Ease-of-Retrieval as an Automatic Input in Judgments: A Mere-Accessibility Framework?

GEETA MENON
PRIYA RAGHUBIR*

The ease-of-retrieval hypothesis suggests that people use the ease with which information comes to mind as a heuristic in forming judgments (Schwarz et al. 1991). We examine the automaticity of the use of ease-of-retrieval as an input in judgments. We demonstrate that the ease-of-retrieval is used unintentionally, outside of awareness, and effortlessly, along with other consciously applied inputs, to make related judgments. Once experienced, its impact follows through to judgments, even when it is discredited as a source of information. Results across four studies suggest that an automatic source of information (viz., the ease-of-retrieval) may merely have to be accessible to be used in a judgment. We propose a mere-accessibility framework as a variant of Feldman and Lynch's (1988) accessibility-diagnosticity framework to explain these results.

The availability heuristic states that people tend to estimate the frequency of an event as a function of the ease with which it comes to mind (cf. Tversky and Kahneman 1973). If an incident comes to mind easily, people believe there must be many such incidents in the population from which it is drawn. Conversely, the more difficult it is to remember an incident, the smaller one should perceive the overall population. Schwarz et al. (1991) followed this rationale to demonstrate the ease-of-retrieval effect. When participants were asked to recall 12 examples of assertive behaviors, they rated themselves as less assertive than when they were asked to recall only six examples. The ease-of-recall appeared to serve an informative function, such that as the length of the recall task increased, the behaviors became increasingly difficult to recall, leading participants to infer that they were lower on the trait exemplifying that behavior. In a similar vein, Raghubir and Menon (1998)

demonstrated that the easier it was to retrieve AIDS-related behaviors in memory, the higher people judged their risk of contracting AIDS. (For recent reviews on the ease-of-retrieval heuristic see Schwarz 1998 and Schwarz and Vaughn 2000.)

This article examines whether the use of ease-of-retrieval, as an input into judgments, is automatic using Bargh's (1989) criteria of whether its use is within or outside of conscious awareness, is uncontrollable (cannot be appropriately discounted once it has been experienced as an input), and is effortless (not requiring the use of cognitive resources). Study 1 demonstrates the informative function of the ease-of-retrieval cue. Study 2 shows how discounting this cue can reverse its effects. However, study 3 shows that the timing of such discounting is key: the ease-of-retrieval effect manifests even when its informativeness is discounted, if the discounting occurs after the ease-of-retrieval has been experienced. Study 4 shows that even when the discounting occurs prior to ease-of-retrieval being experienced, it is ineffective unless there are cognitive resources available to process it. When resources are not available, the ease-of-retrieval effect re-emerges, as processing the discounting information requires cognitive resources, but processing ease-of-retrieval does not. These studies provide evidence of the automatic use of ease-of-retrieval in judgments.

Exploring the automaticity of a process is important as it is increasingly being acknowledged that a large number of consumer decisions are nonconscious (see Bargh 2002 and Fitzsimons et al. 2002, for recent reviews). A two-process theory of human information processing incorporating automatic and controlled components was first proposed by Schneider and Shiffrin (1977). They defined automatic pro-

cessing as one that can occur without control on the part of the subject, without stressing capacity limitations, and without demanding attention, and controlled processing as requiring attention, being capacity-limited, and being controlled by the subject (see also Shiffrin and Schneider 1977). Bargh (1989) later argued for "conditional automaticity" where the criterion of a process being unintentional, outside of awareness, involuntary, effortless, and autonomous did not have to be all or none. In other words, a process may have one or more of the automatic criteria to be differentiated from a conscious or controlled process. Gilbert (1989) further suggested that in a two-stage process, the initial anchor was based on an automatic input, with the subsequent correction (e.g., incorporating ignored inputs or correcting weights) performed in a more controlled manner (see also Gilbert, Pelham, and Krull 1988).

Various empirical demonstrations have documented automatic processes in consumer decision-making domains. For example, Kardes (1986) examined the use of inputs when people were aware of the presence of the input, but unaware of their use, and Janiszewski (1990) examined the use of inputs when people were additionally unaware of the presence of the input itself. Recent research has demonstrated the prevalence of one or more of the criteria for automaticity in the effects of asking a question on subsequent behavior (Fitzsimons and Shiv 2001; Fitzsimons and Williams 2000), consumer impulsivity (Ramanathan and Menon 2002; Shiv and Fedorikhin 1999), judgments of monetary value (Raghubir and Srivastava 2002), distance perception (Raghubir and Krishna 1996), and the phonetic effects of brand names on consumer judgments (Yorkston and Menon 2004).

This article examines whether the ease-of-retrieval effect is automatic. This is important to examine as automatic inputs exert a more consistent influence over attitudes and behavior over time (Bargh et al. 1996). The specific construct, experienced ease-of-retrieval, is a particularly important construct given its relationship with the twin construct of accessibility of information that has a rich tradition in consumer behavior. In fact the ease-of-retrieval hypothesis is interchangeably referred to as the "accessibility-as-information" hypothesis (Raghubir and Menon 1998), a terminology that we also use in this article. Accessibility of information has been defined as the ease with which information can be retrieved from memory (Feldman and Lynch 1988; Schwarz et al. 1991). It has been shown to be a direct function of the frequency and recency of activation of the information (Higgins 1989, 1996). Its consequences are manifold: when information comes to mind easily, subsequent judgments of the probability of an event occurring are higher (Tversky and Kahneman 1973), self-perceptions of personality traits based on behaviors recalled are more extreme (Schwarz et al. 1991), and target evaluations reflect the content of information retrieved (Folkes 1988; Jacoby et al. 1989).

Feldman and Lynch (1988) formalized the consequences of accessibility in their accessibility-diagnosticity frame-work, which proposes that the use of one source of information versus another in making judgments is a positive function of its relative accessibility and diagnosticity, each of which is formulated as a distinct aspect of information. Empirically, the model has received a lot of support (e.g., Lynch, Marmorstein, and Weigold 1988; Menon, Raghubir, and Schwarz 1995, 1997; Simmons, Bickart, and Lynch 1993).

Early tests of the accessibility-diagnosticity model acknowledge that the constructs of accessibility and diagnosticity, while conceptually distinct, may be empirically related. For example, Lynch et al. (1988) noted the possibility that "experienced low accessibility causally influences perceived diagnosticity" (p. 172) and Herr, Kardes, and Kim (1991) noted that accessibility and diagnosticity are highly correlated. More recently, Meyers-Levy and Malaviya (1999) drew attention to the general underspecification of the antecedents of diagnosticity. Casting the ease-of-retrieval hypothesis (Schwarz et al. 1991) within the context of Feldman and Lynch's (1988) accessibility-diagnosticity model suggests that under certain conditions, accessibility plays a dual role in judgments. It allows a source of information to come to mind and is used as a proxy for the diagnosticity of the input, suggesting that the mere-accessibility of the input may be a necessary and sufficient condition for it to enter judgments.

