

Ease of Retrieval Effects in Social Judgment: The Role of Unrequested Cognitions

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The present research explores a new mechanism for ease of retrieval effects in social judgment. It is suggested that in the most common ease of retrieval paradigm, when it is difficult for people to generate or retrieve the specific type of cognition requested (e.g., positive thoughts about an issue or memories of assertive behavior), they are more likely to spontaneously generate or retrieve unrequested cognitions (e.g., negative thoughts about the issue or memories of unassertive behavior), and the presence of these unrequested cognitions can affect social judgment. In 4 experiments, participants were asked to generate a high (difficult) or low (easy) number of cognitions in a given direction. Across experiments, when participants were asked to generate a high number of cognitions, they also had more unrequested cognitions, and these unrequested cognitions played a mediating role in the ease of retrieval effect on judgment. In the 3rd and 4th experiments, this mechanism was found to be independent of previously identified mediators.

Keywords: fluency, metacognition, attitudes, persuasion, unwanted thoughts

The influence of mental content on social judgment is well established in many areas of social cognition (e.g., see Fiske & Taylor, 1991). The cognitive response paradigm in attitude change research (Petty, Ostrom, & Brock, 1981), for example, demonstrates that thoughts generated in response to persuasive messages are critical determinants of both immediate and long-term persuasion. When people are engaged in extensive thought about an object or issue, the more positive thoughts they have, the more positive their attitudes tend to be. The more negative thoughts people have, the more negative their attitudes tend to be. Similarly, early research on role playing suggested that asking people to

self-generate arguments about an issue led to relatively enduring attitude change in the direction of the arguments that came to mind (Janis & King, 1954). The logic behind this effect was that when people generated their own arguments about a particular issue (e.g., reasons to stop smoking), they engaged in biased scanning of the evidence on the issue, selectively highlighting arguments in one direction that they saw as especially compelling (Greenwald & Albert, 1968).

In other domains as well, research suggests that the content of cognition can play an important role in social judgment. For instance, Anderson, Lepper, and Ross (1980) presented participants with information supporting a positive or negative relationship between risk taking and success as a firefighter. Some participants were asked to generate causal explanations for this relationship. Anderson et al. found that after doing so, these participants persevered in their beliefs in the positive or negative relationship even after they received disconfirming evidence. Thus, activating cognitions consistent with a given belief made that belief resistant to change. In research on the self, the content of cognition has proven to affect people's self-perceptions (see Baumeister, 1998). As but one example, Fazio, Effrein, and Falender (1981) asked participants to describe situations in which they had engaged in extraverted or introverted behavior. Participants who described instances of extraverted behavior later rated themselves as more extraverted than did participants who described instances of introverted behavior. In short, research from

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numerous domains has attested to the importance of mental content in social judgment.

Interestingly, though, that recent research has demonstrated that attitudes and other social judgments depend not only on the number and direction of cognitions that come to mind but also on what people think about those cognitions. In general, *metacognition* refers to cognition about cognition—that is, people’s thoughts about and perceptions of their own thoughts and thought processes (Jost, Kruglanski, & Nelson, 1998; Yzerbyt, Lories, & Dardenne, 1998). Considerable research suggests that metacognitive factors can play an important role in social judgment (for a review see Petty, Briñol, Tormala, & Wegener, 2007). Of particular relevance to the current concerns, an extensive body of research suggests that attitudes and other judgments can be influenced not just by the objective content of one’s cognitions, but also by the subjective experience of ease, or fluency, with which one’s cognitions come to mind (Schwarz, 1998). Furthermore, this feeling of ease is so important that it sometimes appears to override, and even reverse, the impact of cognitive content.

EASE OF RETRIEVAL EFFECTS

In their now classic studies, Schwarz et al. (1991) asked participants to recall 6 or 12 examples of their own assertive (unassertive) behaviors. They found that people believed they were more assertive (unassertive) after retrieving 6 rather than 12 instances in which they behaved assertively (unassertively). The logic behind this effect was that people based their judgments of their own assertiveness not on the number of assertive behaviors recalled, but rather on the subjective feeling of ease with which these behaviors came to mind. When it was easy to recall assertive behaviors, because only a few were requested, people concluded that they must be very assertive. When it was difficult to recall assertive behaviors, because many were requested, people presumably concluded that the behaviors must not be very diagnostic or frequent and, thus, inferred that they must not be very assertive.

Since Schwarz et al.’s (1991) initial finding, this *ease of retrieval* effect has been applied to a number of domains. For example, ease effects have been found to impact judgment in the areas of likelihood estimation (Wänke, Schwarz, & Bless, 1995), stereotyping (Dijksterhuis, Macrae, & Haddock, 1999), interpersonal closeness (Broemer, 2001), health risk (Rothman & Schwarz, 1998), self-doubt (Hermann, Leonardelli, & Arkin, 2002), persuasion (Tormala, Petty, & Briñol, 2002; Wänke, Bless, & Biller, 1996), and attitude strength (Haddock, Rothman, Reber, & Schwarz, 1999), among others. It has been demonstrated in each of these areas that the subjective experience of ease in generating cognitions can, under certain conditions, override the number of cognitions generated. In the persuasion domain, for instance, it has been found that generating 2 arguments in favor of a given position can make people more favorable toward that position than generating 10 arguments in favor of the same position (e.g., Tormala et al., 2002). Again, 2 arguments are presumably more persuasive than 10 arguments because of the ease of generating those arguments and the inferences that stem from this ease. Thus, subjective experience appears to override the amount of information that comes to mind.

Perspectives have varied with respect to the mechanism behind the ease of retrieval effect. According to Schwarz and colleagues

(1991; see also Schwarz, 1998), the effect is driven by the availability heuristic (Tversky & Kahneman, 1973). When it is difficult to generate a list of positive thoughts about a policy, for instance, people are assumed to infer that there must not be many positive things about it. When it is easy to generate positive thoughts, on the other hand, people are assumed to infer that there must be many positive things about it. Recent work has challenged the idea that there is only one mechanism by which ease effects operate. For example, Tormala et al. (2002) found that when it was easy to generate positive thoughts about a policy, participants were more confident in the validity of those specific thoughts. Moreover, thought confidence mediated the effect of the ease manipulation on attitudes toward the policy, whereas the perceived number of supportive thoughts did not. Furthermore, this confidence mediation only occurred under high-elaboration conditions, when metacognitive operations are most likely (Petty et al., 2007).

THE ROLE OF UNREQUESTED COGNITIONS

Although perspectives differ on the precise nature of the processes guiding the traditional ease of retrieval effect, they share an emphasis on cognitions in the requested direction—that is, the kind of cognitions participants were directed to list in an experiment. For example, whether having an easy time generating positive cognitions makes one assume there are many more positive cognitions available (Schwarz et al., 1991) or makes one confident in the positive cognitions he or she just generated (Tormala et al., 2002), the clear emphasis in both cases is on positive cognitions (or on negative cognitions if those were requested by the experimenter). The current research takes a different tack and asks what the role might be for *unrequested* cognitions in the traditional ease of retrieval paradigm. More specifically, we examine whether when people are requested to generate a large and difficult number of cognitions (e.g., positive thoughts on an issue or memories of past assertive behaviors), they might also spontaneously generate a number of cognitions in the opposite direction of those that are requested. Our primary hypothesis is that the more difficult it is to retrieve or generate a given set of cognitions, the more likely it is that unrequested cognitions come to mind. As people try to generate a large number of positive thoughts or recall a large number of assertive behaviors, for example, they might spontaneously think of a few negative thoughts or unassertive behaviors along the way as they struggle to complete the task. When people try to generate or recall an easier number of thoughts or behaviors, however, spontaneous generation of unrequested thoughts or behaviors should be reduced. If unrequested cognitions come to mind when the generation or retrieval task is difficult, the question is: Can these cognitions account, at least in part, for the traditional ease of retrieval effect? Addressing this question is the main objective of the present research.

It should be noted that unrequested, unwanted, or unintended cognitions have received attention in other domains. For example, when people attempt to diet, quit smoking, get more exercise, watch less television, or simply attain mental peace, they often strive to control their behavior by facilitating thoughts of the wanted activity and suppressing thoughts of the unwanted activity (see Wegner, 1994, for a review). However, it is now well documented that thought suppression can have ironic or paradoxical effects, such that the suppressed thoughts often emerge and be-

come more accessible than they were to begin with. Wegner, Schneider, Carter, and White (1987), for instance, found that the more participants tried to not think of a white bear while listing thoughts, the more likely it was that thoughts of a white bear would come to mind.

