The Use of Concurrent Disclosures to Correct Invalid Inferences

GITA VENKATARAMANI JOHAR
CAROLYN J. SIMMONS*

In four experiments we examine the ability of simple concurrent disclosures to correct invalid inferences about brand quality based on advertising claims. We ensure that the disclosure is always encoded, yet we find that it is utilized to correct invalid inferences only under high-capacity conditions. Across the experiments, cognitive capacity is operationalized as opportunity to process (time), ability (explicitness of disclosure), and motivation (accuracy incentive). Two experiments use open-ended brand-claim recall and cognitive responses to establish that elaboration on the qualified claim and disclosure mediates its utilization in updating quality judgments. Given an impression-formation goal, such elaboration can occur on-line at the time of processing brand information or at the time of judgment, provided that the disclosure is internally or externally available. Practical strategies for facilitating the use of disclosures to correct inference errors are offered.

> In 1997, the R. J. Reynolds Tobacco Company settled on "No Bull" as an advertising slogan for its Winston cigarettes, which it said were 100 percent tobacco with no additives. The Federal Trade Commission, however, detected at least a little confusion among consumers and announced yesterday that the company, a unit of the RJR Nabisco Holdings Corporation, would start including disclaimers with its Winston advertising. The disclaimers, an RJR spokeswoman said, will read, "No additives in , our tobacco does not mean a safer cigarette." (*New York Times,* March 4, 1999)

Will the action taken by the Federal Trade Commission (FTC) have its intended effect? Will consumers encode the disclaimer and utilize it to correct their invalid inferences about the safety of Winston cigarettes? The FTC mandated that the disclosure must appear in a rectangular box 40 percent the size of the surgeon general's cigarette health warning and in a clear and prominent location. We contend that this mandate may increase the salience of the disclosure and hence ensure that consumers encode it. Yet, even if the disclosure is encoded, it may not be used to update invalid safety inferences, rendering the settlement ineffective.

The goal of most disclosures is to facilitate an accurate global judgment or inference–for example, overall product safety or quality. To achieve this goal, the disclosure may explicitly mention the dimension on which the global judgment is made, as in the above example. Alternatively, the disclosure may focus on specific beliefs that are used as input to the global judgment. For example, in an attempt to influence global judgments of drug safety and suitability, the Food and Drug Administration (FDA) requires advertising to include disclosures of side effects. The FDA also requires disclosure of related nutrients when claims concerning fiber, saturated fat, or cholesterol appear on food labels so as to influence global judgments regarding the health value of foods. Similarly, in order to influence global judgments of safety, cigarette ads are required to contain warnings regarding specific health hazards.

Because early research on disclosures (e.g., nutritional labeling) showed that disclosures were not used much by consumers in global judgments or behavioral decision making (Andreasen 1991), there has been an increasing emphasis on mandating disclosure-type size and placement in an attempt to facilitate processing of the disclosure. Examples include the FTC's settlement with Winston cigarettes, the commission's rules regarding when and how the cholesterol content of eggs must be disclosed in various forms of advertising (FTC 1994; see also Wilkie 1987), and the FDA requirement that fat content be disclosed in immediate proximity to a cholesterol claim. While such strategies seem

*Gita Venkataramani Johar is associate professor of marketing at Columbia University. Carolyn J. Simmons is assistant professor of marketing at Lehigh University. Authors' names are in alphabetical order, as both contributed equally to this article. The authors thank Michel Pham for his comments, Dale Falcinelli and Bill Sweeny for their help with data collection, and the editor, associate editor, and reviewers for their guidance. This research was supported by funding from the Graduate School of Business, Columbia University, and from the Department of Business and the Office of Research and Sponsored Programs, Lehigh University. Please address correspondence to Gita Venkataramani Johar, Graduate School of Business, Columbia University, New York, NY 10027; E-mail: gvj1@columbia.edu.

likely to increase the probability of noticing and even encoding the disclosure, there is evidence that encoding does not ensure use. Failure to use disclosures has been observed when the disclosure has been noticed and read (Friedmann 1988) and even successfully encoded (Stewart and Martin 1994).

Further, there is reason to question whether other such "obvious" strategies for encouraging disclosure use are likely to be effective. For example, Pechmann (1996) found that even a disclosure that explicitly corrected an erroneous inference about overall price superiority drawn from favorable price comparisons for a limited set of offerings (rate comparisons do not refer to)–similar to the explicit correction regarding product safety required in the Winston case–was ineffective in preventing or correcting these inferences. In contrast, Moorman (1990) found that utilization of nutrition information on package labels can be facilitated by providing explicit information about the negative consequences of excessive nutrient consumption and specific recommendations for reducing risks from consumption.

In four experiments we examine the conditions under which concurrent disclosures (as opposed to after-the-fact corrective advertising examined by Johar [1996]) are used in global judgments, specifically, inferences about brand quality. We examine disclosures that address specific beliefs as well as disclosures that explicitly address the global quality judgment. We contend that limited use of disclosures by consumers results from a failure by public policy makers to effectively distinguish between encoding and use of information. Efforts to ensure encoding (e.g., font size) are not misplaced; for the disclosure to be utilized, it must be encoded. Even if it is not separately encoded and stored in long-term memory, the disclosure must be encoded in order to be integrated. However, encoding alone is not sufficient for use. Below, we develop a theoretical framework that examines conditions under which encoded disclosures are likely to be used.