We propose the mere-accessibility framework as a variant of the accessibility-diagnosticity framework for the domain of automatic inputs. The accessibility-diagnosticity framework is a useful model of how consumers make judgments in contexts where accessibility does not affect perceived diagnosticity, when consumers can both invest the effort to examine the diagnosticity of an input and are motivated to do so to improve judgment accuracy. These are situations where sufficiency thresholds to make an accurate judgment are high (cf. Chaiken, Liberman, and Eagly 1989). When these preconditions do not exist (when desired accuracy is not high, cognitive resources are unavailable to assess diagnosticity, and when the accessibility of the input affects its perceived diagnosticity), the risk of making an inaccurate judgment may not be high enough to involve the effortful process of judging the diagnosticity of an input for a judgment (see Kardes and Cronley 2000 for judgment goals where diagnosticity does not have to lead to accuracy). In such cases, a variant of the accessibility-diagnosticity model may more accurately describe consumer decision making. We propose the mere-accessibility framework as such a variant: If accessibility is informative, the phenomenological experience of accessibility will be used as a reasonable proxy for the diagnosticity of the input, and alternate inputs will be underutilized.

The mere-accessibility framework proposes that under conditions of low processing motivation, experienced ease-of-retrieval of positive information often (but not always) confers an impression that the positive information itself is relevant. When that information enters early in the process, it will be incorporated unless there is some cue that causes consumers to actively discount it. Because the fluency per-

ception is a very low-level process, it may be unlikely to be discounted for irrelevance unless consumers are forewarned of its contaminating effects. And since it enters early, its use will appear to be independent of the diagnosticity of other information subsequently made salient.

Thus, the mere-accessibility framework proposes that the use of accessibility as a source of information is contingent on the diagnosticity of alternate inputs, but only partially contingent on the perceived diagnosticity of the accessibility itself. This is because while the use of alternate inputs may be a controlled and conscious process, the use of ease-of-retrieval has an automatic component: people are not aware of using it as an input, do so unintentionally, are unable to stop its use once it has been activated, with its use neither demanding nor consuming cognitive resources (cf. Bargh 1989). Thus, they may continue to use such felt inaccessibility as a source of information, even if they consciously believe that it is not diagnostic for the judgment. On the other hand, the use of alternate inputs is more controllable and contingent on its perceived diagnosticity for a judgment. Therefore, while the accessibility-diagnosticity framework predicts the judgment formation process for domains where the use of inputs is controllable, a mere-accessibility framework may suffice to explain nonconscious consumer judgments when consumers are unaware of the influence of an input and are unable to control their use of it, and when effort-accuracy trade-offs lead to low sufficiency thresholds.

Across the four studies, we show that: (i) ease-of-retrieval is informative for consumer judgments (study 1); (ii) diagnostic alternative information sources counter the effect of ease-of-retrieval on related judgments (study 2); (iii) people are unaware of using ease-of-retrieval as a cue (studies 2 and 3); (iv) the use of ease-of-retrieval is uncontrollable in as much as if it has already been experienced at the time of making a judgment, the presence of diagnostic alternate information is less effective in countering its effect (study 3); and (v) the use of ease-of-retrieval is effortless as limiting cognitive resources leads to a reduction in the use of controllable inputs, but does not affect the use of the ease-of-retrieval cue (study 4).

The primary theoretical contribution of this article is to show that the ease-of-retrieval heuristic is an automatic input in judgments. We propose that for inputs that enter judgments in an automatic manner, a mere-accessibility framework is a plausible variant of the accessibility-diagnosticity model that better applies for controlled and consciously used inputs. We now describe the four experiments and then discuss the implications of our findings for the automaticity literature, the ease-of-retrieval cue, and the accessibility-diagnosticity framework.

STUDY 1: THE USE OF EASE-OF-RETRIEVAL AS AN INPUT IN JUDGMENTS

This study examines the effects of experienced ease of information retrieval on brand judgments when information content is controlled. Based on the manner in which ease-of-retrieval is informative in judgments (Raghubir and Menon 1998; Schwarz 1998; Schwarz et al. 1991; Wänke, Bohner, and Jurkowitsch 1997), we aim to show that brand judgments are less favorable the more difficult it is to recall attribute information. The baseline hypothesis tested is

H1: The easier it is to recall positive features of a product, the more favorable the evaluations, controlling for actual information available.

Method

Choice of Product Category. All the studies reported in this article used personal computers as the target category given their high usage rate among student participants. Pretests showed that personal computers are very common consumer durables owned and used by a student population, and one of their more expensive personal possessions.

Procedure. One hundred and thirty-three undergraduate students enrolled in an introductory marketing course participated in the experiment for partial course credit. Participants saw a one-page ad for Micron, a PC brand that 89% of the participants had not heard of. The ad listed 10 product features to control the information that participants had about the brand. Subsequent to exposure to the ad, participants completed a surprise recall task, followed by the dependent measure and the manipulation check. The length of the recall task (recall two vs. eight) was used to manipulate accessibility (cf. Raghubir and Menon 1998; Schwarz et al. 1991). Pretests showed that recalling two features was easy, while recalling eight was difficult.

Measures. The dependent variable used was the likelihood of recommending the brand of personal computer to a friend, elicited on a seven-point semantic-differential scale anchored at 1 = definitely will not and 7 = definitely will recommend. To ensure that the recall task was differentially easy/difficult, participants rated task difficulty on four scales anchored at not at all/very difficult, no/a lot of effort, no/a lot of time, and no/a lot of thought (cf. Menon et al. 1995). These measures were combined to form a composite Difficulty Index (Cronbach's $\alpha = 0.91$). This manipulation check was used in all the studies in this article.

Results

Manipulation Check. The manipulation worked as intended with participants in the recall-two condition rating the listing task as easier ($M = 3.67$) than those in the recall-eight condition ($M = 4.19$; $F(1, 131) = 4.35$, $p < .05$, $\eta = .18$).

Hypothesis Test. As predicted by the ease-of-retrieval hypothesis (hypothesis 1), judgments were more favorable in the recall-two versus recall-eight condition (M's = 4.33 vs. 3.27; $F(1, 131) = 17.52$, $p < .01$; $\eta = .34$; see fig. 1). Thus, a longer listing task that brought more features to

FIGURE 1

STUDY 1: THE BASIC EASE-OF-RETRIEVAL EFFECT
(HYPOTHESIS 1)
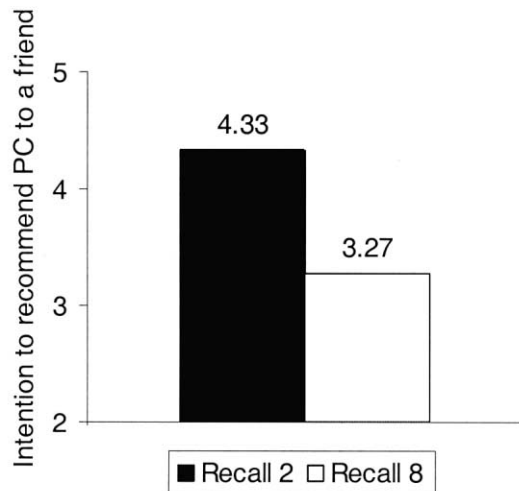
mind, but where the features were more difficult to recall, led to less favorable evaluations.