Applying this notion to the ease of retrieval paradigm, it might be that the more people search for cognitions in a particular direction (e.g., positive or assertive) and seek to avoid cognitions in the opposite direction (e.g., negative or unassertive), the more frequently cognitions in the opposite direction come to mind. Such a finding would suggest that in the typical ease paradigm, judgments might be affected not only by the subjective experience of ease or difficulty in generating the requested cognitions, but also by the presence of unrequested cognitions. Thus, this effect would reestablish a role for cognitive content in the common ease of retrieval paradigm, suggesting that subjective experience does not totally overwhelm the content of one's cognition, but rather that subjective experience and objective cognitive content are both important in determining attitudes or other judgments.

THE PRESENT RESEARCH

The primary objective of the present research is to explore the role of unrequested cognitions in the traditional ease of retrieval effect. Our hypothesis is that when people find it difficult, as opposed to easy, to generate the requested number of cognitions in a particular direction on a topic, an increased number of cognitions in the opposite direction will come to mind. Consistent with an extensive body of research highlighting the importance of cognitive responses in social judgment (e.g., Petty et al., 1981), we expect these unrequested cognitions to contribute to the ease of retrieval effect. The more difficult it is to generate requested positive thoughts about an issue, for example, the more prevalent unrequested negative thoughts should be and the more negative attitudes toward the issue should become. Similarly, the more difficult it is to recall instances of one's assertive behavior, the more prevalent memories of unassertive behaviors should be, and the more unassertive one's self-assessment should become.

It is important to note, that we do not think a role for unrequested cognitions rules out a role for metacognitive factors in ease effects. Ultimately, we propose that both cognitive content (unrequested cognitions) and metacognitive experience (subjective ease) are important. As noted already, recent work applying the self-validation hypothesis (Petty, Briñol, & Tormala, 2002) to ease effects has shown that the subjective experience of ease versus difficulty in generating a list of thoughts can affect the confidence with which those thoughts are held, which in turn affects the extent to which people base their attitudes on those thoughts (Tormala et al., 2002). Our general expectation, then, is that in addition to finding an effect for unrequested cognitions, we will also find a separate effect through subjective ease and confidence in requested cognitions. However, we predict that unrequested cognitions will influence judgment in the classic ease of retrieval paradigm without taking the confidence with which they are held into account. Because the unrequested cognitions occur spontaneously—that is, without any direct request to list a large number of them—they should come to mind relatively easily, which would translate into relatively high confidence and make them influential by default (see Tormala et al., 2002). The more unrequested cognitions that

come to mind, then, the more judgments should correspond with unrequested cognitions and the less they should correspond with requested cognitions. In fact, in the difficult condition of the typical ease of retrieval paradigm, unrequested cognitions might actually exert a greater impact on attitudes than requested cognitions, given that requested cognitions would be held with low confidence (as a result of their perceived difficulty) and unrequested cognitions presumably would be held with relatively high confidence (as a result of their perceived ease). After demonstrating a role for unrequested cognitions in Experiments 1 and 2, we examine the additional impact of perceptions of ease in Experiment 3 and confidence in both requested and unrequested cognitions in Experiment 4.

Experiment 1

Experiment 1 was designed to provide an initial test of the notion that the standard ease of retrieval manipulation, in which participants are asked to generate a large (difficult) or small (easy) number of cognitions in a given direction, can affect the number of unrequested cognitions that come to mind and that these unrequested cognitions can have an impact on judgment. In this experiment, participants were asked to generate a large or small number of positive thoughts on an issue, after which they reported their attitudes toward the issue and the extent to which they also had negative thoughts during the task. It was predicted that more unrequested (negative) cognitions would be reported in the difficult than in the easy condition and that the presence of these unrequested cognitions would play a mediating role in the impact of the ease of retrieval manipulation on attitudes.

Method

Participants and Procedure

Twenty-eight undergraduates from Ohio State University participated in partial fulfillment of a course requirement. Upon arrival, participants were welcomed by an experimenter and seated in a room containing 10 partitioned computer work stations. All sessions were conducted on computers equipped with MediaLab (Jarvis, 2000) research software. The experimenter asked participants to read the instructions on their computer monitors and to begin the experiment. At the outset of the experiment, participants were led to believe that their university had recently begun to consider a new policy requiring seniors to pass comprehensive exams in their major areas in order to graduate (see Petty & Cacioppo, 1986). Participants were told that if implemented, the exam policy would begin in the next academic year and would apply to all students currently enrolled at the university. Thus, the topic was of high personal relevance to all participants (Petty & Cacioppo, 1979). To further increase involvement in the experiment, we also led participants to believe they were one of a very small number of people who were being asked to take part in this research and that their responses were extremely important (see Petty, Harkins, & Williams, 1980).

Immediately after this introduction, participants were presented with a persuasive message in favor of comprehensive exams. This message contained more detailed versions of the following arguments (Petty & Cacioppo, 1986): Grades would improve if the

exam policy were adopted, implementing the exams would allow the university to take part in a national trend, the average starting salary of graduates would increase if the exam policy were implemented, and the exam policy would allow students to compare their scores with students at other universities. This message was presented to all participants.

Following the message, participants were told that the purpose of the experiment was to find out what kinds of positive arguments students could generate with respect to the comprehensive exam policy—that is, what their positive thoughts might be. Participants were then asked to generate either a high or low number of positive thoughts about comprehensive exams. After participants listed their thoughts, they completed measures of attitudes and unrequested cognitions. Finally, all participants were thanked and debriefed.

Number of Thoughts Manipulation

Immediately after reading the persuasive message, participants were randomly assigned to list either 2 (easy) or 10 (difficult) positive thoughts about comprehensive exams. Following past research that used the same ease manipulation (Tormala et al., 2002), we asked participants to type these thoughts into a series of boxes that appeared on the computer screen one at a time. They were instructed not to worry about spelling or grammar but just to make sure they conveyed the main idea of each thought.

Dependent Measures

Attitudes. Immediately following the thought listing procedure, participants were asked to report their attitudes toward comprehensive exams. To begin with, participants reported the extent to which they agreed with the proposal to implement the exams. Responses were provided on a scale ranging from 1 (*completely disagree*) to 9 (*completely agree*). Participants then rated the exams on six additional semantic differential items, all ranging from 1 to 9, with the following anchors: *negative–positive*, *bad–good*, *unfavorable–favorable*, *against–in favor*, *harmful–beneficial*, and *foolish–wise*. All scales were structured such that higher numbers reflected more favorable attitudes toward the comprehensive exam policy. Responses to the 7 items were highly consistent ($\alpha = .93$), so we averaged them to form a composite index of attitudes.

Unrequested cognitions. All participants were asked to list positive thoughts about comprehensive exams. At the end of the experiment, a single global item asked participants to report the extent to which any negative thoughts came to mind during the thought listing task. Participants responded to this question on a 9-point scale, ranging from 0 to 8 with each point labeled—0 was labeled *none*, 1 was labeled *1*, 2 was labeled *2*, and so on, up to 8, which was labeled *8 or more*. Thus, higher numbers indicated more unrequested cognitions.

Results and Discussion

Attitudes

We began by submitting the attitude data to analysis. As expected, the number of positive thoughts requested had a significant effect on attitudes toward comprehensive exams, $t(26) = 2.46, p <$

.03. Consistent with past research in the ease of retrieval paradigm, attitudes toward the exam policy were more favorable when participants generated just 2 ($M = 5.67, SD = 1.49$) rather than 10 ($M = 4.34, SD = 1.39$) positive thoughts about it.¹

Unrequested Cognitions

Following the attitude analysis we examined unrequested cognitions. As predicted, the number of positive thoughts manipulation had a significant effect on participants' self-reported unrequested cognitions, $t(26) = -4.98, p < .001$. Participants indicated that more negative thoughts came to mind when they had been asked to list 10 ($M = 5.00, SD = 2.04$) rather than 2 ($M = 2.07, SD = 0.83$) positive thoughts.

Mediation

The primary objective of this experiment was to explore the possibility that the perception of unrequested cognitions might play a mediational role in the ease of retrieval effect. To assess this possibility, we conducted a series of regression analyses following the recommendation of Baron and Kenny (1986). In these analyses, the number of thoughts manipulation was dummy coded such that 0 = 2 thoughts and 1 = 10 thoughts. As revealed already, the number of thoughts manipulation had a significant effect on both attitudes ($\beta = -.43, t(26) = -2.46, p < .03$, and unrequested cognitions ($\beta = .70, t(26) = 4.98, p < .001$). Furthermore, attitudes were significantly predicted by unrequested cognitions ($\beta = -.55, t(26) = -3.31, p < .01$). More unrequested (negative) cognitions led to less favorable attitudes. When both the number of positive thoughts listed and self-reported unrequested cognitions were simultaneously entered into the regression model predicting attitudes, unrequested cognitions continued to predict attitudes ($\beta = -.47, t(26) = -2.02, p = .05$, but the number of positive thoughts listed did not ($\beta = -.10, t(25) = -.45, p > .65$). A Sobel test indicated that the mediational pathway through unrequested cognitions was marginally significant ($Z = 1.87, p = .06$).

