reber, Winkielman, & Schwarz, 1998; Winkielman & Cacioppo, 2001; see Winkielman, Schwarz, Fazendeiro, & Reber, 2003; Winkielman, Schwarz, Reber, & Fazendeiro, 2003).

Interestingly, in all of this research, investigators have agreed that people place a positive interpretation on the feeling of ease or fluency. In the processing-fluency literature, researchers have claimed explicitly that the default response to fluency is positive (e.g., "the more fluently a perceiver can process an object, the more positive is his or her response," Reber, Schwarz, & Winkielman, 2004, p. 365).[1] In the ease-of-retrieval domain, the assumption has been made less explicitly, but researchers still essentially have agreed that ease is good. For example, researchers have assumed that easy-to-generate thoughts or arguments, whether positive or negative, tend to be viewed by people as more valid or trustworthy (Tormala et al., 2002) or greater in number (Schwarz, 1998) than thoughts or arguments that are more difficult to generate.

This is not to say that ease is necessarily associated with positive judgments, or that difficulty is always associated with negative judgments. For example, if it seems easy to generate negative thoughts or difficult to generate positive thoughts, ease can be associated with more negative judgments than difficulty (e.g., Schwarz et al., 1991; Tormala et al., 2002). In one study demonstrating that perceived difficulty can be associated with positive judgments, Winkielman and Schwarz (2001) led participants to believe that either good or bad events were more difficult to remember, and then asked the participants to generate an easy or difficult number of events from their childhoods. When participants were led to believe that good events were more difficult to remember than bad ones, people rated their childhoods as happier when they had a difficult rather than an easy time generating the events. This is because the difficulty in remembering the events presumably led people to infer that the events were relatively positive. Thus, difficulty sometimes can be associated with favorable judgments. However, it is important to note that in any study in which ease has been associated with negative judgments or difficulty with positive judgments, the meaning of ease itself has not changed. For example, in the study just described, in the difficult condition people presumably recognized that their memory was difficult (poor), but they interpreted this poor memory as a sign that the content of their memory was positive.

In short, in both the processing-fluency and ease-of-retrieval domains, the typical assumption is that when people find it easy, rather than difficult, to process or generate their thoughts, they view these thoughts as reflecting good memory, or being compelling, frequent, reliable, or diagnostic of what they think—all essentially good things. In past studies, then, explanations for the effects of ease have largely been based on the assumption that ease equals good.

THE NATURE AND VALUE OF METACOGNITION

Recently, we (Briñol, Rucker, Tormala, & Petty, 2004) have argued that it is important to distinguish between two qualitatively different aspects of metacognition. The first aspect is the *content* of metacognition. There are many kinds of thoughts people can have about their thoughts. People can think their thoughts are easy or difficult to generate, stem from their own ideas or those of others, are familiar or novel, and so forth (see Petty et al., in press). A second aspect of metacognition is a *value judgment*. For example, does ease (or originality or familiarity) imply something good or bad? Although much research has examined the content of metacognition, relatively little research has examined its evaluative meaning. Yet this is a potentially important dimension.

There is some evidence that people can have higher-order assessments of their metacognition. Perhaps most relevant to the current research is recent work on the illusion-of-truth effect. The dominant finding in this domain is that repeated exposure to information increases its familiarity, which increases its perceived truth (e.g., Begg, Anas, & Farinacci, 1992; Gilbert, Krull, & Malone, 1990). Skurnik, Schwarz, and Winkielman (2000) recently proposed that this effect depends on the extent to which people develop a second-order belief that familiarity is diagnostic of truth. If people believe that familiarity is diagnostic of falseness, then the illusion-of-truth effect should be reversed. Indeed, Skurnik et al. summarized a study in which the illusion-of-truth effect was reversed when they led people to believe that familiarity was diagnostic of falseness. However, although this work is informative, it does not address the present concerns.

[1]One notable exception to this assumption comes from Mandler, Nakamura, and Van Zandt (1987), who argued that the fluency stemming from prior exposure could affect not only evaluative judgments, but also judgments of other relevant stimulus dimensions such as brightness and darkness. Even this work, however, did not produce evidence that fluency (or mere exposure in particular) can be interpreted as negative.