Discussion

Therefore, holding constant the content of the information respondents were exposed to, we demonstrated that the ease-of-retrieval affects brand evaluations in a stimuli-based task. The method we used has the advantages of being managerially relevant as a large number of judgments are based on advertising, while having the theoretical advantage of controlling information content by providing identical information to all individuals.

To verify the construct validity of the effects of ease-of-retrieval, two follow-up studies (available from the authors, but not reported in this article) manipulated accessibility using alternate methods that control for the length of the recall task and manipulate the ease of recalling information through contextual cues: the part-list cuing method (Alba and Chattopadhyay 1985) and by manipulating whether the number of features recalled is perceived to be a small or large number via the range of response alternatives presented subsequent to recall (based on Menon et al. 1995, 1997; Schwarz et al. 1985). Irrespective of how ease-of-retrieval was manipulated, the effects were similar: when people found a recall task more difficult, the more positive information they recalled, the less favorable their judgments.

Having found support for the baseline ease-of-retrieval hypothesis, study 2 examines whether ease-of-retrieval is used consciously because it is believed to be a diagnostic input.

STUDY 2: THE USE OF EASE-OF-RETRIEVAL AS A DIAGNOSTIC INPUT

Research on Schwarz et al.'s (1991) ease-of-retrieval cue has shown that the experienced accessibility of individual instances from memory percolates through to judgments presumably because it is misattributed to overall population size. In the paradigmatic task where ease-of-retrieval is manipulated via the length of the recall task, the more the items recalled, the more difficult the task. If judgments reflect the content of the information recalled, then the more positive items recalled, the more favorable judgments should be. However, if judgments reflect the experienced difficulty of retrieval, then the more items recalled, the less positive judgments should be. Accordingly, this research has been based on how discounting the informational value of the ease-of-retrieval cue through instructions that acknowledge task difficulty reverses the effects of ease-of-retrieval (Winkielman, Schwarz, and Belli 1998; see also review by Schwarz 1998). Feldman and Lynch's accessibility-diagnosticity model (1988) can account for the use of ease-of-retrieval as a source of information. Whereas accessibility is the ease with which information comes to mind (and is closely related to the experienced ease-of-retrieval), Feldman and Lynch (1988) define diagnosticity as the sufficiency of a retrieved input to arrive at a solution for the judgment task at hand, a construct akin to the informativeness of a cue (Schwarz et al. 1991) and the perceived reliability of a cue (Chaiken et al. 1989).

The theoretical question is: When will the ease-of-retrieval be perceived as informative? Whittlesea and Williams (1998, 2000) propose the discrepancy-attribution hypothesis, whereby the difference between the expected and the actual perceptual fluency makes the ease (or difficulty) with which information comes to mind informative. This implies accessibility should be particularly informative when its actual experience deviates from an expected baseline. In support of this, Raghubir and Menon (1998) showed that while inaccessibility of recalling AIDS-related behaviors was informative for judgments of one's own risk of AIDS, it did not affect judgments of others' risk level, a domain for which inaccessibility was uninformative.

In the context of consumer judgments about products like the ones we investigate in the current research, the baseline expectation is that post exposure to stimuli-based information (e.g., advertisements listing product features) product features would be highly accessible. Consequently, the more favorable product features that come to mind, the better the product is perceived to be. In such stimuli-based contexts where information is expected to be easily accessible, inaccessibility should be particularly informative, and accessibility should not.

Additionally, if accessibility is in itself diagnostic, an alternate source of information may not only substitute as a source of information that could be used to make judgments (as per the accessibility-diagnosticity model; Feldman and Lynch 1988), but may also be effective at discrediting the

diagnosticity of accessibility and reducing its effects on judgments (as per the accessibility-as-information hypothesis; Schwarz et al. 1991). In this study we provide consensus-based task difficulty information about whether other people found the two versus eight recall task either easy or difficult (see Chaiken et al. 1989 for a discussion of the consensus heuristic). Given the expectation that information should be easily accessible, consensus information that a task is easy, should not affect the informativeness of the phenomenological experience of ease-of-retrieval. In this situation, the ease-of-retrieval cue should have its effect on product judgments, and evaluations should be higher the easier the retrieval task. On the other hand, information that a task is difficult allows an alternate attribution for the inability to recall information to task contingencies (rather than inferences about the population of product attributes) and should undercut the diagnosticity of accessibility as an information source. Therefore, this should reverse the effect of ease-of-retrieval, with people basing their judgments more on the number of positive features recalled rather than on the difficulty of retrieval.

In sum, we propose that consensus information that a task is difficult will reverse the ease-of-retrieval effect and that information that the task is easy will replicate it.

> **H2:** Consensus information on task difficulty moderates the use of the ease-of-retrieval cue, such that:
>
> *a)* When the task is described as easy, the ease-of-retrieval effect specified in hypothesis 1 is replicated (i.e., judgments are more favorable when asked to recall two vs. eight features).
> *b)* When the task is described as difficult, the ease-of-retrieval effect specified in hypothesis 1 is reversed (i.e., judgments are less favorable when asked to recall two vs. eight features).

Method

Design. We used a 2 (length of recall task: recall two vs. eight features) × 2 (consensus information on task difficulty: easy vs. difficult) between-subjects full-factorial design. The first factor was manipulated as in study 1. The second factor was manipulated through initial instructions informing participants that a nationwide study conducted among other students like them revealed that the recall task they performed was considered either easy versus difficult. Ninety-two undergraduate students enrolled in an introductory marketing course took part in the experiment to complete a course requirement.

Measures. In all the remaining studies reported in this article, we used an Intention Index computed as an average of two measures: (*a*) intention to recommend to a friend elicited as in study 1 and (*b*) intention to purchase the PC elicited on a seven-point scale anchored at $1 =$ definitely will not buy and $7 =$ definitely will buy.

Additionally, two other measures were collected in this study and in subsequent studies. Participants rated how believable the consensus information was ($1 =$ not at all and $7 =$ very believable) and the extent to which they believed that the consensus information affected their beliefs of how difficult the task really was ($1 =$ did not affect at all and $7 =$ affected a lot). This latter measure was used to explore whether the use of information regarding the diagnosticity of accessibility was within or outside of conscious awareness. We elicited the Difficulty Index measures as in study 1. Other measures elicited to counter alternate explanations are described in the results section. In this article, all predicted contrasts are reported using one-tailed tests.