¹ Before proceeding to the unrequested cognitions data, it was important to establish that we did, in fact, have an ease effect to begin with rather than an artifact of people's inability to list 10 thoughts or a tendency to list poorer quality thoughts when many thoughts were requested. First, we examined the actual number of requested thoughts listed. All but 1 participant completed the requested thoughts task. The participant who failed to complete this task listed 7 positive thoughts. Next, we analyzed the quality of the requested thoughts listed. Using the same basic procedure as Tormala et al. (2002), we had two judges, blind to our hypotheses, rate each thought listed on a scale ranging from 1 (*very low quality*) to 9 (*very high quality*). We then averaged the ratings (within judges) for each participant. The judges' ratings were significantly correlated ($r = .78, p < .001$), so we averaged them to form a composite quality index for each participant, and we submitted this quality index to analysis. There were no differences in requested thought quality across the 2 ($M = 5.34, SD = 1.56$) and 10 ($M = 5.33, SD = .86$) thoughts conditions, $t(26) = .03, p > .97$. This null effect on quality was replicated in Experiments 2–4, so we do not address the issue further. Furthermore, across Experiments 2–4, only 4 participants failed to complete the requested thought task, with the actual number of thoughts listed for those participants ranging from 7 to 9.

Experiment 2

The first experiment suggested that unrequested cognitions can play a role in ease of retrieval effects. The difficult condition was associated with more unrequested cognitions than the easy condition, and this difference in unrequested cognitions played a mediating role in the attitude effect. In Experiment 2 we sought to replicate and extend this finding. This study was very similar to Experiment 1, with three key modifications designed to enhance the generalizability of our findings. First, we changed the direction of requested cognitions. That is, we asked participants to generate negative thoughts about comprehensive exams. In this experiment, then, unrequested cognitions would be positive with respect to the target issue. The purpose of this change was to establish that the unrequested cognition effect in Experiment 1 was not dependent upon the direction of cognitions requested (or unrequested). Second, we changed the measure of unrequested cognitions. Rather than have participants self-report the perceived number of unrequested cognitions they had in a memory-based fashion, we asked them to indicate their unrequested cognitions on-line—that is, as they occurred. This change was made to determine whether people were aware of their unrequested cognitions as they were having them, and if unrequested cognitions measured in this fashion would still influence attitudes.

Finally, we removed the persuasive message from this study. Although some studies (e.g., Briñol, Petty, & Tormala, 2006; Tormala et al., 2002) have provided participants with a persuasive message prior to ease of retrieval manipulations, most studies have not (see Schwarz, 2004, for a review). It could be that a persuasive message increases the probability of people having cognitive responses on both sides of an issue. If true, the unrequested cognition effect might be confined to situations in which people receive and think about a persuasive message prior to the thought generation task. Although it would still be useful to know that unrequested cognitions matter under these conditions, we suggest that the unrequested cognition effect is more general in nature, and independent of the presence or absence of a message. To examine this issue in Experiment 2, we did not include any persuasive message. Instead we tested the unrequested cognition mechanism by using a more traditional ease paradigm in which people simply listed a small or large number of arguments on an issue and then reported their attitudes.

Method

Participants and Procedure

Thirty-eight undergraduates from Universidad Miguel Hernandez de Elche in Alicante, Spain, participated in partial fulfillment of a course requirement. This experiment was essentially a paper-and-pencil replication of the first study, including its use of the comprehensive exam policy issue and high-elaboration conditions for all participants. Of importance, though, participants were told that the purpose of the experiment was to find out what kinds of counterarguments students could generate against the comprehensive exam policy. Thus, participants were told to list negative thoughts about comprehensive exams. Also, participants in this study did not receive a persuasive message. They simply learned about the policy and then generated a high or low number of

arguments against it. After doing so, participants reported their attitudes toward the issue and were thanked and debriefed.

Number of Thoughts Manipulation

Participants were randomly assigned to list either 2 (easy) or 10 (difficult) negative thoughts about comprehensive exams. Depending on condition, participants were given a sheet of paper with 2 or 10 boxes in which they were instructed to write their thoughts. Aside from these thoughts being negative, the instructions were virtually identical to those used in the first experiment. The form we used was similar to the thought listing forms used in many prior persuasion studies (e.g., see Petty & Cacioppo, 1979).

Dependent Measures

Attitudes. At the end of the experiment, participants reported their attitudes toward comprehensive exams on four semantic differential scales. These scales ranged from 1 to 9 and had the following anchors: *negative–positive*, *bad–good*, *disagree–agree*, and *harmful–useful*. All scales were scored such that higher numbers reflected more favorable attitudes toward comprehensive exams. Responses across items were highly consistent ($\alpha = .95$), so they were averaged to form a composite index.

Unrequested cognitions. In this experiment, we modified the unrequested cognitions measure to assess these cognitions on-line—that is, as they came to mind—rather than from memory. Immediately before participants listed (2 or 10) negative thoughts, they received the following instructions: “It is possible that some favorable thoughts will also come to mind while you do this task. You might have some, a few, or even none. If this happens, don’t worry. The only thing you have to do is write an ‘X’ in the box and continue with your task.” In other words, participants were instructed to simply indicate when an unrequested cognition had occurred and to continue with the primary thought listing procedure. We instructed participants to simply write an “X” to limit any disruption from the unrequested cognitions measure. We tallied the number of “X”s for each participant and treated this value as the measure of unrequested cognitions.

Results

Attitudes

We again began by submitting the attitude data to analysis. Because participants were asked to generate negative thoughts in this experiment, an ease effect would be reflected by attitudes that were less favorable (i.e., more negative) in the 2 thoughts (easy) rather than in the 10 thoughts (difficult) condition. Consistent with this notion, attitudes toward comprehensive exams were significantly less favorable when participants generated 2 ($M = 2.28$, $SD = 1.55$) rather than 10 ($M = 3.67$, $SD = 2.42$) negative thoughts about the policy, $t(36) = -2.14$, $p < .05$.

Unrequested Cognitions

We next submitted the unrequested cognitions index to analysis. Across conditions, the number of unrequested cognitions ranged from zero to four ($M = 1.58$, $SD = 1.15$). As predicted, the number of thoughts manipulation had a significant effect on the

number of times participants indicated that they had an unrequested cognition, $t(36) = -3.81, p < .001$. Participants indicated that more positive thoughts came to mind when they had been asked to list 10 ($M = 2.22, SD = 1.17$) rather than 2 ($M = 1.00, SD = 0.79$) negative thoughts. It is noteworthy that the average number of unrequested cognitions decreased compared with the first experiment. This could be due to the fact that the unrequested cognitions in this experiment were positive rather than negative (and senior comprehensive exams are unpopular), or that on-line measures of unrequested cognitions simply uncover fewer such cognitions compared with post hoc or memory-based measures. Most germane to our concerns, the difference across conditions remained significant and in the predicted direction.

Mediation

We also tested mediation of the attitude effect by unrequested cognitions by using the same procedure as in Experiment 1 (see Baron & Kenny, 1986). Again, the number of thoughts manipulation was dummy coded such that 0 = 2 thoughts and 1 = 10 thoughts. As established already, the number of thoughts manipulation had a significant effect on both attitudes ($\beta = .34, t(36) = 2.14, p < .05$, and unrequested cognitions ($\beta = .54, t(36) = 5.81, p < .001$). Furthermore, attitudes were predicted by unrequested cognitions ($\beta = .71, t(36) = 6.10, p < .001$). More unrequested positive cognitions led to more favorable attitudes. When both the requested number of negative thoughts (manipulation) and unrequested positive cognitions were simultaneously entered into the regression model predicting attitudes, unrequested cognitions continued to predict attitudes ($\beta = .75, t(35) = 5.35, p < .001$, but the number of negative thoughts listed did not ($\beta = -.07, t(35) = -.47, p > .64$). A Sobel test indicated that the mediational pathway through unrequested cognitions was significant ($Z = 3.04, p < .01$).

Discussion

Experiment 2 replicated the findings from Experiment 1. It also advanced these findings by demonstrating that they were resistant to procedural changes. For instance, we changed the type of cognition participants were asked to generate, focusing on negative rather than positive thoughts in the latter study. This change was important because participants in Experiment 1 were instructed to generate positive thoughts about a counterattitudinal issue, a scenario that might have been primed to create unrequested cognitions. Participants were asked to generate negative thoughts about the counterattitudinal issue in Experiment 2, suggesting that it is the struggle to come up with a large number of cognitions in one direction, rather than a motivation to defend one's opinion against a counterproposal, that leads to the generation of unrequested cognitions.