THEORETICAL FRAMEWORK

Based on the information integration literature (Hogarth and Einhorn 1992; Kruglanski and Freund 1983), we suggest that adequate levels of elaboration on the disclosure are required to facilitate appropriate integration of the disclosure into judgments. Such elaboration is likely, given processing capacity (Petty and Cacioppo 1986), which in turn depends on ability, motivation, and opportunity (MacInnis and Jaworski 1989; MacInnis, Moorman, and Jaworski 1991). *Ability* refers to a consumer's "skill or proficiency in interpreting brand information" (MacInnis and Jaworski 1989, p. 7) and can be manipulated by making it easy versus difficult for consumers to interpret information (e.g., explicit vs. implicit brand claims). *Motivation* is defined as the desire to process brand information and reach a valid conclusion and can be manipulated using incentives for accurate judgments. *Opportunity* is defined as the extent to which other processing demands or a limited processing time affect attention to brand information. As depicted in Figure 1, we believe that ability, motivation, and opportunity determine whether consumers who have encoded corrective disclosures will utilize them in making brand judgments.

We also distinguish between two stages at which the use of disclosures may occur, namely, at the time of encoding brand information and at the time of judging brand quality. If an impression formation goal is in place at the time of encoding and consumers have sufficient capacity, then they will elaborate on the disclosure and utilize it in forming their on-line brand evaluations. However, if these conditions do not hold, then consumers will utilize the disclosure at the time of judgment only if they have sufficient processing capacity and can retrieve the disclosure from memory or from the external environment. Elaboration on the disclosure is likely to be similar in both stages. Consumers simply need to be motivated and able to elaborate on the disclosure either at the time of encoding or at the time of judgment in order to integrate it into their judgments.

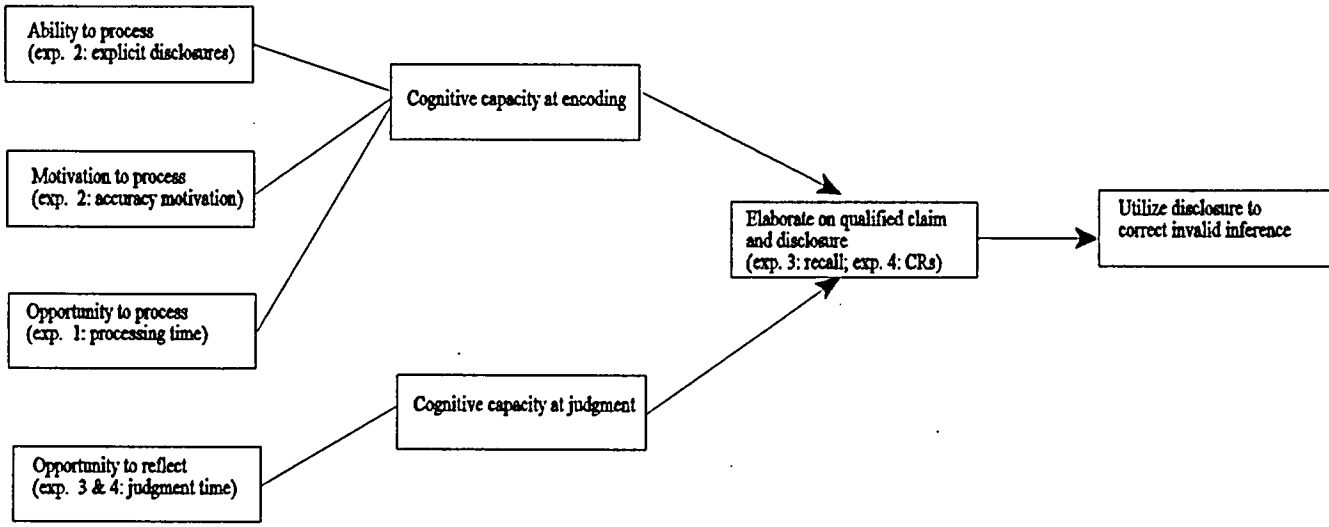
Finally, we recognize that one reason that global judgments resist the incorporation of disclosures may be inherent in the situations in which disclosures are most needed. Disclosures are deemed necessary when a misinterpretation is otherwise likely. Often, misinterpretation may be likely because some brand information is associated with a highly accessible inference rule; hence, even concurrent disclosures may be used after the fact, that is, after the inference is made. For example, if length of warranty is strongly believed to be a good predictor of quality, a positive inference about brand quality may be intrinsic in the interpretation of warranty length. Hence, a disclosure of limitations on the warranty may function as a correction rather than an input to the quality inference.