Results

Manipulation Checks. A 2×2 repeated measures ANOVA on the Difficulty Index (Cronbach's $\alpha = 0.87$) showed a marginal interaction effect ($F(1, 88) = 2.43$, $p = .13$), with an acceptable effect size for the recall task factor ($\eta = 0.12$). Overall, the task was rated as more difficult in the recall-eight ($M = 4.27$) versus recall-two condition ($M = 3.95$), but beliefs in task difficulty appear to be contaminated by consensus information provided: the recall task was perceived to be significantly more difficult in the recall-eight (vs. -two) condition when participants were informed that the task was difficult ($M = 4.63$ vs. 3.90; $F(1, 89) = 3.58$, $p < .05$), but not when they were told that the task was easy ($M = 3.87$ vs. 4.00; $F < 1$; see Discussion).

The length of a recall task, while a paradigmatic manipulation of ease-of-retrieval (Raghubir and Menon 1998; Schwarz et al. 1991; Wänke et al. 1997), may be criticized on the grounds that it confounds information content with accessibility: that is, if people are attempting to recall more favorable features, unfavorable features come unbidden to mind, and it is the enhanced accessibility of these unfavorable features rather than the inaccessibility of the favorable features that accounts for the effect. (Note the two unreported follow-up studies to study 1 that manipulated accessibility while keeping the length of the recall task constant suggest that this is not a problem.) In order to eliminate this alternative explanation, we elicited estimates of the number of positive, negative, and total features of a PC. A 2×2 ANOVA on the proportion of positive features showed a main effect of recall task ($F(1, 83) = 4.87$, $p < .05$), while one on the proportion of negative features indicated a null effect of recall ($F < 1$). This pattern attests to the internal validity of the ease-of-retrieval manipulation.

The consensus information was equally believable across conditions ($M = 4.37$, p's $> .15$).

Hypothesis Tests. Hypothesis 2 predicted an interaction between consensus information about task difficulty (easy vs. difficult) and length of the recall task (two vs. eight) on the Intention Index (Cronbach's $\alpha = .87$). A 2×2 ANOVA yielded a significant interaction ($F(1, 88) = 6.57$, $p < .05$), and no significant main effect (p's $> .10$). The pattern of the

means showed a crossover interaction (see fig. 2). When they were told the task was easy, the ease-of-retrieval effect was directionally (though not statistically significant) replicated with higher intentions in the recall-two ($M = 5.89$) versus the recall-eight condition ($M = 5.59$; contrast $F < 1$). But when participants were informed that the task was difficult, the ease-of-retrieval effect was reversed with judgments more favorable when participants recalled eight features ($M = 6.26$) versus two ($M = 5.30$; contrast $F(1, 88) = 8.03$, $p < .01$).

Exploring Awareness of Use of Information. We computed a correlation between the belief that the recall task had affected judgments with the judgment itself in the manner recommended by Wegener, Petty, and Dunn (1998). This correlation was nonsignificant ($r = -.04$, $p > .50$), a pattern consistent with unawareness of influence of an input on judgments. We conducted an additional analysis to examine whether individual self-explicated beliefs (based on median splits) moderated the results. This analysis revealed no interaction effects, a pattern consistent with an account of lack of awareness of a stimulus' influence on judgments. Note that the self-explicated belief measure may be error-laden. These results, while consistent with lack of awareness, are not definitive proof that ease-of-retrieval is used outside of awareness.

Discussion

This study demonstrated the moderation of the use of the ease-of-retrieval cue by consensus information about task difficulty such that it discredited the cue (and reversed its effects) when the unexpectedly difficult task was attributable to task contingencies. Note that the weak replication of the ease-of-retrieval effect in the condition where people are told that the task was easy may be due to the manipulation of the recall task being contaminated by the consensus information provided, as evidenced by the manipulation check data.

Preliminary evidence on the awareness measures suggests that participants do not believe that the information they were provided at the beginning of the recall task affected their judgments, suggesting that they are unaware of the effect of ease-of-retrieval on their judgments. When a cue is used outside of conscious awareness, it may have other automatic components including being uncontrollable (Bargh 1989). In the next study we examine whether the use of information accessibility as a source of information is controllable.

STUDY 3: THE UNCONTROLLABLE USE OF EASE-OF-RETRIEVAL

Prior research has documented that, under certain conditions, people continue to use an input in a judgment even when its informativeness has been discredited (Burnstein and Schul 1983; Schul and Burnstein 1985; Wyer et al. 1982). For example, in the Wyer et al. (1982) studies, participants' recall was biased toward information that was consistent with the information processing goal they had been given, suggesting that they encoded the material at the time it was being processed in terms of the construct that had been made salient at the time. Providing the goal after the information was processed did not have an effect. Using the belief-perseverance paradigm, and also manipulating the time at which information is provided, Schul and Burnstein (1985) showed that participants discounted cues (that were meant to be ignored) if they were made salient, but not if they were represented in an integrated manner in memory.

FIGURE 2

STUDY 2: PROVIDING CONSENSUS INFORMATION ABOUT TASK DIFFICULTY BEFORE RETRIEVAL UNDERCUTS EASE-OF-RETRIEVAL AS A CUE (HYPOTHESIS 2)
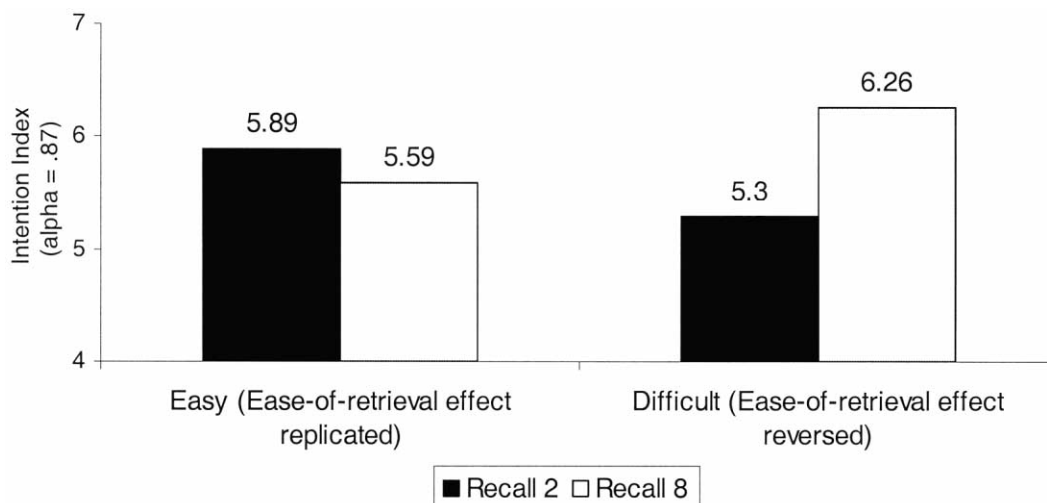
Harkins and Petty (1987) manipulated the timing of information provided to participants in order to test the extent to which they were able to discount the persuasiveness of information provided before in the light of information that they encountered later. (See also Johar and Simmons 2000 and Schul and Mazursky 1990 for other discounting effects.)