We made other changes in this experiment as well. For example, we changed the measure of unrequested cognitions. Rather than assessing perceptions of unrequested cognitions in a memory-based fashion as in Experiment 1, we instructed participants to indicate the occurrence of these cognitions on-line—that is, as they happened. We also dropped the persuasive message in Experiment 2. On the basis of the results of Experiment 1 alone, it might have been argued that unrequested cognitions only emerge, or are par-

ticularly likely to emerge, when people receive and think about a persuasive message. In fact, the message used in Experiment 1 contained arguments in favor of a counterattitudinal issue, which might have been viewed as making unrequested (unfavorable) cognitions particularly salient. Despite all of the changes, we obtained further evidence for the predicted effects. Thus, the unrequested cognition effect appears to be quite robust.

Experiment 3

As noted, the findings from the first 2 experiments have been consistent with our predictions despite numerous procedural changes. Nevertheless, on the basis of the findings of these experiments alone, several important questions remain. For example, in both experiments, we have manipulated the ease with which participants could generate arguments on one side of an attitude issue. We have varied the direction of these arguments across experiments and varied whether or not a persuasive message was presented, but both experiments have asked participants to consider a novel attitude issue and to generate new arguments in one direction or another. It could be that this kind of attitude scenario is uniquely amenable to the unrequested cognition effect if to consider arguments on one side of an issue people inevitably consider the opposing arguments as well. That is, people might naturally think about both sides when considering an attitude issue, even when no persuasive message is presented.

If the unrequested cognition effect is confined to attitude scenarios, this effect would not replicate in the classic ease paradigm in which participants are asked to retrieve, or recall, instances of their own behavior and then form a self-assessment. We see the unrequested cognition effect as more general in nature and likely to emerge when people attempt to retrieve behavioral instances from memory, just as it emerges when people think about an attitude issue. As people struggle to recall 10 instances of their own assertive behaviors, for example, it stands to reason that unassertive behaviors might become increasingly intrusive. Consistent with the notion that unrequested cognitions can occur outside of the attitudes arena, research from a variety of domains suggests that when people receive or think about one piece of information, they sometimes spontaneously or automatically activate the opposite information (e.g., Schul, Mayo, & Burnstein, 2004). To address the generality of unrequested cognitions in Experiment 3, we moved away from the attitudes domain and asked participants to recall examples of situations in which they behaved assertively and then to judge their own assertiveness (see Schwarz et al., 1991). We expected participants to report more unrequested cognitions (i.e., more unassertive behaviors) when they were asked to recall many rather than few instances of their own assertiveness.

It is also noteworthy that we have yet to demonstrate that the content of unrequested cognitions matters in the ease of retrieval paradigm. In particular, we do not yet know whether it is unrequested *contrary* cognitions that are key, as we have suggested, or whether any unrequested cognitions—even completely irrelevant ones—could mediate the ease of retrieval effect. It could be that participants in the difficult condition of an ease experiment have more unrequested contrary cognitions as well as more unrequested irrelevant cognitions. If true, perhaps simply having any cognitions beyond the requested ones dilutes the effect of requested cogni-

tions, thereby contributing to the ease of retrieval effect. We addressed this issue in Experiment 3 by measuring both relevant and irrelevant (i.e., unrelated) unrequested cognitions.

Another issue we sought to address in Experiment 3 was whether the unrequested cognition effect stems simply from the increased time participants spend in the typical difficult condition of an ease of retrieval study. In Experiments 1 and 2 of the current research, and in past studies that used similar manipulations, it is reasonable to assume that participants spent more time generating thoughts or recalling instances in the difficult rather than in the easy condition. Indeed, it should take longer to think about or to recall many (e.g., 10) things than it takes to think about or to recall few (e.g., 2) things. One could argue that more unrequested cognitions emerge in the difficult rather than in the easy condition simply because more time is spent thinking in the difficult rather than in the easy condition. According to this account, if we equated time across the easy and difficult conditions, we would no longer find that unrequested cognitions mediate ease effects. If unrequested cognitions are independent of time, however, equating time across conditions would not eliminate the unrequested cognition effect. We explored this issue in Experiment 3 by adding time to the easy condition and by later instructing participants to indicate the unrequested cognitions they had had at any point during the experiment. This additional time gave participants in the easy condition more time to generate unrequested cognitions. In fact, because participants in the difficult condition would be working on requested cognitions during this period, those in the easy condition may actually have had even more time than those in the difficult condition to generate unrequested cognitions.

Finally, even after controlling for irrelevant cognitions and time, it could be that unrequested cognitions are ultimately just a proxy for subjective ease (i.e., perceived difficulty). That is, the more difficult one perceives it to list requested cognitions, the more unrequested cognitions one has. Conversely, it may be that the more unrequested cognitions one has (perhaps because of increased time, as noted above), the more difficult it becomes to list requested cognitions. If unrequested cognitions simply serve to index (or to even create) difficulty in generating requested cognitions, assessing unrequested cognitions themselves would offer little value beyond assessing perceived difficulty. In other words, if unrequested cognitions are redundant with perceived difficulty, measuring and controlling for perceived difficulty would be expected to eliminate the unrequested cognition effect. To examine this possibility, we directly assessed the perceived difficulty of the retrieval task in Experiment 3. We expected the unrequested cognition effect to make a contribution to judgment that was independent of the effect of perceived difficulty per se.

Method

Participants and Procedure

Seventy-nine Indiana University undergraduates participated in partial fulfillment of a course requirement. This experiment was very similar in design to the first two experiments, but there were several important changes. As in Experiment 1, participants were seated at individual computer work stations. In this experiment, however, participants were led to believe that we were studying college students' perceptions of daily situations. On the opening

screen, participants were told that we were seeking to better understand the way college students think about and recall everyday events. Participants were informed that to investigate this issue we would be asking them to recall their own past experiences with a specific type of situation. High-elaboration conditions were created for all participants by telling them that they were part of a very small group of participants being asked to participate in this research, so their responses were very important (see Petty et al., 1981). After listing their memories, participants completed dependent measures and were thanked and debriefed.

Number of Memories Manipulation

Following the introductory information, all participants were told that we would like them to think about and recall situations in which they had behaved assertively (see Schwarz et al., 1991). Participants were instructed that their examples could be from their recent or more distant past as long as they reflected situations in which they thought or acted in a very assertive way. Immediately following these instructions, participants were asked to recall 2 (easy) or 10 (difficult) examples of situations in which they behaved assertively. As in the first experiment, participants were asked to type these examples into a series of boxes that appeared on the computer screen one at a time. They were instructed not to worry about spelling or grammar but to make sure they communicated the main idea for each example.

In an effort to equate time across conditions, we added a delay of 180 s to the 2 memories (easy) condition. Specifically, after participants in this condition listed their second example of assertiveness, a screen appeared instructing them to wait patiently while the computer prepared the next part of the experiment. After this delay (or immediately after the retrieval task in the 10 memories condition), participants completed the dependent measures.

Dependent Measures

Time. First, we recorded the amount of time participants spent listing each memory in the retrieval task. We summed these individual times to create a total index of time for each participant. In the 2 memories condition, we added 180 s to reflect the delay screen these participants received before proceeding to the dependent measures.

Assertiveness. Immediately following the retrieval task (or the delay screen in the 2 memories condition), participants were asked to assess their own assertiveness. Participants rated themselves on assertiveness on a scale ranging from 1 (*not assertive at all*) to 9 (*extremely assertive*).

Perceived difficulty. Following the assertiveness item, participants were asked to think back to the examples they listed of their assertive behavior and experiences and to indicate how difficult it was for them to recall the requested number of examples. Responses were given on a scale ranging from 1 (*not at all difficult*) to 9 (*extremely difficult*).

Unrequested cognitions. The unrequested cognitions measure was adapted from that used in Experiment 1. Specifically, after the perceived difficulty item, participants were asked to report the extent to which any memories or instances of unassertive behaviors had come to mind during the experiment. Participants responded to this question on a 9-point scale, ranging from 0 to 8

with each point labeled as follows: 0 was labeled *none*, 1 was labeled *1*, and so on up to 8, which was labeled *8 or more*. It is important to note that this measure emphasized unrequested cognitions during the experiment, rather than during the recall task, so that participants in the 2 memories condition would feel comfortable reporting any unrequested cognitions that occurred during the delay period following the recall task.

Unrelated cognitions. We also assessed the number of unrelated or irrelevant cognitions participants might have had. This measure closely paralleled the unrequested cognitions measure, but in this case participants were asked to think about any thoughts or memories they might have had that were completely unrelated to assertiveness or unassertiveness. Participants indicated the number that came to mind on the same 9-point scale used to measure unrequested cognitions.