To the extent that this situation is common, research on the correction of beliefs is also relevant to our theoretical framework. A variety of research shows that people tend to persevere in their beliefs despite information that discredits the belief (Anderson 1983; Ross, Lepper, and Hubbard 1975). It is clear, however, that correction of beliefs, even those formed without awareness and intention, does sometimes occur (see Petty and Wegener [1993] and Wilson and Brekke [1994] for reviews).

As is the case in the straightforward use of information, processing capacity is also implicated in the use of information to correct previous inferences. For example, Gilbert and his colleagues (Gilbert 1989; Gilbert, Pelham, and Krull 1988) have demonstrated in a number of domains that people make spontaneous dispositional inferences when they observe behavior (i.e., they ascribe behavior to the actor's internal traits) and fail to correct for these inferences using situational information if their cognitive capacity is limited. One study showed that observation of behavior (e.g., fidgeting) leads to spontaneous trait inferences (e.g., "she is an anxious person"), which are corrected in the face of "discrediting information" (e.g., the fidgeting is in response to questions about sexual fantasies), but only if processing capacity is high (see Gilbert [1989] for a review). Drawing on these findings, Gilbert suggests that the judgment pro-

FIGURE 1

FRAMEWORK FOR UTILIZATION OF ENCODED DISCLOSURES TO CORRECT INVALID INFERENCES



cess consists of three sequential processes: categorization of a behavior, characterization of the behavior in terms of its implications, and correction of this initial characterization by utilizing information on situational constraints that may have caused the action. Correction is considered to be more effortful than the other two processes, which occur automatically. Thus, anything that reduces resources available to process information inhibits the correction phase but not the earlier phases. Gilbert's results cannot be accounted for by subjects' failure to encode the discrediting information under low capacity; all subjects can accurately report the discrediting information. Rather, capacity moderates the use of successfully encoded discrediting information. A series of studies using both language-based assertions and iconic propositions shows similar effects (Gilbert, Krull, and Malone 1990; Gilbert, Tafarodi, and Malone 1993). Similar findings have been reported in the literature on context effects (Martin and Achee 1992; Martin, Seta, and Crelia 1990; Meyers-Levy and Sternthal 1993; Meyers-Levy and Tybout 1997).

Therefore, our basic theoretical proposition is simply that corrective disclosures are more likely to be integrated into global quality judgments or inferences when consumers elaborate on the disclosure and its implications prior to making brand judgments. Any factor that influences the ability to interpret the disclosure (e.g., disclosures that explicitly rather than implicitly correct the global quality judgment), motivation to use it (e.g., accuracy motivation), or opportunity to do so (e.g., time pressure) will influence the likelihood that the disclosure will be used.

The ability, motivation, and opportunity model has been shown to predict elaboration of information in a variety of situations (MacInnis et al. 1991), as well as to predict the correction of inferences based on discrediting information (e.g., Gilbert 1989). However, our work makes a number of unique contributions. First, we extend previous work examining the utility of corrective disclosures (e.g., Pechmann 1996) by identifying factors that moderate disclosure use. Second, we extend prior research on the processing of ad claim qualifications (e.g., Johar 1995) by differentiating between the encoding versus utilization of information in judgments. This distinction is important because the recent direction of public policy mandates has been to facilitate attention and encoding. Third, in contrast to previous work in the marketing literature (e.g., Schul and Mazursky 1990), we examine the updating of inferred quality beliefs rather than of externally presented information. Inferred beliefs are important because they are often believed to be asserted (Harris, Dubitsky, and Bruno 1983) and may be accorded more credibility because of the cognitive operations performed on them prior to storage (Alba 1984). The sparse research on inferred beliefs has focused on specific dimensions (e.g., price; see Pechmann 1996) and has not studied global dimensions such as quality, which summarize many specific product attributes and which are often more proximal to choice. Fourth, our investigation focuses on inferences that are based on highly accessible inference rules. Because such inferences are not deliberative, they consume little capacity and are therefore likely to be drawn even when capacity is low. Marketers tend to emphasize attributes associated with highly accessible inference rules because they succinctly communicate brand quality or other important characteristics; hence, we believe that such inferences are representative of the kinds of judgments that are intended to be corrected by many disclosures.

We test our predictions in four experiments in which we create conditions under which an inference about quality is likely to be made (e.g., warranty is the longest in the category) and examine the impact of a simple concurrent disclosure on this quality judgment. The disclosure provides

corrective input to the inference (e.g., warranty covers parts only; all other brands cover parts and labor) and hence should affect the quality judgment. By ensuring that the corrective disclosure is encoded, we limit our investigation to the use of the disclosure in making the quality judgment. In the first two experiments we systematically vary processing capacity via manipulations of ability, motivation, and opportunity (at encoding), and show that the disclosure is used only when capacity is high. The third and fourth experiments reveal that processing capacity at judgment, manipulated in terms of opportunity to elaborate on the disclosure, can overcome capacity deficits at encoding and lead to correction and that elaboration on the disclosure is the process that mediates this effect.