First, it focused exclusively on truth rather than evaluative judgments. It could be that evaluative judgments based on ease are particularly hard to alter given the pervasive association between ease and positivity. Second, it is somewhat unclear whether the participants in this study reversed the meaning of perceived familiarity or simply relied on a learned rule that they thought would be helpful in the experiment (i.e., that most of the statements in this particular study were false).

The primary goal of the current research was to examine the evaluative meaning of the subjective feeling of ease and to establish that this meaning is malleable. We noted that in past research, ease has been perceived as something good (e.g., ease indicates one has a good memory), or having positive value, whereas difficulty has been perceived difficulty as something bad (e.g., difficulty indicates one has a poor memory), or having negative value. This may be the normal or default association with fluency, learned as a result of numerous associations with easy things being good (e.g., "If tennis is easy, I must be good at it"). However, there could be people who have learned something different (e.g., that easy things are not worthwhile), or situations in which ease would not have a positive connotation. If the meaning of ease is malleable, the effect of ease could sometimes be very different. In the present research, we directly manipulated the value of ease and examined its impact on judgment.

EXPERIMENT 1

In Experiment 1, college students were led to believe their university was considering implementing a new comprehensive examination policy, and they were asked to generate an easy or difficult number of arguments in favor of it. Ease was given a positive or negative connotation and difficulty the opposite connotation. We expected to replicate the classic ease-of-retrieval effect (i.e., more favorable attitudes after generating 2 rather than 10 favorable arguments) when ease was described as positive, and to reverse this effect when ease was described as negative.

Method

Participants and Procedure

Sixty undergraduates from Ohio State University participated in partial fulfillment of a course requirement. All sessions were conducted on computers using MediaLab 2000 software (Jarvis, 2000). Participants were led to believe a special committee at their university had submitted a proposal to implement senior comprehensive exams as a graduation requirement. Before implementing this policy, however, the Board of Trustees wanted to assess students' reactions by allowing them to read about the policy and report their thoughts and opinions about it. Because some past research has shown that ease effects are more likely to occur under high- than low-elaboration conditions (Hirt, Kardes, & Markman, 2004; Tormala et al., 2002; Wänke & Bless, 2000), we made the issue personally relevant to all participants by telling them the comprehensive exams were being considered at their university for the next academic year (see Petty & Cacioppo, 1984). To further increase thinking, we asked participants to take their task seriously because very few students were being asked to complete the survey (e.g., Petty, Harkins, & Williams, 1980). Participants then read the message about the proposed policy, listed a high or low number of arguments in favor of comprehensive exams, and reported their attitudes.

Independent Variables

Number of Thoughts. Participants were randomly assigned to list either 2 (easy) or 10 (difficult) arguments in favor of the exams. Participants used the computer keyboard to enter each argument into a separate box on the computer screen; the boxes appeared one at a time. This manipulation was adopted from Tormala et al. (2002).

Value Frame. Before listing thoughts, participants received information about the meaning of ease. They were randomly assigned to the *ease-is-good, difficulty-is-bad* condition or the *ease-is-bad, difficulty-is-good* condition. Participants in the ease-is-bad, difficulty-is-good condition read a paragraph explaining that unintelligent people often experience a feeling of ease when thinking because their thoughts are not very complex and they have few neuronal connections, and that because intelligent people generally have more complex thinking and more neuronal connections when thinking, they often experience a feeling of difficulty when generating thoughts about a new issue. The goal of this manipulation was to provide a positive interpretation of the feeling of difficulty and a negative interpretation of ease. In the other condition, in which ease was given a positive meaning and difficulty a negative one, participants received exactly the opposite information.

Dependent Measures

Participants' attitudes toward senior comprehensive exams were assessed using four semantic differential scales ranging from 1 through 9 and having the following anchors: *negative-positive*, *bad-good*, *unfavorable-favorable*, and *against-in favor*. Responses to these items were highly consistent ($\alpha = .95$) and were thus averaged to form an overall attitude index. Higher numbers indicated more favorable attitudes.