Results

We began by submitting each of the dependent measures to analysis with the number of memories manipulation (i.e., the number of assertive examples retrieved) as the independent variable. The data of 5 participants were not used because they failed to follow experimental instructions, resulting in a final sample of 74 participants for all analyses.

Time

First, although it did take participants more time to list 10 ($M = 605.86$ s, $SD = 562.32$) as opposed to 2 ($M = 290.46$ s, $SD = 238.84$) examples of their own assertiveness, $t(72) = -3.27$, $p < .01$, this effect disappeared when the 180-s delay time was added to the 2 memories condition, $t(72) = -1.41$, $p > .16$. Thus, participants did not have more time to generate unrequested cognitions in the 10 memories condition compared with the 2 memories condition.

Assertiveness

There was a significant effect of the number of memories manipulation on self-reported assertiveness, $t(72) = 1.97$, $p = .05$. Replicating Schwarz et al. (1991), participants rated themselves as more assertive when they were asked to recall 2 ($M = 5.74$, $SD = 1.84$) rather than 10 ($M = 4.91$, $SD = 1.75$) instances of their own assertive behavior.

Perceived Difficulty

There was also a significant effect of the number of memories manipulation on perceived difficulty, $t(72) = -2.78$, $p < .01$. Participants found it to be more difficult to retrieve 10 ($M = 6.53$, $SD = 1.76$) rather than 2 ($M = 5.31$, $SD = 1.96$) examples of their own assertiveness.

Unrequested Cognitions

Replicating our earlier findings, there was a significant effect of the manipulation on unrequested cognitions, $t(72) = -2.62$, $p < .02$. Participants reported more unassertive memories when they were asked to retrieve 10 ($M = 4.13$, $SD = 1.86$) rather than 2 ($M = 3.17$, $SD = 1.29$) examples of their own assertiveness.

Unrelated Cognitions

Finally, participants reported equivalent numbers of unrelated cognitions across the 2 ($M = 4.14$, $SD = 2.37$) and 10 ($M = 4.78$, $SD = 2.23$) memories conditions, $t(72) = -1.18$, $p > .24$.

Mediation

One of the primary objectives of Experiment 3 was to examine whether unrequested cognitions would mediate ease of retrieval effects in a paradigm focusing on retrieved memories rather than generated or constructed attitudinal arguments. We tested mediation of the assertiveness effect by unrequested cognitions by using the same strategy as in the first two experiments (see Baron & Kenny, 1986), dummy coding the number of memories manipulation such that 0 = 2 memories and 1 = 10 memories. As noted, the number of memories manipulation had a significant effect on both assertiveness ($\beta = -.23$), $t(72) = -1.97$, $p = .05$, and unrequested cognitions ($\beta = .30$), $t(72) = 2.62$, $p < .02$. In addition, self-reported assertiveness was predicted by unrequested cognitions ($\beta = -.31$), $t(72) = -2.77$, $p < .01$. The more unrequested (unassertive) cognitions people had, the less assertive they judged themselves to be. Finally, when both the number of memories manipulation and unrequested cognitions were entered in a regression model predicting assertiveness, unrequested cognitions continued to predict assertiveness ($\beta = -.27$), $t(71) = -2.28$, $p < .03$, whereas the number of memories manipulation did not ($\beta = -.15$), $t(71) = -1.27$, $p > .20$. This mediating pathway through unrequested cognitions was marginally significant ($Z = 1.65$, $p < .10$).²

In this experiment, we also sought to demonstrate that the unrequested cognition effect was not simply a proxy for the subjective ease or difficulty of retrieving the requested number of memories or instances. We addressed this issue in several ways. To begin with, we examined simple correlations between variables. Perceived difficulty was correlated with assertiveness ratings ($r = -.30$, $p < .01$) but not with unrequested cognitions ($r = .17$, $p > .15$). Because it did not correlate with unrequested cognitions, perceived difficulty did not provide a plausible mediator of the unrequested cognition effect, or vice versa. Further consistent with this notion, we submitted the unrequested cognitions data to a regression analysis with the number of memories manipulation and perceived difficulty as simultaneous predictors. The number of memories manipulation was a significant predictor in this analysis ($\beta = .27$), $t(71) = 2.26$, $p < .03$, but perceived difficulty was not ($\beta = .09$), $t(71) = .71$, $p > .47$.

Finally, we reanalyzed the assertiveness data treating the number of memories manipulation, perceived difficulty, and unre-

² Because the Sobel test was marginal, we conducted an alternative assessment of mediation in this experiment. Specifically, we used the 95% confidence interval (CI) approach of Shrout and Bolger (2002). This approach involves computing CIs around indirect effects (e.g., the effect of the number of memories manipulation on self-reported assertiveness through unrequested cognitions). Mediation is indicated by CIs that do not contain zero (for SPSS code, see Preacher & Hayes, 2004). Results indicated a CI ranging from $-.7618$ to $-.0005$. Given that zero fell outside of the CI, unrequested cognitions did play a mediating role in the ease of retrieval effect.

quested cognitions as simultaneous predictors. In this analysis, both unrequested cognitions ($\beta = -.25$), $t(70) = -2.15$, $p < .04$, and perceived difficulty ($\beta = -.23$), $t(70) = -2.02$, $p < .05$, emerged as significant predictors, whereas the effect of the manipulation was no longer significant ($\beta = -.08$), $t(70) = -.68$, $p > .49$. By all accounts, then, unrequested cognitions played an important role in the classic ease of retrieval effect, and this role was not redundant with perceived ease or difficulty.

Discussion

Experiment 3 had several objectives. First, we moved our paradigm away from the attitudes domain to examine the role of unrequested cognitions in a more traditional ease study focusing on participants' recall and judgments of their own assertiveness. In addition, we equated the amount of time participants had to think about their memories or past experiences (or anything else) in the easy and difficult conditions, we assessed unrequested cognitions that were both relevant and irrelevant to the assertiveness topic, and we included an index of perceived difficulty. As hypothesized, we found that the more assertive behaviors participants were asked to recall, the more unrequested cognitions they reported and, therefore, the less assertive they judged themselves to be. This effect was confined to unrequested cognitions that were relevant to the issue (i.e., memories about unassertive behaviors), and it emerged despite adding time to the easy condition. Therefore, the unrequested cognition effect was independent of the amount of time participants had at their disposal.

Furthermore, unrequested cognitions were neither a consequence of nor redundant with perceived difficulty. Although perceived difficulty was influenced by the ease manipulation, as intended, and contributed to assertiveness ratings, it neither correlated with unrequested cognitions nor eliminated the unrequested cognition effect when controlled. Given that perceived difficulty per se was not responsible for the unrequested cognition effect (nor were unrequested cognitions responsible for the perceived difficulty effect), the results were more consistent with the notion that as participants struggled and ran out of requested cognitions in the difficult condition, unrequested cognitions became more prevalent. The presence of unrequested cognitions, along with perceived difficulty, determined the ease of retrieval effect. Taken together, the results from this experiment provided strong support for the importance of unrequested contrary cognitions as contributing to the ease of retrieval effect.

Experiment 4

The results of the first three experiments suggest that unrequested cognitions can explain variance in studies of ease of retrieval effects. In addition, Experiment 3 showed that unrequested cognitions can explain variance beyond that explained by feelings of ease from the task. It is important to note, however, that our position is not that the content of cognition is all that matters. We submit that both cognitive content (i.e., unrequested cognitions) and metacognitive experience (i.e., subjective ease) are important determinants of ease of retrieval effects in the most common paradigm. Consider the evidence from Experiment 3. In the easy condition of that experiment, participants actually reported more unrequested cognitions than requested cognitions. In

the difficult condition, participants reported fewer unrequested cognitions than requested cognitions. If content alone were all that mattered, we would expect this pattern of data to lead to judgments more consistent with the direction of requested cognitions in the difficult rather than in the easy condition. Yet this effect was not obtained, presumably because subjective ease also matters. Indeed, in the final mediational analysis reported in Experiment 3, both unrequested cognitions and perceived difficulty contributed to assertiveness ratings. Thus, there appeared to be two simultaneous pathways to the ease of retrieval effect—one involving unrequested cognitions and one involving the ease with which requested cognitions could be generated.

How would subjective ease alter the effect of content alone? As reviewed earlier, past research has revealed that ease of retrieval effects, under at least some conditions, are mediated by the confidence people have in their requested cognitions. Tormala et al. (2002) found that the more difficult it was for participants to generate requested cognitions in an ease of retrieval paradigm, the less confident they felt about those cognitions and the less those cognitions predicted attitudes. That is, feelings of ease translated into feelings of confidence, and this effect influenced judgment. In Experiment 3, then, although there were more unrequested than requested cognitions in the easy condition, and more requested than unrequested cognitions in the difficult condition, those cognitions may have been held with differential confidence across conditions. In particular, participants should have held their requested cognitions with greater confidence (and relied on them to a greater extent) in the easy condition as opposed to in the difficult condition. In contrast, unrequested cognitions presumably were held with equivalent and high confidence across conditions, given that they came to mind spontaneously with no instructions to generate a specific number. In Experiment 4, we explored these issues by measuring the confidence with which participants held their requested and unrequested cognitions. On the basis of Experiment 3 and the findings of Tormala et al., we expected to find two separate mediating pathways for the ease of retrieval effect—one through unrequested cognitions and one through confidence in requested cognitions.