EXPERIMENT 1

The primary goal of this experiment is to test the proposition that disclosure use is a function of opportunity to process. To separate disclosure encoding from disclosure use, we ensure encoding by instructing all subjects to learn the disclosure; the success of this procedure is verified by disclosure recall data. We manipulate opportunity to process by varying the time available at encoding; time at judgment is always severely restricted to ensure that we test disclosure utilization at the time of encoding.

A secondary goal is to examine whether simple disclosure placement strategies can increase disclosure use. The FDA nutrition guidelines require placing disclosures in close proximity to related claims. We extend the idea of disclosure proximity to examine whether proximal disclosure placements that encourage reading of the disclosure prior to the claim, integrated with the claim, or subsequent to the claim have any impact on disclosure use. Even if disclosure placements affect the time of reading the disclosure, we expect disclosure placement to have no impact on the inferences we examine here (i.e., inferences that are based on highly accessible inference rules). This expectation is consistent with the finding that presenting discrediting information in advance is not always effective in blocking the formation of false beliefs (Wegner, Coulton, and Wenzlaff 1985). That is, we expect the inferences to be made regardless of when the disclosure is read and to be corrected only if opportunity is high.

Overview

Subjects viewed single-lens reflex (SLR) camera descriptions of an unnamed brand that included information about three attributes (warranty; battery life; and features such as film handling, screen displays, and flash), one of which—a long warranty—was verified via pretest to initiate an inference about product quality even under low capacity. This attribute will be referred to as the inference cue. The brand description also contained a disclosure relevant to verifying the validity of the inference. The disclosure varied across two levels, validating and invalidating. The validating disclosure was consistent with the inference that a long warranty implies high quality (no limitations on warranty), whereas the invalidating disclosure implied that an inference based on warranty length alone is invalid (limitations on warranty). Thus, all subjects had information on the same set of attributes, as well as a disclosure, thereby equating information load.

Pretests

We are interested in the use of the disclosure to alter brand quality judgments that would otherwise be based only on the inference cue. Therefore, it is crucial that the inference cue prompt the same quality inference regardless of our opportunity manipulation. Pretests were used to calibrate the opportunity manipulation and to ensure that subjects draw the desired quality inference under both low and high opportunity at encoding.

Pretest 1: Calibration of Opportunity at Encoding. Fourteen subjects who received no compensation were asked to follow the experimental procedures (described below) working at their own pace. Encoding time for the high-opportunity condition was calibrated as the time required by 85 percent of these subjects (30 seconds); encoding time for the low-opportunity condition was calibrated as the time required by the fastest 15 percent of subjects (10 seconds).

Pretest 2: Verification That Inferences Do Not Require Capacity. Sixty-one students who received partial course credit were given the goal of judging the quality of an SLR camera brand based on limited information and were told that warranty is a good predictor of quality. This comment was intended to make accessible the inference rule that longer warranty means higher quality. They were also asked to learn the "note indicated with an asterisk," (i.e., the disclosure). Subjects first read general information about three attributes of SLR cameras, including norms for attribute levels, which were included to reduce error variance. They then saw a table of information for a specific SLR camera, including information on warranty length, for either 10 or 30 seconds, depending on their opportunity at encoding condition. In an asterisked footnote to warranty length, they saw a validating disclosure consistent with the notion that warranty length is a good predictor of quality (includes coverage of parts and labor for the duration of the warranty).

In a 2 (opportunity at encoding: low and high) × 2 (warranty length: typical or longest in the category) design, subjects were randomly assigned to warranty length and randomly assigned in small groups to the opportunity conditions. They were paced through the experiment via audio tape. After viewing brand information (for 10 seconds or 30 seconds, depending on the opportunity at encoding condition) they rated brand quality on several dimensions (engineering and design, materials, manufacturing process, reliability, and performance; Cronbach's $\alpha = .94$) on a seven-point scale anchored by "very low" and "very high." All subjects were given an equal amount of time to read instructions and to record responses (time required by 85

TABLE 1

DISCLOSURE-TYPE MANIPULATIONS

Product category	Validating disclosure	Invalidating disclosure	Integrated disclosure (experiment 1 only)
Experiments 1, 3, 4:			
Single-lens reflex camera:			
Inference cue: warranty length	Longest in the category: 6 years*	Longest in the category: 6 years*	Longest in the category: 6 years; includes parts only, whereas all other manufacturers cover parts and labor
Disclosure: coverage	*Includes coverage of parts and labor for the duration of warranty	*Includes parts only; all other manufacturers cover parts and labor	
	Validating disclosure	Implicit invalidating disclosure	Explicit invalidating disclosure
Experiment 2:			
Hybrid bike:			
Inference cue: brand name	New bike brand, CT200*	New bike brand, CT200*	New bike brand, CT200*
Disclosure: manufacturer	*Manufactured by CT200's hybrid division	*Manufactured by well-known company, Raleigh	*Newness of brand does not mean low quality because it is manufactured by well-known company, Raleigh

NOTE.—The inference cue was presented in a table along with information on two other attributes. The asterisk was used to indicate that the claim was qualified by a disclosure.

percent of pretest 1 subjects), with one exception. Because we wished to measure quality beliefs formed at encoding, all subjects were under time pressure (time required by fastest 20 percent of pretest 1 subjects: 10 seconds) when responding to the quality rating scales. As expected, warranty length was used to infer quality ($M = 5.77$ vs. 4.51 for longest and typical warranties, respectively, $F(1, 57) = 26.75$, $p < .001$), and this inference was made regardless of opportunity (interaction $F(1, 57) = 1.68$, $p > .2$).