Results and Discussion

The attitude data were submitted to a 2×2 analysis of variance (ANOVA), with number of thoughts (ease) and value frame as the independent variables. Main effects were not significant for either number of thoughts, $F < 1$, or value frame, $F(1, 56) = 2.33$, $p > .13$, $\eta^2 = .04$. There was, however, a significant interaction between number of thoughts and frame, $F(1, 56) = 9.31, p < .01$, $\eta^2 = .14$. As illustrated in Figure 1, we obtained the traditional ease-of-retrieval effect in the ease-is-good condition, $F(1, 56) =$

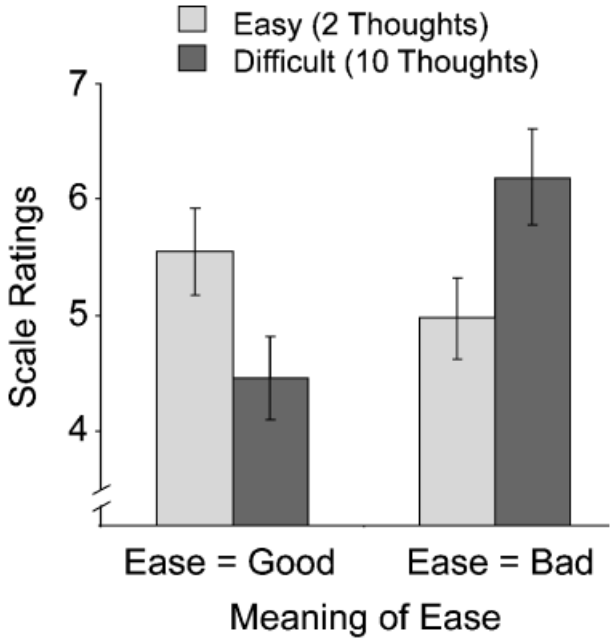

Fig. 1. Attitude ratings in Experiment 1 as a function of ease (number of thoughts generated) and frame (the meaning of ease). Error bars show standard errors. Note that all participants generated arguments in favor of the proposal.

4.40, $p < .05$, $\eta^2 = .07$; participants reported more thought-consistent (i.e., favorable) attitudes toward comprehensive exams after listing 2 favorable thoughts ($M = 5.55$) rather than 10 favorable thoughts ($M = 4.45$). In the ease-is-bad condition, this effect was reversed, such that participants reported more thought-consistent (i.e., favorable) attitudes after listing 10 favorable thoughts ($M = 6.19$) rather than 2 favorable thoughts ($M = 4.97$), $F(1, 56) = 4.91$, $p < .04$, $\eta^2 = .08$. Note also that attitudes in the easy-is-good, 2-argument condition and the difficulty-is-good, 10-argument condition did not differ, $p = .32$.

In short, we replicated the traditional ease effect under conditions in which the presumed default meaning of ease (i.e., ease is good) was made salient. When the meaning of ease was reversed, the impact of ease of retrieval on attitudes was also reversed. This finding is consistent with the hypothesis that when people base judgments on metacognition, they consult the metacognition itself and also consider the meaning associated with that metacognition. In other words, the specific meaning attached to metacognitive feedback can be malleable. The fact that we replicated the typical ease effect when ease was positive indicates that focusing participants' attention on the meaning of their metacognitive experience did not in and of itself reverse the effect or lead to mental correction (e.g., Petty & Wegener, 1993; Wilson & Brekke, 1994). The specific meaning tied to ease was the key.

Some alternative explanations for the interaction might be raised. For example, participants in the ease-is-bad condition may have been confused or distracted by the reversal of what presumably was their default assumption about the meaning of ease. If so, they may have thought less than participants in the ease-is-good condition. Because of a reduced amount of thinking, they might have relied on a simple numerosity heuristic in forming their evaluative judgments (e.g., 10 arguments are better than 2), thus exhibiting a reversal of the ease effect. Indeed, people tend to rely on numerosity heuristics under low-elaboration conditions (e.g., Petty & Cacioppo, 1984; Tormala et al., 2002). Alternatively, it might be argued that if the meaning manipulation in the ease-is-bad condition violated participants' expectations, it increased processing, perhaps leading participants to consider the content of their thoughts rather than the metacognitive experience associated with them. Considering the content of thoughts could lead the 10-argument condition to be more persuasive than the 2-argument condition (Petty & Cacioppo, 1984).