What remains unclear at this point is whether unrequested cognitions play any role in shaping confidence in requested cognitions. One possibility is that the generation of unrequested cognitions causes people to lose confidence in their requested cognitions. Such a finding would suggest that the confidence in requested cognition effect ultimately subsumes both the subjective ease and unrequested cognition effects. Alternatively, it could be that these are separate and independent contributors to ease of retrieval effects. In Tormala et al. (2002), the confidence effect was argued to stem directly from the subjective experience of ease versus difficulty in generating requested cognitions, not from the presence of unrequested cognitions. If these are indeed separate effects, we would expect unrequested cognitions to affect judgment even when controlling for the influence of confidence in requested cognitions. Thus, unrequested cognitions could matter in addition to confidence in requested cognitions. Along with the findings of Experiment 3, this result would suggest that both subjective ease and the presence of unrequested cognitions are important determinants of the ease of retrieval effect in studies that use the traditional paradigm.

In Experiment 4, we returned to the attitudes domain and replicated the ease manipulation from Experiment 1. We asked participants to report the number of unrequested cognitions they had and then measured the confidence with which participants held both requested and unrequested cognitions. We then submitted the attitude data to a series of regression analyses in order to determine the roles of unrequested cognitions and confidence in requested cognitions in the traditional ease of retrieval effect.

Method

Participants and Procedure

Forty-three Indiana University undergraduates participated in partial fulfillment of a course requirement. In general, this experiment was very similar to Experiment 1. Participants were seated at individual computer work stations where they read that their university was considering implementing comprehensive exams in the very near future. High-elaboration conditions were created for all participants in the same manner as the first experiment. Participants then read the same message in favor of comprehensive exams, after which they were asked to list either 2 (easy) or 10 (difficult) positive thoughts about comprehensive exams. The primary change in this experiment was that we included a number of new measures designed to expand our understanding of the mechanisms behind ease of retrieval effects.

Dependent Measures

Attitudes. Immediately after the thought listing procedure, participants reported their attitudes by rating comprehensive exams on a series of semantic differential scales. These scales, which ranged from 1 to 9, had the following anchors: *negative–positive*, *bad–good*, *unfavorable–favorable*, *against–in favor*, *harmful–beneficial*, and *foolish–wise*. Higher numbers always indicated more favorable attitudes. Responses to these scales were highly reliable ($\alpha = .95$), so they were averaged to form a composite index.

Confidence in requested cognitions. After reporting their attitudes toward comprehensive exams, participants completed a measure of confidence in requested cognitions, adopted from past research (see Petty et al., 2002; Tormala et al., 2002). Specifically, participants were asked to think back to the positive thoughts they listed and to indicate how much confidence they had in the validity of those thoughts. Responses to this question were given on a scale ranging from 1 (*none at all*) to 9 (*very much*).

Unrequested cognitions. Participants then completed a measure of unrequested cognitions. This measure was identical to the measure used in Experiment 1: Participants were asked to respond to a single global item asking about the extent to which any negative thoughts came to mind during the thought listing task. Responses were made on a 9-point scale, ranging from 0 (*none*) to 8 (*8 or more*).

Confidence in unrequested cognitions. Finally, after reporting the number of unrequested cognitions they had, participants completed a measure of unrequested cognition confidence. Specifically, participants were asked to think back to any negative thoughts they might have had and to report how much confidence they had in the validity of those thoughts. Responses to this

question were given on a scale ranging from 1 (*none at all*) to 9 (*very much*).

Results

We began by submitting each of the individual dependent measures to analysis with number of thoughts manipulation as the independent variable.

Attitudes

There was a significant effect of number of positive thoughts listed on attitudes toward comprehensive exams, $t(41) = 2.28$, $p < .03$. Attitudes were more favorable after participants listed 2 ($M = 6.28$, $SD = 1.53$) rather than 10 ($M = 5.10$, $SD = 1.85$) positive thoughts, again replicating the basic ease of retrieval effect.

Confidence in Requested Cognitions

There was also a significant effect of number of positive thoughts listed on participants' confidence in their requested cognitions, $t(41) = 2.91$, $p < .01$. Consistent with the Tormala et al. (2002) findings, participants reported more confidence in their positive thoughts after listing 2 ($M = 7.68$, $SD = 1.17$) rather than 10 ($M = 6.43$, $SD = 1.63$) of them.

Unrequested Cognitions

Replicating our earlier findings, there was a significant effect of the number of thoughts manipulation on the self-reported presence of unrequested cognitions, $t(41) = -3.44$, $p = .001$. As predicted, participants reported that they had more negative thoughts when they were asked to list 10 ($M = 5.19$, $SD = 2.29$) rather than 2 ($M = 3.36$, $SD = 0.95$) positive thoughts about comprehensive exams.

Confidence in Unrequested Cognitions

Finally, we examined confidence in unrequested cognitions. There was a tendency for participants to report greater confidence in their unrequested cognitions when they were asked to list 10 ($M = 7.77$, $SD = 1.85$) rather than 2 ($M = 6.95$, $SD = 1.21$) positive thoughts, but this difference was not significant, $t(41) = -1.50$, $p < .15$. The fact that confidence in unrequested cognitions was not affected by the number of thoughts manipulation rules it out as a mediator of the attitude effect. Of interest, though, confidence in unrequested cognitions was positively correlated with the number of unrequested cognitions listed ($r = .46$, $p < .01$). For unrequested cognitions, a positive relation makes sense given that participants were not asked to list a large or small number of these thoughts. Participants who spontaneously generated more were also more confident of them.

Mediation

The most important objective of the current experiment was to assess the relative contributions to the attitude effect of unrequested cognitions and confidence in requested cognitions. As noted, one possibility was that unrequested cognitions contributed to confidence in requested cognitions. That is, perhaps a difficult

task led to more unrequested cognitions, which reduced confidence in requested cognitions that, in turn, affected attitudes. Consistent with this possibility, the number of thoughts manipulation (dummy coded; 0 = 2 thoughts and 1 = 10 thoughts) affected both confidence in requested cognitions ($\beta = -.41$, $t(41) = -2.91$, $p < .01$, and the number of unrequested cognitions reported ($\beta = .47$, $t(41) = 3.44$, $p < .01$). Furthermore, the number of unrequested cognitions predicted confidence in requested cognitions ($\beta = -.32$, $t(41) = -2.19$, $p < .05$). However, when both the number of thoughts manipulation and unrequested cognitions were included as predictors of confidence in requested cognitions, the direct effect of the manipulation remained significant ($\beta = -.34$, $t(40) = -2.08$, $p < .05$, whereas the effect of unrequested cognitions did not ($\beta = -.17$, $t(40) = -1.03$, $p > .31$). Thus, unrequested cognitions did not account for the impact of the ease of retrieval manipulation on confidence in requested cognitions.

Similarly, confidence in requested cognitions did not account for the unrequested cognition effect. When both the number of thoughts manipulation and requested cognition confidence were included as predictors of unrequested cognitions, the direct effect of the manipulation was significant ($\beta = .41$, $t(40) = 2.71$, $p < .01$, whereas the effect of requested cognition confidence was not ($\beta = -.16$, $t(40) = -1.03$, $p > .31$).

The next possibility we examined was that unrequested cognitions and confidence in requested cognitions played separate mediating roles in the attitude effect. We began by assessing whether we replicated the Tormala et al. (2002) mediation through confidence in requested cognitions. As established already, the number of thoughts manipulation affected both confidence in requested cognitions ($\beta = -.41$, $t(41) = -2.91$, $p < .01$, and attitudes ($\beta = -.34$, $t(41) = -2.28$, $p < .03$). In addition, confidence in requested cognitions predicted attitudes ($\beta = .54$, $t(41) = 4.13$, $p < .001$). The more confidence people had in their positive thoughts, the more positive their attitudes were. When both the number of thoughts manipulation and confidence in requested cognitions were included as predictors of attitudes, confidence continued to predict attitudes ($\beta = .49$, $t(40) = 3.37$, $p < .01$, whereas the number of thoughts manipulation did not ($\beta = -.13$, $t(40) = -.93$, $p > .35$). Furthermore, confidence in requested cognitions provided a significant mediating pathway ($Z = 2.13$, $p < .05$).