Subjects and Design

One hundred eighty subjects participated in the study. Most received partial course credit; 78 received a monetary incentive. In a 2 (opportunity at encoding) × 2 (disclosure-type) × 3 (disclosure-placement) design, subjects were randomly assigned to disclosure type and disclosure placement and randomly assigned by small groups to opportunity conditions. Opportunity was low (10 seconds) when responding to the five specific quality rating scales. Subjects were also given five seconds to respond to an overall quality scale prior to making specific judgments.

Manipulations

Opportunity at Encoding. As in pretest 2, opportunity was operationalized via time allowed for reading brand descriptions (30 seconds vs. 10 seconds).

Disclosure Type. Validating and invalidating disclosures are shown in Table 1.

Disclosure Placement. The disclosure was placed above the table of brand information, below the table of brand information, or integrated with warranty information (see Table 1).

Procedure

Subjects were told that they would see claims for real (but unnamed) brands taken from advertisements and that the information would be presented in a table because we were interested in their reaction to the content of the ad rather than the style. As in the pretest, they were given the goal of judging the quality of these brands based on limited information. To increase the accessibility of the warranty-quality inference rule, subjects were informed that warranty is a good predictor of quality. Because our interest was in examining disclosure use, subjects were instructed to learn the disclosure ("the note indicated with an asterisk") except in the integrated disclosure condition, where the disclosure was not presented as a separate note; those subjects were asked to learn "the complete information about warranty." To create moderate levels of motivation to be accurate, subjects were given an incentive—a $25 cash lottery—to make accurate quality judgments. Subjects were paced via an audiotape through a booklet containing product information and response scales with each timed task on a separate page, beginning with a practice trial using food processors. To ensure that subjects followed timing instructions, they were run in small groups, and each session was monitored by a human experimenter.

As in the pretest, subjects first read general product category information, including norms for attribute levels, which were included to equate subjects' perceptions about attribute desirability. Subjects then read a description of a specific SLR camera, including the inference cue and the disclosure. Next, they rated brand quality. Immediately after responding to the quality questions, subjects were asked to "write down, as accurately as possible, the note about the brand, indicated with an asterisk" (the disclosure). Subjects in the integrated disclosure conditions were asked to write down all the information about warranty, which should include the disclosure, if it were successfully encoded. At the end of the booklet, subjects responded to manipulation check questions described below.

Dependent Measures

Brand Quality. Judgments were elicited for overall quality and five specific dimensions of quality (as in the pretests) on seven-point scales anchored at "very low" and "very high."

Manipulation and Other Checks. Subjects rated how much effort they spent on judging the quality of the brands and how hard they tried to be accurate in brand judgments (1 = little, 7 = a lot), how hurried they felt in each part of the task, and how knowledgeable they were about the product category (1 = not at all [hurried, knowledgeable], 7 = very [hurried, knowledgeable]). Except in the integrated disclosure condition, they also responded to a question asking "When did you read the information presented in the note?" and selected from the options "before reading any of the information in the table," "after reading all the information in the table," "immediately after the note was indicated by an *," and "other (please specify)." Finally, they completed an open-ended demand-check question and reported simple demographic information.

Results

Manipulation and Confounding Checks. Knowledge of SLR cameras (M = 2.04) did not vary by condition ($p > .3$). Reported attempts to be accurate (M = 5.12) were also not affected by any of the factors in the experiment ($ps > .1$). The opportunity manipulation worked as intended; subjects under low opportunity at encoding felt more hurried while reading the brand descriptions than did subjects under high opportunity (M's = 4.70 vs. 2.73; $F(1, 168) = 65.13, p < .001$). As intended, encoding of the disclosure was unaffected by opportunity. Recall of the disclosure was high and equally good across opportunity conditions; 85 percent of subjects in the low-opportunity condition and 84.2 percent of subjects in the high-opportunity condition accurately recalled the corrective disclosure ($p > .9$). Restricting the analyses to these subjects does not substantively change the results. The disclosure-placement manipulation affected the time of processing the disclosure such that 81 percent of subjects in the above-brand-table condition and 81 percent of subjects in the below-brand-table condition read the disclosure when intended (i.e., before and after reading the inference cue, respectively).

TABLE 2

EXPERIMENT 1: SLR CAMERA QUALITY MEANS—EFFECTS OF DISCLOSURE PLACEMENT AND OPPORTUNITY AT ENCODING

Opportunity at encoding (disclosure type)	Disclosure placement: Above-brand claims	Integrated	Below-brand claims	Row means
Low:				
Validating	5.32	5.64	5.39	5.45[a]
Invalidating	5.26	5.65	5.46	5.46[a]
High:				
Validating	5.79	5.30	5.74	5.61[a]
Invalidating	4.90	4.99	4.69	4.86[b]

NOTE.—Row means with different superscripts at the same level of opportunity at encoding are significantly different at $p < .001$. All conditions represent low capacity at judgment. SLR = single-lens reflex.