Wilson and Brekke (1994) define this set of effects as mental contamination, or the process by which a person has an unwanted response because of mental processing that is unconscious or uncontrollable. This recasts prior research on the inability to correct for the use of an input or an inadequate correction of such influences as automatic influences, characterized by their uncontrollability. Fitzsimons and Shiv (2001) applied this mental contamination model to understand why hypothetical questions affect behavior. They concluded that, when respondents were unaware of the biasing influence of a hypothetical question, they were unable to control for it. Increased elaboration of the biasing input enhanced rather than attenuated these effects. This view of representing biasing inputs that continue to affect judgments as uncontrollable is consistent with our approach.

Note that a mental contamination process is also consistent with a two-stage anchor-adjust process where the first source of information encountered affects judgments, even when it is not diagnostic of the task at hand particularly under conditions of low involvement. This is because people do not undertake the effortful process of actively discounting the information under low involvement scenarios, with a low sufficiency threshold (Chaiken et al. 1989), even if they later encounter a more diagnostic piece of information to use in their judgments. Such two-stage anchor-adjust processes are consistent with the automatic-controlled distinction with the starting anchor (e.g., ease-of-retrieval) used in an automatic manner but the subsequent adjustment being a more conscious and controlled process (Gilbert 1989; Gilbert et al. 1988; Raghubir and Krishna 1996; Raghubir and Srivastava 2002; Schneider and Shiffrin 1977; Shiffrin and Schneider 1977).

If information accessibility is used as a function of its diagnosticity, then reducing its diagnosticity relative to alternative sources of information should reduce its effect (Feldman and Lynch 1988). We propose that the timing of this information will moderate the impact of the discounting information. If the use of an input is uncontrollable, reducing its relative diagnosticity should be more effective if the perceived difficulty of recall has not been felt and incorporated into a judgment. In other words, once people have incorporated the ease-of-retrieval into judgments, manipulations aimed at discrediting it should be relatively ineffective. This is because people are either unaware of using accessibility as a source of information to make judgments, or even if they are aware, are unable to control their use of it, which are both aspects of an automatic process (Bargh 1989). On the other hand, if the cue is discounted prior to being felt, then it should not enter into the judgment (as in study 1; and Schwarz et al. 1991, study 3).

Relating the effects of timing and the discrediting of cues

to the issue of uncontrollability of an input in the current context, it is most plausible that the ease with which a product attribute is recalled will be stored with the product attributes recalled in an integrative sense. This should make discounting of that cue difficult unless it is not processed as informative at the time it is felt (Schul and Burnstein 1985). Thus, study 3 examines whether the timing of the consensus information affects the use of ease-of-retrieval as a cue. Based on the above arguments, if the use of ease-of-retrieval is uncontrollable, discrediting it after it has been experienced should be ineffective and lead to a replication of the ease-of-retrieval effect even in the presence of discounting information (reversing study 2 results). However, discrediting it prior to it being experienced should replicate study 2 results, reversing the ease-of-retrieval effect (Schwarz et al. 1991, study 3). Further, when consensus information does not serve a discrediting function (people are told the task is easy), it should not have an effect before or after ease-of-retrieval has been experienced, and the ease-of-retrieval effect should manifest. Thus:

H3: The timing of consensus information about task difficulty will moderate hypothesis 2:

a) When the task is described as easy, timing will not make a difference: the ease-of-retrieval effect specified in hypothesis 1 is replicated (i.e., judgments are more favorable when asked to recall two vs. eight features).

b) When the task is described as difficult, timing will moderate the ease-of-retrieval effect, such that when the information is provided:

  i) After the recall task (inaccessibility has been experienced before it is discounted), the ease-of-retrieval effect specified in hypothesis 1 is replicated even in the presence of consensus information (i.e., judgments are more favorable when asked to recall two vs. eight features).

  ii) Before the recall task (inaccessibility is discounted while being experienced), the ease-of-retrieval effect specified in hypothesis 1 is reversed in the presence of consensus information (i.e., judgments are less favorable when asked to recall two vs. eight features).

Method

We used a 2 (length of recall task: recall two vs. eight) × 2 (information about task difficulty: easy vs. difficult) × 2 (timing of feedback: before vs. after recall task) between-subjects design, and manipulated the first two factors in an identical manner to study 2. Timing was manipulated by informing participants that the task was easy/difficult prior to or after they had completed the recall task. The

measures used were identical to study 2. One hundred and five undergraduates enrolled in an introductory marketing course took part in the experiment to complete a course requirement. Data of two respondents was missing on some measures, leading to a usable sample of 103.

Results

Manipulation Checks. A $2 \times 2 \times 2$ ANOVA on the Difficulty Index (Cronbach's $\alpha = .88$), yielded a main effect of accessibility ($F(1, 96) = 14.40$, $p < .01$, $\eta = .34$). Recalling eight attributes was perceived to be more difficult ($M = 4.23$) than recalling two attributes ($M = 3.29$). No other effect was significant. The average believability rating was 4.12 (on a seven-point scale).

Hypothesis Tests. Means are presented graphically in figure 3. As predicted, a $2 \times 2 \times 2$ ANOVA on the Intention Index (Cronbach's $\alpha = .77$) revealed a significant three-way interaction ($F(1, 96) = 7.25$, $p < .01$), which allows us to proceed with testing the specific contrasts predicted in hypothesis 3a and 3b. The overall ANOVA also revealed a significant interaction between the length of the recall task with consensus information ($F(1, 96) = 11.11$, $p < .01$) and with timing of consensus information ($F(1, 96) = 7.25$, $p < .01$).

Hypothesis 3a predicted that the ease-of-retrieval effect would manifest when participants are told that the task is easy and that timing would not make a difference. The Intention Index was higher in the recall-two (vs. recall-eight) task, regardless of whether the consensus information was provided before the recall task ($M_2 = 5.70$ vs. $M_8 = 4.71$; contrast $F(1, 100) = 4.33$, $p < .05$) or after ($M_2 = 5.96$ vs. $M_8 = 4.86$; contrast $F(1, 100) = 6.20$, $p < .05$; see fig. 3).

Hypothesis 3b predicted a crossover interaction. The ease-of-retrieval effect should replicate when consensus information is provided after the recall task, but it should reverse when consensus information is provided before. The pattern of means indicated that this is indeed the case. When consensus information was provided after the recall task, the Intention Index was higher when the task was to recall two features ($M = 5.61$) versus eight features ($M = 4.78$; contrast $F(1, 100) = 3.59$, $p < .05$). On the other hand, when this consensus information was provided before the recall task was experienced, the Intention Index was lower when the task was to recall two features ($M = 4.35$) versus eight features ($M = 5.95$; contrast $F(1, 100) = 12.33$, $p < .01$). These results support hypothesis 3.