A second set of analyses was conducted to determine whether unrequested cognitions accounted for additional covariance between the number of thoughts manipulation and attitudes, beyond confidence in requested cognitions (see Figure 1).³ To successfully meet the conditions for mediation through this second pathway, it was necessary to show that the number of thoughts manipulation affected unrequested cognitions even after controlling for confidence in requested cognitions (see Leonardelli & Tormala, 2003, for a similar procedure). As noted already, a simultaneous regression with the number of thoughts manipulation and confidence in requested cognitions as predictors of unrequested cognitions revealed that the number of thoughts manipulation affected unrequested cognitions ($\beta = .41$, $t(40) = 2.71$, $p < .01$, whereas confidence in requested cognitions did not ($\beta = -.16$, $t(40) = -1.03$, $p > .31$).

Next, we tested whether unrequested cognitions mediated the effect of the number of thoughts manipulation on attitudes, even after controlling for the effect of confidence in requested cognitions. Attitudes were submitted to a simultaneous regression anal-

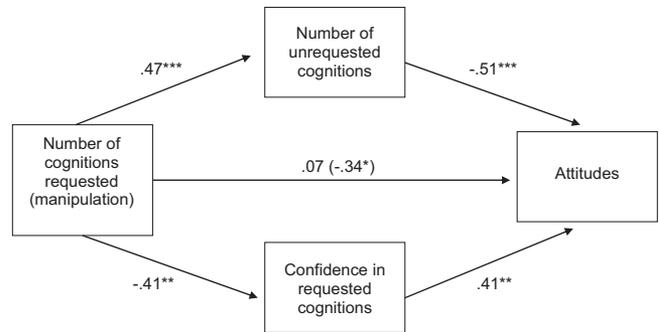


Figure 1. Mediators of the ease of retrieval effect on attitudes in Experiment 4. The value in parentheses indicates the direct effect before controlling for the mediators. * $p < .05$. ** $p < .01$. *** $p < .001$.

ysis with the number of thoughts manipulation, unrequested cognitions and confidence in requested cognitions as the predictors. Both unrequested cognitions ($\beta = -.51$, $t(39) = -3.91$, $p < .001$, and confidence in requested cognitions ($\beta = .41$, $t(39) = 3.25$, $p < .01$, predicted attitudes, whereas the number of thoughts manipulation did not ($\beta = .07$, $t(39) = .55$, $p > .58$). Thus, both unrequested cognitions and confidence in requested cognitions played mediating roles in the effect of the manipulation on attitudes. In fact, the mediational pathway through unrequested cognitions was significant, even after controlling for the mediating effect of confidence in requested cognitions ($Z = 2.17$, $p < .03$).

Discussion

In Experiment 4, as in Experiment 3, we found evidence for dual mediation of ease effects—one based on primary cognition (thought content) and another based on secondary cognition (thought confidence, which stems from subjective ease; see Tormala et al., 2002). It is important to note that unrequested cognitions were not responsible for the requested cognition confidence effect or vice versa. A series of mediational analyses suggested that these effects were independent. This result directly paralleled the results of Experiment 3, in which unrequested cognitions were not related to subjective ease. Thus, both cognitive content and subjective metacognitive experience simultaneously contribute to judgment in the common ease of retrieval paradigm, and neither effect is responsible for the other.

It is interesting that in Experiment 4, confidence in unrequested cognitions did not serve as a viable mediator of the attitude effect. First, the number of thoughts manipulation failed to influence confidence in unrequested cognitions. Second, further analysis indicated that controlling for confidence in unrequested cognitions did not change any of the mediational outcomes reported in the results. Third, we created an interaction term that essentially weighted the number of unrequested cognitions by the confidence with which those cognitions were held (i.e., Unrequested Cogni-

³ Although the direct effect of the manipulation on attitudes was no longer significant after controlling for requested cognition confidence, several authors have argued that a significant direct effect is not essential prior to testing for mediation (e.g., see MacKinnon, 2000; Shrout & Bolger, 2002).

tions \times Confidence in Unrequested Cognitions). When we controlled for unweighted cognitive content (i.e., the unrequested cognition term), this weighted variable failed to account for additional variance in attitudes. Unrequested cognition confidence, then, did not contribute to the attitude effect above and beyond the number of unrequested cognitions reported. As noted earlier, we suspect that confidence in unrequested cognitions did not matter because unrequested cognitions were held with high and relatively constant confidence across conditions. Confidence in requested cognitions did matter because in this case there was more meaningful variability due to the ease manipulation. When the thought generation task was easy, people had relatively high confidence in their requested cognitions; when the task was difficult, people had less confidence in their requested cognitions.

GENERAL DISCUSSION

Although classic perspectives in attitudes and social cognition research emphasize the role of the content of one's cognitions, research on the ease of retrieval effect has suggested that people sometimes form attitudes and other judgments more on the basis of the subjective experience of ease or difficulty in generating cognitions than on the actual content of those cognitions. As reviewed earlier, an extensive body of research has developed that supports this idea, first examined by Schwarz and colleagues (1991). Perspectives on the specific process that guides ease effects have varied, but the core emphasis has always been on the intriguing notion that people sometimes weight subjective cognitive experience more heavily than the objective content of cognition.

Our argument is not that the subjective experience of ease or difficulty is unimportant. We simply argue that the role of cognitive content in the classic ease of retrieval paradigm may have been underappreciated as a result of researchers' emphasis on cognitions generated in the requested direction. In four experiments, we explored the possibility that cognitions in the unrequested direction might also matter. Across experiments, we found that the standard ease of retrieval manipulation had a significant effect on unrequested cognitions, which in turn influenced judgments. This effect did not depend on the direction or type of cognitions requested, the manner in which unrequested cognitions were assessed, the presence or absence of a persuasive message, the specific topic participants were thinking about (i.e., themselves or an attitude issue), the amount of time participants had to think (or recall), or even the university or country in which the study was run. Furthermore, the effect did not depend on whether participants were asked to construct new thoughts on a topic or to retrieve instances of their own past behavior. However, this effect did depend on the relevance of the unrequested cognitions assessed. As revealed in Experiment 3, unrequested cognitions only mattered when they were relevant to the issue under consideration. Thus, the content of unrequested cognitions was a critical determinant of this effect.

It is also important to highlight the results of Experiments 3 and 4, which suggest that the unrequested cognition mechanism does not replace the effect of subjective experience in the classic ease of retrieval paradigm. In Experiment 3, there remained an effect of perceived difficulty on assertiveness judgments even after controlling for unrequested cognitions. In Experiment 4, we found that both unrequested cognitions and confidence in requested cogni-

tions, which we assume stemmed from subjective ease (see Tormala et al., 2002), played mediating roles in the attitude effect. By considering unrequested cognitions, then, we uncovered a parallel route through which the classic ease of retrieval manipulation exerts its influence. Apparently, when generating cognitions is relatively difficult, people tend to generate cognitions in the opposite direction and lose confidence in the cognitions generated in the requested direction. The former effect is content-based, whereas the latter effect is more experiential in nature.

Thus, both cognitive content and subjective cognitive experience are important determinants of the classic ease of retrieval effect. We assume the struggle to complete the generation or retrieval task in the difficult condition is what creates unrequested cognitions, whereas the subjective feeling of ease or difficulty affects the confidence people have in their requested cognitions. Both processes are important. Furthermore, these processes are not in competition. On the contrary, it appears that the effects of subjective cognitive experience and unrequested cognitions are additive in nature, both explaining unique and important variance. If these effects are additive, suppressing either one of them should weaken the ease of retrieval effect, whereas strengthening either one of them should accentuate this effect.

In fact, the additive nature of these processes could help reconcile the current results with past findings that used misattribution procedures in the ease of retrieval paradigm. Schwarz et al. (1991), for example, found that the ease of retrieval effect disappeared when the experience of ease versus difficulty could be attributed to some situational factor. In other words, when the experience of ease or difficulty was made nondiagnostic, participants' judgments reflected the content of their requested cognitions. If unrequested cognitions were the sole determinant of ease effects, the misattribution findings would be difficult to explain because the content of unrequested cognitions (as well as requested cognitions) presumably remains intact following a misattribution manipulation. To reiterate, though, we do not suggest that unrequested cognitions are the sole determinant of ease effects. We submit that both unrequested cognitions and the experience of generating requested cognitions are important. Thus, just as discounting the feeling of ease or difficulty has been shown to reduce or even to eliminate the ease of retrieval effect, we assume that discounting the presence of unrequested cognitions would do so as well. Again, if subjective ease and unrequested cognitions additively contribute to the ease of retrieval effect, as we suggest they do, suppressing or discounting either one should attenuate this effect.