Effects of Opportunity at Encoding and Disclosure Placement. We expected disclosure use to be moderated by opportunity at encoding. The validating disclosure should not alter the inference that a long warranty means high quality, whereas the invalidating disclosure should reduce the favorability of quality inferences. Therefore, we expected an opportunity × disclosure-type interaction such that quality judgments are lowered by the invalidating disclosure only when opportunity is high. Further, we expected disclosure placement to have no impact on the quality inferences we examine here, which are based on highly accessible inference rules.

Ratings on all six quality scales are averaged to form an index of quality (Cronbach's α = .90). Means are in Table 2. A 2 (opportunity at encoding) × 2 (disclosure-type) × 3 (disclosure-placement) ANOVA (see Table 3) reveals a significant main effect for disclosure type ($F(1, 168) = 9.62, p < .001$) and a marginally significant main effect of opportunity at encoding ($F(1, 168) = 3.27, p < .07$). However, these main effects are qualified by a significant interaction of opportunity at encoding and disclosure type ($F(1, 168) = 9.99, p < .001$; all other p's $> .17$). As expected, simple effects tests show that opportunity at encoding moderates disclosure use; the invalidating disclosure lowers quality ratings only when opportunity is high ($F(1, 168) = 19.61, p < .001$, and $F < 1$ for high and low opportunity, respectively). Also as expected, there are no effects of disclosure placement on quality inferences (placement by type of disclosure interaction and three-way interaction F's < 1).

Discussion

When an inference cue prompts a quality inference, even successfully encoded disclosures are not used in global

TABLE 3

EXPERIMENT 1: ANOVA ON SLR CAMERA QUALITY—EFFECTS OF DISCLOSURE PLACEMENT AND OPPORTUNITY AT ENCODING

Source	df	F	p
Main effects:			
Opportunity at encoding	1	3.27	.07
Disclosure type	1	9.62	.00
Disclosure placement	2	.19	.82
Two-way interactions:			
Opportunity × type	1	9.99	.00
Opportunity × placement	2	1.75	.18
Type × placement	2	.84	.43
Three-way interaction:			
Opportunity × type × placement	2	.97	.38
Explained	11	2.76	.00
Residual	168		
Total	179		

NOTE.—SLR = single-lens reflex.

quality judgments unless processing capacity is high. We restricted our examination to the effects of opportunity at encoding. Opportunity was always limited at judgment, so that subjects could only retrieve their previously formed judgment from memory.

Although null effects must always be interpreted with caution, the failure to find disclosure placement effects suggests that these quality inferences, which are based on highly accessible inference rules, are not blocked or more readily corrected when disclosures are placed above brand claims or integrated with them. These disclosure placement strategies are ineffective in facilitating disclosure use even though they alter the time at which the disclosures are processed and may reasonably be expected to facilitate encoding.

EXPERIMENT 2

The primary goal of this experiment is to examine the effects of motivation and ability on the use of disclosures in brand quality judgments. A secondary goal is to establish the generality of our theoretical model by extending our examination to a second product category and to a situation in which correction increases—rather than decreases—the favorability of quality judgments.

We manipulate motivation via the presence or absence of a monetary incentive for accurate judgments. Although ability is often viewed as a stable characteristic of individuals, it can be enhanced via executional cues that provide knowledge necessary for processing the message (MacInnis et al. 1991). We chose to use an executional cue to manipulate ability because we are interested in actionable variables under the marketer's control. To successfully process our disclosures, one must understand that the disclosure implies that the accessible inference rule is not valid. Therefore, we vary ability by varying the explicitness of the invalidating disclosure. Implicit disclosures do not include the information that the accessible inference rule is invalid; explicit disclosures do include this information. The specific implicit and explicit disclosures are described below. We were especially interested in this operationalization because past evidence regarding its effects has been mixed (Moorman 1990; Pechmann 1996; Schul and Mazursky 1990); for example, research has found that even explicitly telling people to ignore previously learned information is often ineffective (Johnson 1994; Schul and Burnstein 1985; Wyer and Budesheim 1987). Finally, we hold opportunity constant at a low level via time pressure. Because integrating the disclosure with the inference cue is effortful, we expect that—under low-opportunity conditions—the disclosure will be used only when both ability and motivation are high.

Subjects, Design, and Procedure

One hundred sixty-three students who received partial course credit were randomly assigned to conditions in a 2 (accuracy motivation: low vs. high) × 3 (disclosure-type: validating, implicit invalidating, and explicit invalidating) design. Opportunity at encoding and judgment were constrained for all subjects by giving them the same amount of time to read the brand description and respond to the brand quality scales as required by the fastest 20 percent of pretest subjects working at their own pace. The procedure was the same as that used in experiment 1.