Awareness of Use of Information. The same $2 \times 2 \times 2$ ANOVA incorporating the belief measure ($M = 3.54$) as a covariate, showed a null effect of the covariate ($F < 1$ for both measures). Incorporating awareness as a fourth independent variable based on a median split at 4, showed that awareness was not involved in any significant main or interaction effects; a pattern consistent with the lack of awareness of the use of accessibility as a sources of information.

Discussion

In summary, the data show that the once the ease-of-retrieval was experienced, discounting it as a cue was ineffective: despite information that the task was difficult, when this information was provided after the ease-of-retrieval had entered judgments, the ease-of-retrieval effect replicated with judgments more favorable in the recall-two versus -eight condition. This continued use of ease-of-retrieval information in the presence of discounting information, suggests that its use is uncontrollable, a second aspect of automaticity (Bargh

FIGURE 3

STUDY 3: PROVIDING CONSENSUS INFORMATION AFTER RETRIEVAL DOES NOT AFFECT USE OF EASE-OF-RETRIEVAL AS A CUE (HYPOTHESIS 3)
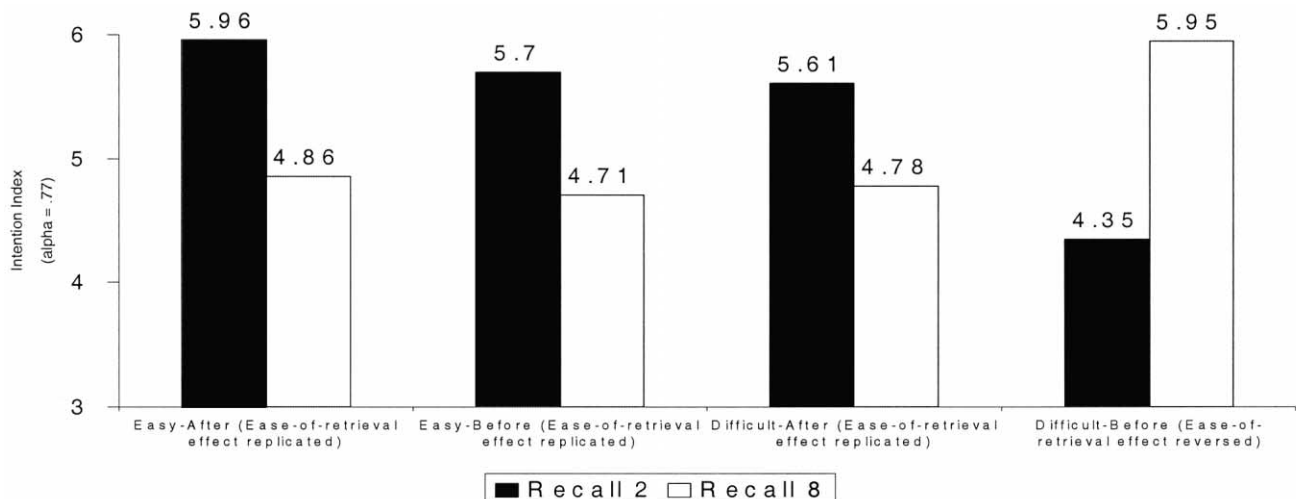
1989). (Another study, conducted for reasons of convergent validity but not reported in this article, manipulated information about task difficulty using Schwarz et al.'s 1991, study 3, manipulation of playing classical music during the experiment, and informing participants' that the music either enhanced or detracted from the recall task. Similar results were obtained with this manipulation, testifying to the reliability of the results. Details are available from the authors.)

The pattern is consistent with mental contamination (Wilson and Brekke 1994) due to the automatic influences of inputs that enter judgments outside awareness. This is an important finding as the theoretical underpinnings of the process by which information accessibility effects manifest have not yet been determined in the literature. Our results suggest that while a source of information that is used in a conscious and controllable manner may be subjected to the test of diagnosticity prior to being applied toward a judgment, an automatic source of information may merely have to be easily accessible to be used in a judgment, irrespective of its perceived diagnosticity: the mere-accessibility hypothesis.

STUDY 4: THE EFFORTLESS USE OF EASE-OF-RETRIEVAL

Study 1 demonstrated the informative function of the ease-of-retrieval cue. In study 2 we showed how the ease-of-retrieval cue could be reversed if it was discredited. However, in study 3 we showed that the timing of such discrediting was key. Unless the cue was discredited prior to its being experienced, discrediting was ineffective and the ease-of-retrieval effect replicated even when information discounting its informativeness was present. In study 4, we now demonstrate that even when the discrediting information is provided prior to ease-of-retrieval being experienced, it may be ineffective unless there are cognitive resources available to process it. When resources are not available, the ease-of-retrieval effect replicates, as processing discounting information requires cognitive resources, but processing ease-of-retrieval does not. As such, this is evidence for the effortless use of ease-of-retrieval as a cue in judgments.

If a source of information is used in an automatic manner alongside an alternate source of information that is used in a controllable manner, the cue used automatically would have a greater effect when cognitive resources were constrained than when they were abundantly available (e.g., Bargh and Thein 1985; Gilbert et al. 1988). This is because when there is cognitive load, the source of information that is automatically processed will have a proportionately greater impact on judgments as many of the conscious, effort-requiring adjustments will not be possible (Bargh 1989; Bargh and Thein 1985; Gilbert 1989). Thus, we test the following hypothesis:

H4: When cognitive load is imposed, the ease-of-retrieval effect specified in hypothesis 1 is replicated, regardless of whether consensus information is provided or not.

Study 2 results show that the use of consensus information is controllable. Such information requires resources to process. Therefore, in the presence of cognitive impairment, such task difficulty information should not be assimilated into a judgment; instead, the effects of any input that is effortless to use should manifest. In other words, under conditions of cognitive load, only a cue that is used effortlessly will continue to be used. In such conditions, even if information discounting the ease-of-retrieval heuristic is provided, inability to process this information will lead to the ease-of-retrieval effect. On the other hand, when resources are unconstrained, then providing information that discounts the use of ease-of-retrieval will be effective, and the ease-of-retrieval effect will reverse. Consensus information will only be used when cognitive resources are available. In its absence, the low effort requiring ease-of-retrieval heuristic will dominate. We use a combination of Gilbert's load paradigm with the method of opposition recommended by Jacoby (1991) to show that debiasing (i.e., conditions where information about the task being difficult successfully reversed the ease-of-retrieval effect) is more effective in a control condition where resources are unconstrained as compared to in a load condition where they are inadequate. In this latter condition, the ease-of-retrieval effect (hypothesis 1) should replicate. Thus:

H5: When consensus information is provided before the recall task, its use in brand evaluations will be moderated by whether or not cognitive load is imposed on the judgment task, such that:

a) Under cognitive load, the ease-of-retrieval effect specified in hypothesis 1 is replicated.