In order to address these possibilities, we conducted a second experiment that more clearly separated the content and number of thoughts from the subjective experience of generating them. Following research in the processing-fluency domain (Reber & Schwarz, 1999; Werth & Strack, 2003), we manipulated ease in a way that kept the number of thoughts constant. Specifically, we made the thought task difficult or easy by degrading the computer images for some participants but not for others. Also, to extend the generalizability of our effect, we asked participants to generate arguments against rather than in favor of a proposal.

EXPERIMENT 2

Experiment 2 was a conceptual replication of the first study, again manipulating both ease and the meaning of ease. The most important change in this experiment related to the way participants were led to experience ease or difficulty. All participants were asked to list the same number of thoughts, but half of them typed those thoughts in yellow font against a pink background. In comparison to the traditional white-and-black contrast, this combination of colors clearly degraded the extent to which participants could see what they had written. Thus, presumably, the self-generated arguments seemed difficult to process. Also, in this experiment, we asked participants to generate arguments against the proposed policy. We expected to conceptually replicate our previous findings. That is, when the default meaning of ease was made salient, we expected to find more thought-congruent (i.e., unfavorable) attitudes when generating negative thoughts seemed easy rather than difficult. When the meaning of ease was reversed, we expected to find more thought-congruent (i.e., unfavorable) attitudes when generating negative thoughts seemed difficult.

Method

Participants and Procedure

Eighty-three Ohio State University undergraduates were led to believe that their university was planning to implement

comprehensive exams in the near future. Participants read a persuasive message in favor of the exam policy and were then asked to generate four arguments against the proposal. After listing arguments, participants reported their attitudes.

Independent Variables

Value Frame. Participants were randomly assigned to one of two conditions: the *ease-is-good, difficulty-is-bad* condition or the *ease-is-bad, difficulty-is-good* condition. The instructions for these conditions were the same as in Experiment 1.

Ease of Processing. Following the meaning induction, all participants read a message in favor of comprehensive exams and were asked to list four arguments against the policy. In the easy condition, participants read the message and entered their thoughts in standard format—that is, black letters on a white background. In the difficult condition, participants read the message and entered their thoughts in a format that was more difficult to process—that is, yellow letters on a pink background. The latter color combination was intended to make it more difficult for participants to read the message and record their thoughts. This manipulation was adapted from prior research in which it successfully varied ease of processing (e.g., Reber & Schwarz, 1999).

Dependent Measures

Attitudes. Attitudes toward the exam policy were assessed using the same items as in the first experiment. Responses were averaged to form a composite attitude index ($\alpha = .90$).

Thoughts. Although the manipulations did not affect the number of thoughts participants wrote (all wrote four), we wanted to be sure that the content of the thoughts was not affected. Two judges unaware of the experimental conditions rated the thoughts for quality on a scale from 1 (*very weak*) to 9 (*very strong*). The mean ratings for each participant were averaged ($\alpha = .83$) to form a single thought-quality index.

Results and Discussion

The attitude data were submitted to a 2 (ease) × 2 (value frame) ANOVA. Neither of the main effects was significant, Fs(1, 79) < 1.63, ps > .20, $\eta^2 = .004$ for ease and $\eta^2 = .02$ for value frame. However, as illustrated in Figure 2, we obtained a significant interaction, $F(1, 79) = 14.53$, $p < .001$, $\eta^2 = .16$. The traditional ease effect was obtained in the ease-is-good condition, $F(1, 79) = 9.38$, $p < .01$, $\eta^2 = .11$; participants reported more thought-consistent (i.e., unfavorable) attitudes toward comprehensive exams when it seemed easy ($M = 4.29$) rather than difficult ($M = 5.80$) to generate negative thoughts. In the ease-is-bad condition, this effect was reversed, such that participants reported more thought-consistent (i.e., unfavorable) attitudes when it was difficult ($M = 4.05$) rather than easy ($M = 5.17$) to generate negative thoughts, $F(1, 79) = 5.38$, $p < .03$, $\eta^2 = .06$.