The product category was hybrid bikes. A pretest (n = 60) similar to that described in experiment 1 verified that the inference cue—an unfamiliar brand name—prompts a relatively unfavorable inference about product quality (the control was a well-known brand name) and that this inference is made regardless of opportunity. Specifically, pretest quality judgments exhibit a significant effect of brand name (M's: familiar brand = 5.94, unfamiliar brand = 4.98; $F(1, 56) = 17.45$, $p < .001$), and this effect is not moderated by opportunity (interaction $F < 1$).

All subjects in experiment 2 saw a brand description including the inference cue and a disclosure that was either validating, implicit invalidating, or explicit invalidating (see Table 1). The validating disclosure (manufacturer's name identical to unfamiliar brand name) does not suggest that brand name is an imperfect predictor of quality, whereas the invalidating disclosure (manufacturer's name highly respected) suggests that brand name alone is not a good predictor of quality. Implicit invalidating disclosures do not draw the conclusion that the inference is invalid, whereas explicit invalidating disclosures do draw this conclusion (newness of brand does not mean low quality). Note that the validating disclosure is always implicit; however, this should not pose a problem because subjects are expected to make the desired inference regarding brand quality from brand name, and the disclosure is not meant to change the inference in any way. Disclosures were always presented below the brand table. A pretest (n = 30) verified that the learn-disclosure instruction was successful in ensuring disclosure encoding as revealed by high levels of accurate open-ended recall of the disclosure among high- and low-

TABLE 4

EXPERIMENT 2: BIKE QUALITY MEANS—EFFECTS OF MOTIVATION AND ABILITY (DISCLOSURE EXPLICITNESS)

	Disclosure type		
Motivation for accuracy	Validating	Implicit invalidating	Explicit invalidating
Low	4.78[a]	4.92[a]	4.67[a]
High	4.93[a]	5.04[a]	5.50[b]

NOTE.—Means in the same row with different superscripts are significantly different from each other at $p < .05$. All conditions represent low capacity at encoding and at judgment.

TABLE 5

EXPERIMENT 2: ANOVA ON BIKE QUALITY MEANS—EFFECTS OF MOTIVATION AND ABILITY (DISCLOSURE EXPLICITNESS)

Source	df	F	p (one-tailed)
Main effects:			
Motivation	1	6.11	.01
Disclosure type (explicitness)	2	.85	.22
Two-way interactions:			
Motivation × type (explicitness)	2	2.41	.05
Explained	5	2.52	.02
Residual	157		
Total	162		

opportunity subjects (93 percent and 100 percent, respectively; $p > .97$).

Manipulations

Accuracy Motivation. Instructions given in experiment 1 were given to all subjects. In addition, subjects under high-accuracy motivation were told that they could receive a $100 cash prize for accuracy.

Disclosure Type. All disclosures are in Table 1.

Dependent Measures

Brand Quality. Quality judgments were elicited on a seven-point scale anchored at "very low quality" and "very high quality."

Manipulation and Other Checks. The same scales were used as in experiment 1.

Results

Manipulation and Confounding Checks. Knowledge of bikes was low but did not vary by condition ($M = 2.25$, all p's $> .15$). As intended, subjects in the high-accuracy-motivation condition tried harder to be accurate than those in the low-accuracy-motivation condition (M's $= 5.10$ vs. 4.62; $F(1, 157) = 5.88$, $p < .05$); no other effects on effort are significant. As desired, all subjects felt hurried while reading the brand description ($M = 5.27$) and when responding to brand quality judgments ($M = 5.43$), and this perception did not differ across experimental conditions (p's $> .3$).

Quality Ratings. Means on the single-item quality scale used in this experiment are in Table 4 and the ANOVA results are in Table 5. Given the directional nature of our hypothesis, we report one-tailed tests of significance (Rosenthal and Rosnow 1985). Any effects of the implicit (explicit) invalidating disclosure on quality judgments is shown by the contrast between the validating disclosure and the implicit (explicit) invalidating disclosure. Moderation by accuracy motivation is shown by interactions with these contrasts.

As expected, the invalidating disclosure leads to higher-quality judgments only when motivation is high and the disclosure is explicit. Although there is a significant main effect of motivation ($F(1, 157) = 6.11$, $p < .01$), it is qualified by a significant interaction of motivation and disclosure type ($F(2, 157) = 2.41$, $p < .05$). Follow-up interaction contrasts reveal a significant interaction between motivation and the explicit invalidating versus validating disclosure contrast ($F(1, 157) = 3.50$, $p < .05$) such that quality judgments are more favorable when disclosures are explicitly invalidating versus validating under high-accuracy motivation ($F(1, 157) = 5.02$, $p < .05$) but not under low-accuracy motivation ($F < 1$). However, the interaction between motivation and the implicit invalidating versus validating disclosure contrast is nonsignificant ($F < 1$). Quality judgments do not differ when disclosures are implicitly invalidating versus validating, regardless of the level of accuracy motivation (F's < 1).

Discussion

According to our theoretical framework, disclosure use is facilitated by increasing ability to interpret (e.g., by explicitly concluding how the inference should be corrected) as well as by increasing motivation for accuracy. As expected, subjects given an explicit invalidating disclosure under high-accuracy motivation corrected their quality inferences even though processing time was constrained at encoding and judgment. Notably, the "obvious" remedy of explicit (even heavy-handed) disclosures did not result in disclosure use under low-accuracy motivation.