b) When no cognitive load is imposed, the ease-of-retrieval effect is reversed. Note that hypothesis 5*b* is a replication of hypothesis 2*b* and hypothesis 3*b*i.
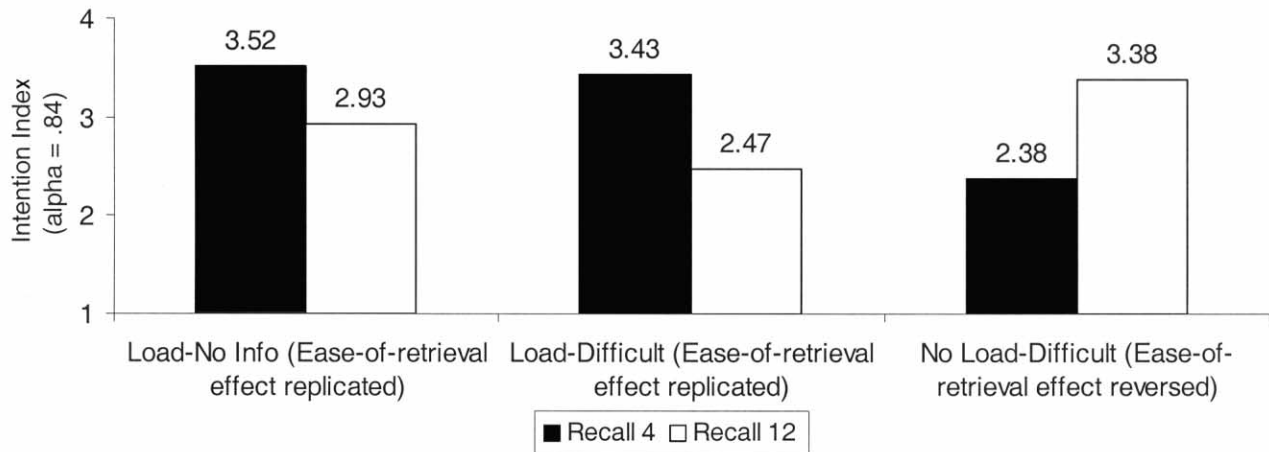
Method

Design. We used a 2 (length of recall task: recall four vs. 12 features) × 3 (task contingencies: load-no information, load-consensus information, no load-consensus information) between-subjects design. The consensus information was provided before the recall task. Study participants were told that other people like them had found the recall task difficult.

Procedure. Ninety-seven undergraduates enrolled in introductory marketing classes participated for partial course credit. Small groups of six to 20 participants per group were randomly assigned to experimental conditions. To impose cognitive load, we showed an episode of the television quiz show *The Weakest Link* and asked participants to focus on the magazine they were reading and not on the show. Participants in the no load conditions were not shown the TV show.

Participants were shown an ad featuring a PC brand called

STUDY 4: COGNITIVE LOAD INHIBITS USE OF CONSENSUS INFORMATION PROVIDED BEFORE BUT NOT THE USE OF
EASE-OF-RETRIEVAL AS A CUE (HYPOTHESES 4–5)

Results

Manipulation Checks. A 2 (length of recall task) × 3 (task contingencies) ANOVA on the Difficulty Index ($\alpha = .90$) yielded a significant main effect of length of recall task ($F(1, 96) = 3.18$, $p < .05$, $\eta = .18$) such that recalling four features was perceived as easier ($M = 4.09$) than recalling 12 ($M = 4.67$). The main effect of cognitive load was also significant ($F(2, 95) = 3.32$, $p < .05$), with the recall task in the no-load conditions being rated easier ($M = 3.79$) than the same task in the load conditions ($M = 4.62$; $\eta = .26$). The interaction was not significant.

A 3 × 2 ANOVA on awareness of whether the recall task affected product evaluations, showed no significant effects ($M = 4.32$), as per earlier studies. Finally, 3 × 2 ANOVAs on motivation and expertise showed no significant effects (F's < 1.0).

Hypotheses Tests. For hypothesis 4 to be supported, a 2 (length of recall task) × 2 (consensus information) ANOVA subdesign on the Intention Index (Cronbach's $\alpha = .84$) should yield a significant main effect, with the index being higher in the recall-four versus -12 condition. A 2 × 2 ANOVA revealed a significant main effect of length of recall task ($F(1, 68) = 6.54$, $p < .05$), with other effects being nonsignificant. As predicted, in the condition where consensus information was not provided, the Intention

Index was higher in the recall-four condition ($M = 3.52$) versus in the recall-12 condition ($M = 2.93$; contrast $F(1, 68) = 2.36$, $p < .05$), similar to when consensus information was provided ($M_2 = 3.43$ vs. $M_8 = 2.47$; contrast $F(1, 68) = 4.29$, $p < .05$; cell means are graphically presented in fig. 4). Results, therefore, support hypothesis 4.

In support of hypothesis 5, a 2 (length of recall task) × 2 (cognitive load) ANOVA subdesign on the Intention Index should yield a significant interaction, with the index being higher in the recall-four versus -12 task when cognitive load is present, and vice versa in the cognitive load absent condition. An ANOVA reveals that this was indeed the case. The interaction was significant ($F(1, 50) = 6.59$, $p < .05$), with two nonsignificant main effects (F's < 1.0). As predicted in hypothesis 5a, the ease-of-retrieval effect was replicated when cognitive load was imposed such that the Intention Index was higher in the recall-four condition ($M = 3.43$) versus in the recall-12 condition ($M = 2.47$; contrast $F(1, 50) = 3.39$, $p < .05$). As predicted in hypothesis 5b, this effect was reversed when there was no cognitive load ($M_2 = 2.38$ vs. $M_8 = 3.38$; contrast $F(1, 50) = 3.22$, $p < .05$; see fig. 4 for cell means).

Discussion

Study 4 indicates that whether or not the participants were cognitively impaired had no effect on the outcome variables: when cognitive constraints were imposed, the ease-of-retrieval effect emerged, even when discounting information had been provided, and done so prior to experiencing recall difficulty (as in study 2). (Another study, not reported in this article, showed similar results by manipulating cognitive load by asking participants to concentrate on the TV show they were shown, rather than the magazine they were reading. Results are available from the authors.) These results

Micron (as in study 1), model number NV40x, listing 18 features (following developments in the computer industry during the course of this research), priced at $2,759.00 with the slogan, "Delivers a powerful computing experience in an unprecedented space-saving and convenient design." The length of the recall task was accordingly updated to retrieve four or 12 features. Measures were the same as earlier studies.

speak directly to the third aspect of automaticity of the use of ease-of-retrieval: its effortlessness.