Of course, in some misattribution studies (e.g., Schwarz et al., 1991), the ease effect has not only disappeared but has actually reversed when the feeling of ease or difficulty has been rendered nondiagnostic. We view our unrequested cognition results as compatible with this outcome. In the easy conditions of Experiments 3 and 4, for instance, participants actually reported more unrequested cognitions (3.17 and 3.36, respectively) than requested cognitions (2). In the difficult conditions of these experiments, participants reported fewer unrequested cognitions (4.13 and 5.19, respectively) than requested cognitions (10). According to a strict content account (which would apply under misattribution conditions), one might expect this pattern of data to produce judgments more consistent with the content or direction of requested cognitions in the difficult rather than in the easy conditions. Thus, when subjective ease is discounted, the pattern of requested versus

unrequested cognitions actually fits with the reversal that has been observed under misattribution (i.e., content-based) conditions.

In the current research, in which ease was not discounted, judgments did not strictly follow the content of cognition. That is, across studies, using the usual (i.e., nonmisattribution) procedure, we observed the typical ease effect. We think this outcome further attests to the importance of both cognitive content and metacognitive experience. Indeed, judgments were more consistent with the content of requested cognitions in the easy rather than in the difficult conditions because participants held their requested cognitions with differential confidence across these conditions. In particular, participants held their requested cognitions with greater confidence in the easy as opposed to difficult conditions. Experiment 4 provided direct evidence for this notion. Experiment 3, with its measure of perceived difficulty, provided indirect evidence for this notion; the easier it was to generate requested cognitions, the more confident participants presumably were of those cognitions (Tormala et al., 2002). Thus, although participants had more requested than unrequested cognitions in the difficult conditions of Experiments 3 and 4, low confidence in the requested cognitions dampened their impact. In the easy conditions, in which requested cognitions were held with more confidence, requested cognitions were weighted more heavily. Again, then, both cognitive content and metacognitive experience played an important role in our studies.

New Questions

On the basis of the current findings, several interesting questions remain. For example, would the present effects obtain with other manipulations of processing experience? We suspect that there are some manipulations of processing experience that create unrequested cognitions and some that do not. Our concern has been with the classic ease of retrieval manipulation, in which people generate/recall many or few requested cognitions, which seems particularly likely to produce these effects as the difficulty stems directly from the generation/retrieval task. Other manipulations of processing experience might be less prone to spark unrequested cognitions. For example, degraded stimulus presentations, which have been found to increase processing difficulty (e.g., Briñol et al., 2006; Reber & Schwarz, 1999), might make both requested and unrequested cognitions difficult to generate. If an individual is attempting to counterargue a persuasive message presented in degraded font types or difficult-to-read color combinations, for instance, it presumably would be difficult to generate both counterarguments and proarguments. Future research should examine the relative importance of the unrequested cognition mechanism for ease effects in a variety of paradigms.

Another important question relates to the moderating role of elaboration, or the extent of thinking, in determining when unrequested cognitions play a role in the traditional ease of retrieval effect. In past research, there have been differing perspectives on whether ease effects are more likely to emerge under low (see Grayson & Schwarz, 1999; Rothman & Schwarz, 1998; Ruder & Bless, 2003) or high (see Hirt, Kardes, & Markman, 2003; Tormala et al., 2002; Wänke & Bless, 2000) elaboration. In each of the present studies, all participants were given instructions designed to induce high levels of elaboration. Thus, our findings are consistent with the notion that unrequested cognitions, and confidence in

requested cognitions, can guide ease of retrieval effects in high-elaboration situations. Moreover, considerable past research has demonstrated that people's judgments (e.g., attitudes) are most dependent on the content of their cognitive responses under high-elaboration conditions (e.g., Petty & Cacioppo, 1986; see also Petty, Wheeler, & Tormala, 2003) and that confidence in cognitive responses is particularly likely to guide the impact of those responses under high-elaboration conditions as well (Briñol & Petty, 2003; Petty et al., 2002; Tormala et al., 2002).

In general, then, the current research suggests that the unrequested cognition mechanism for ease effects operates at high levels of processing. Because we were not directly addressing the elaboration issue in the present studies, however, no low-elaboration comparison groups were included in the design. It is interesting to note, though, that in the one prior study we located in which unrequested cognitions were assessed, Wänke et al. (1996) used a topic that may have stimulated less elaboration than was present in the current research. Specifically, Wänke et al. asked participants to list an easy or difficult number of arguments against or in favor of public transportation. Although public transportation might be of high relevance for some individuals, it presumably would be of less relevance for others, making it only moderately engaging overall. After participants listed their arguments in the Wänke et al. study, they were asked to report the extent to which they spontaneously thought of any arguments that were opposite in valence to the ones they listed. Wänke et al. found no difference across conditions in participants' reports of these opposite arguments. Assuming their study created lower elaboration conditions than those used in the current research, the Wänke et al. finding is consistent with the notion that the unrequested cognition effect might be dampened under low elaboration.⁴

Thus, we surmise that the role of unrequested cognitions in the classic ease of retrieval effect is most likely in relatively high-elaboration circumstances. It is important to emphasize, however, that we do not propose that whereas unrequested cognitions matter under high elaboration, metacognitive experience matters under low elaboration. That is, we do not posit alternating roles for unrequested cognitions and metacognitive experience under high and low elaboration. Again, Experiments 3 and 4, which placed participants in a high-elaboration context, revealed that unrequested cognitions and metacognitive processes (i.e., ease and confidence in requested cognitions) played a simultaneous role in mediating the ease of retrieval effect. Moreover, as noted, an accumulating body of evidence now suggests that the metacognitive experience of ease can influence judgments under high elaboration (e.g., Hirt et al., 2004; Tormala et al., 2002). Thus, we submit that both metacognitive ease and unrequested cognitions can determine the ease of retrieval effect under high elaboration. Future research should measure unrequested cognitions in ease of

⁴ Of course, this interpretation of Wänke et al. (1996) is based on their finding no difference in unrequested cognitions across the easy and difficult conditions. We acknowledge that it is difficult to interpret this null effect, just as it is difficult to interpret any null effect. It could be that Wänke et al. found no differences in unrequested cognitions because of low power or other methodological factors. Thus, identifying the conditions under which unrequested cognitions do and do not emerge remains a useful direction for future research.

retrieval paradigms using both high- and low-elaboration conditions to shed light on the parameters for the unrequested cognition effect and the interplay between this effect and the subjective ease effect at varying levels of elaboration. For example, the experience of ease might affect judgment under both high- and low-elaboration conditions but do so via different mechanisms. Indeed, this pattern of moderated mediation (Muller, Judd, & Yzerbyt, 2005) is common for many variables affecting judgment (e.g., see Petty & Wegener, 1998, for a review).

Theoretical and Practical Implications

Taken together, the findings from the present experiments have clear implications for several different domains of social psychological research. First, and most obvious, is the ease of retrieval effect itself. The current experiments demonstrate that the generally observed ease effect, at least under high-thinking conditions, depends in part on the content of cognition. This finding extends past research that focused on the roles of the availability heuristic (Schwarz et al., 1991) and confidence (Tormala et al., 2002), but it also suggests that there is still much to be learned about ease effects. In particular, our findings speak to the importance of considering both objective cognitive content and subjective metacognitive experience in understanding when and why ease of retrieval effects operate. We suspect that future research will further advance our understanding of the multiple mechanisms through which ease effects can occur.

The present research may also contribute to our understanding of mental control and thought suppression. Our experiments essentially show that the more difficult it is to generate requested cognitions, the harder it becomes to suppress unrequested cognitions. Although this basic effect is consistent with the kinds of suppression effects demonstrated in other work (e.g., Wegner, 1994), it adds to that work by suggesting that metacognitive experience (e.g., ease vs. difficulty) may be important to consider. Indeed, although participants in both the easy and the difficult conditions reported having unrequested cognitions, these thoughts were more prevalent in the difficult condition. Thus, we suggest that future research on mental control and thought suppression should consider the subjective experience of ease versus difficulty with which certain cognitions can be generated or controlled. This issue might be fruitfully examined in the health domain, in which people can be particularly concerned with focusing on some kinds of cognitions (e.g., healthy thoughts and intentions) rather than on others (e.g., unhealthy thoughts and intentions).

Conclusion

In summary, the current experiments sought to advance our understanding of the interplay of objective cognitive content and subjective cognitive experience in the classic ease of retrieval effect. In four experiments, we replicated a common ease of retrieval paradigm but included measures designed to tap unrequested cognitions that may have emerged during the generation or retrieval task. Across experiments, the findings were consistent with the notion that unrequested cognitions play an important role in ease effects. Our hope is that these findings will lead to new advances in research that attempts to disentangle, or simply iden-

tify, the interplay between cognitive and metacognitive processes in attitudes and social judgment.

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