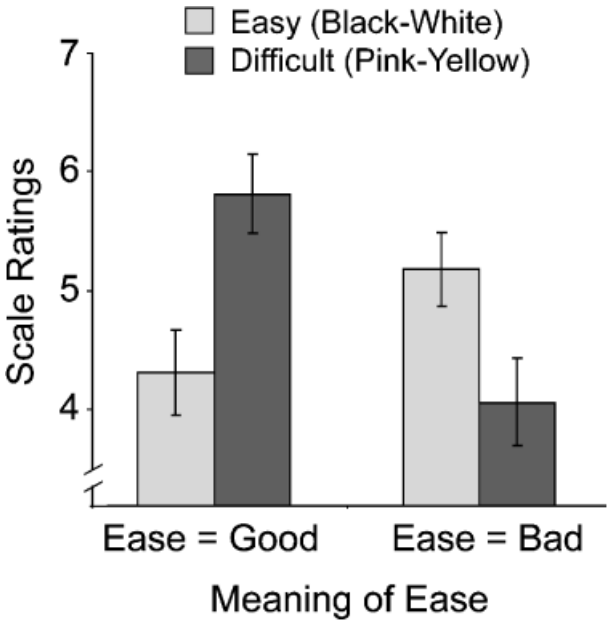

Fig. 2. Attitude ratings in Experiment 2 as a function of ease (color condition) and frame (the meaning of ease). Error bars show standard errors. Note that all participants generated arguments against the proposal.

We also submitted the thought-quality index to analysis and found no significant effects (ps > .10).

These findings conceptually replicate those of the first experiment, using a paradigm in which the number of thoughts was kept constant across conditions. The use of this paradigm helps rule out the possibility that the reversal of the ease effect was due to differences in the amount of thinking across conditions. Note also that the interaction pattern for the attitude data, in addition to the analysis of thought ratings, rules out the possibility that there were differences in the quality of counterarguments across conditions. Indeed, if difficulty affected the quality of counterarguments, the prediction would be a main effect of difficulty on attitudes, not an interaction between difficulty and value. In short, participants generated the same number and quality of arguments in the two conditions, but formed different attitudes depending on the perceived ease with which their arguments were generated and the value that was placed on ease.

GENERAL DISCUSSION

The importance of subjective ease in social judgment is well established. Interestingly, though, whether researchers have examined ease of retrieval or other forms of fluency, they have tended to assume that the psychological meaning of ease is good (see Reber et al., 2004). The present research suggests that the positive meaning attributed to ease is malleable. Across experiments, we examined this malleability using a traditional ease-of-retrieval paradigm (Experiment 1) and an adaptation of a processing-fluency paradigm (Experiment 2). We found that

framing ease in a way that challenged people's default interpretation reversed the ease effect. To our knowledge, the effect of ease on evaluations never has been significantly reversed by manipulating the meaning of ease.

We suspect that the malleability of ease effects will have implications for a number of other phenomena. Of particular interest is the possibility that the present results will speak to issues of long-standing concern in the mere-exposure literature (e.g., Bornstein, 1989; Zajonc, 1968). Given that the mere-exposure effect has often been thought to stem from differences in processing fluency (e.g., Jacoby et al., 1989;see also Lee, 2001), the current findings suggest that changing the meaning of such fluency might change the direction of the classic effect. Also, the current approach might be applied to other forms of fluency and other kinds of metacognition. For example, can attitude accessibility (Fazio, 1995) be interpreted as a bad thing and reduce rather than increase attitude-behavior consistency? Is confidence in thoughts (Petty, Briñol, & Tormala, 2002) a good or a bad thing?. Finally, the current work opens the door to examining people who generally perceive ease as negative and situations in which ease may spontaneously have a negative interpretation. In any case, the present research provides a novel finding and a conceptual framework for understanding ease effects. More generally, we view the present research as advancing understanding of the components of metacognition and the extent to which these components interact in guiding thought and judgment.

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