GENERAL DISCUSSION

The four studies in this article systematically investigated the use of the experienced ease-of-retrieval of information, as a function of (i) the presence of an alternate source of information (consensus information about task difficulty); (ii) the diagnosticity of the alternate source of information (whether the information described the task as easy vs. difficult, under conditions where it was expected to be easy); (iii) the timing of such information; and (iv) the presence of cognitive load. Attesting to the automaticity of the use of ease-of-retrieval as a cue in judgments, we showed that its use was based on its mere presence if it had already been experienced. Information discounting its use was ineffective if such information was received after ease-of-retrieval had been incorporated into judgments (study 3). It was also ineffective when it was received prior to ease-of-retrieval being experienced, but under conditions of cognitive load that inhibited its being consciously used to discount the ease-of-retrieval cue (study 4). This article contributes to the literature on the ease-of-retrieval effects by showing conditions when ease-of-retrieval will obtain and when it will be reversed. We add to the literature on automaticity by identifying that the ease-of-retrieval is an automatic cue, and propose the mere-accessibility model as a variant to the accessibility-diagnosticity model for inputs that are automatically processed.

Implications for the Ease-of-Retrieval Cue

In study 2, we pitted consensus information as an alternative source of information that people could use to make their judgments rather than using their own experienced ease/difficulty of recall, as well as use to discredit the informativeness of their own experienced ease-of-recall. While results point to the manner in which consensus information undercuts the use of the ease-of-retrieval cue, they can also be interpreted within the context of when consensus information will or will not be used. Results demonstrate that when ease-of-retrieval is not diagnostic (recall-two condition), consensus information has a direct effect: people believe that if others found the task difficult, it is not a good PC. But when ease-of-retrieval is diagnostic (recall-eight condition), consensus information worked by undercutting its diagnosticity. Consensus information, rather than exerting an effect in and of itself, worked through its implications for task difficulty, discrediting the diagnosticity of the felt inaccessibility of information.

While these results are consistent with the general assumptions of Schwarz et al. (1991) regarding the diagnosticity of the accessibility of information, the pattern of results is different in some important ways. In Schwarz et al.'s scenario, consensus information allowed for the attribution of felt inaccessibility and, therefore, lessened or exacerbated its effects through changing the perceived diagnosticity of

experienced inaccessibility. In the current scenario, however, consensus information was used as a source of information in and of itself. This is because in the domain of product judgments with which a subject may have limited experience, consensus information may be more diagnostic than one's experienced ease-of-recall as a source of information (see Chaiken et al. 1989 for a discussion on consensus heuristic). Our investigation allowed us to identify whether the ease-of-retrieval is used because it is perceived to be diagnostic (in which case discrediting the diagnosticity should reduce its effects) or purely because it is accessible, irrespective of its diagnosticity. Our results support the latter conclusion.

This research examined contexts where information inaccessibility was more informative than accessibility due to the expectation that information should come to mind easily. Note that it is the divergence between the expectation of accessibility and the actual experience of it that makes accessibility (or lack thereof) informative (Whittlesea and Williams 1998, 2000). In contexts that are memory-based rather than stimuli-based, for example, recall of a historical event, a distant product experience, or an infrequent one, the baseline expectation may be that the episode would be inaccessible. In such contexts, the accessibility, rather than the inaccessibility of information may be particularly informative. The moderating role of stimuli-based versus memory-based product judgments as a function of the recency and frequency of episodic behavior, on the relative diagnosticity of accessibility versus inaccessibility, is worth investigating further.

There is evidence that increasing accuracy motivation (Aarts and Dijksterhuis 1999) and personal relevance (Rothman and Schwarz 1998) ameliorates the use of ease-of-retrieval as a cue in judgments. It is an open question for future research as to whether increasing the sufficiency threshold of accuracy in a judgment (cf. Chaiken et al. 1989) will increase the controllability of the use of the ease-of-retrieval heuristic. It is plausible that the timing manipulation of task difficulty was effective at moderating the use of ease-of-retrieval as a cue because participants were not motivated to make highly accurate judgments. They may have stopped processing diagnostic information encountered later (the consensus information about task difficulty), because they had already received adequate information to make a judgment. That is, input A (task difficulty information) was used in the judgment as consumers encountered it first, as opposed to input B (accessibility of information). However, the use of these inputs switched if consumers encountered them in the opposite sequence (i.e., B followed by A), implying that the "after" conditions used in study 3 may be a function of the sequence of inputs encountered—an anchor-adjust with diagnosticity thresholds as described earlier. Note, however, that in study 4, the consensus information about task difficulty was provided prior to recall difficulty being experienced: but under conditions of cognitive load, recall difficulty entered into judgments, but information about task difficulty did not. However, if low sufficiency thresholds

contribute to the uncontrollability of the use of the ease-of-retrieval as a heuristic cue, then increasing personal relevance should be effective at getting participants to actively discount it. This would be interesting for future research, as it would also uncover the antecedents of why cues are used in an uncontrollable fashion.

Implications for the Automaticity Literature

Study 2 showed that participants did not believe that the experienced ease/difficulty of recalling information affected their judgments. Study 3 found that the inaccessibility of information in memory is an uncontrollable input, such that once it has been experienced, it exerts an influence on judgments. We confirmed the effortlessness of this use by manipulating the availability of cognitive resources in study 4. Bargh (1989) proposes that "attention, awareness, intention, and control do not necessarily occur together in an all-or-none fashion. They are to some extent independent qualities that may appear in various combinations" (p. 6). We reported evidence consistent with unawareness of the use of accessibility as a source of information, its uncontrollability, and its effortlessness: three key aspects of the automaticity of a process. However, our evidence is much stronger for the claims of uncontrollability and effortlessness than it is for lack of awareness. Future research could systematically examine the issue of awareness of the cue itself vis-à-vis the awareness of the influence of the cue.

Further, we would like to note that researchers that adopt a very strict definition of automaticity (e.g., all four of Bargh's criteria for assessing automaticity must be met) argue that some perceptual processes and no cognitive processes are truly automatic. Many heuristics are used relatively automatically with relatively little effort. For example, Devine (1989) argued that stereotypes are heuristics that are used automatically, but Gilbert and Hixon (1991) showed that some cognitive resources are needed to use stereotypes as heuristics. If a sufficiently high cognitive load is imposed, many phenomena that are thought to be automatic are shown to be partially or relatively automatic.

Implications for the Accessibility-Diagnosticity Framework

Feldman and Lynch's (1988) framework predicts that "an earlier response will be used as an input to a subsequent response if the former is accessible and if it is perceived to be more diagnostic than other accessible inputs" (p. 431). Building on the work of Schwarz et al. (1991), we suggest that the accessibility of information is itself a diagnostic cue that affects the manner in which the content of the retrieved information affects related judgments. This suggests that accessibility of information may make the content of information more or less diagnostic. In such conditions, particularly under conditions where people are unwilling or unable to undertake the effortful task of assessing diagnosticity, we propose that an input may merely have to be accessible to enter into judgments. As such, we propose the mere-accessibility framework as a variant of the accessibility-diagnosticity framework for automatic inputs.

[*David Glen Mick served as editor and Frank R. Kardes served as associate editor for this article.*]

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