It is possible that these findings are an artifact of our use of a positive disclosure—one that implies higher quality—as compared to the negative disclosure employed in experiment 1. Negative information is weighted more heavily than positive information in judgments (see Skowronski and Carlston [1989] for a review); hence, had we employed a negative disclosure, we might have found that an explicit disclosure or high-accuracy motivation alone is sufficient to result in disclosure use. This possibility is

particularly important from a public policy perspective, since mandated disclosures are unlikely to be positive. However, prior work that has examined negative explicit disclosures has found mixed evidence for their effectiveness, even when opportunity was not constrained (Moorman 1990; Pechmann 1996), suggesting that our results do not underestimate the utility of explicit disclosures.

EXPERIMENT 3

The primary goal of this experiment is to examine the effects of capacity at judgment. Experiments 1 and 2 examined the extent to which disclosures are used at the time of encoding (although our motivation and ability manipulations may also have carried over to judgment). Collectively, they show that opportunity to process (time) at encoding, ability to process (explicitness of disclosure), and motivation for accuracy all can increase disclosure use, although neither explicit disclosures nor high-motivation accuracy as manipulated were alone sufficient to result in disclosure use. What about the common situation in which consumers are exposed incidentally to a message and have low opportunity and motivation to process it, and the disclosure is not explicit? Our results suggest that although inferences based on highly accessible inference rules are likely to be drawn, the probability of correction based on a disclosure at the time of encoding is low.

At the time of judgment, however, consumers may reflect back on a previously encoded disclosure and integrate it with other brand information. In this experiment we examine the effect of capacity at judgment as manipulated by opportunity to process (operationalized as time available at judgment) on disclosure use. Capacity at encoding is held constant at a low level by constraining opportunity. Ability to process is always relatively low; disclosures are implicit. Similarly, motivation is only moderate; as in experiment 1, incentives for accuracy are relatively low.

A second goal is to examine the process underlying disclosure use. Our theoretical framework suggests that elaboration on the disclosure mediates the effect of capacity on disclosure utilization. However, experiments 1 and 2 lack measures of this posited elaboration process. In this experiment, we collect open-ended recall data immediately following brand quality judgments. Subjects' open-ended recall should reflect the claims that are most accessible to them (i.e., top of the mind) and is therefore a measure of which brand claims were elaborated on at the time of judgment.

Subjects, Design, and Procedure

In a 2 (opportunity at judgment: low vs. high) × 2 (disclosure-type: validating vs. invalidating) design, 40 subjects who received a monetary incentive were randomly assigned to disclosure type and randomly assigned in small groups to opportunity conditions. Opportunity at judgment was manipulated via time to process. Capacity at encoding was always low (manipulated as opportunity: processing time) and the disclosure was presented postinference. Stimuli, procedures, dependent measures, and manipulation checks (e.g., cued recall of the warranty disclosure as a measure of disclosure encoding) were the same as in experiment 1 with one addition. Immediately after completing the quality ratings (the five specific questions), all subjects were given two and one-half minutes to recall as much of the brand information as possible; this open-ended recall is a measure of elaboration.

Manipulation of Opportunity at Judgment

To make all five of the specific quality judgments (all on the same page), high-opportunity subjects were given 30 seconds and low-opportunity subjects were given 10 seconds. (Seventy-seven percent of pretest subjects responded to these questions in under 30 seconds and 39 percent in under 10 seconds.)

Results

Manipulation Checks. Knowledge of SLR cameras was low ($M = 2.13$) but did not differ significantly by condition (p's $> .1$). Seventy-five percent of all subjects recalled the invalidating disclosure accurately as indicated by their response to the cued disclosure recall question. This percentage does not differ by condition. Because we are interested in utilization of the disclosure once it is encoded, 10 subjects who did not exhibit cued disclosure recall were dropped from the following analyses.

Quality Ratings. The five specific quality questions are averaged to form an index of brand quality (Cronbach's $\alpha = .87$). Means are in Table 6. A 2 (opportunity) × 2 (disclosure-type) ANOVA (see Table 7) reveals no significant main effects (p's $> .46$) but a significant interaction of opportunity at judgment and disclosure type ($F(1, 26) = 6.36$, $p < .05$). As expected, when opportunity at judgment is low, quality judgments do not differ in the validating versus invalidating conditions ($F(1, 26) = 1.82$, $p > .15$); however, when opportunity is high, quality judgments are lower when the disclosure is invalidating versus validating ($F(1, 26) = 5.08$, $p < .05$).

Open-Ended Recall. As compared to the cued recall of the disclosure, which measures encoding of the disclosure, open-ended recall reflects what was most accessible in subjects' minds immediately after making brand ratings and is thus a good indication of which brand claims were elaborated on at the time of judgment. Open-ended recall was coded as accurate or inaccurate and as related to warranty claim, warranty disclosure, nonwarranty claims, or irrelevant. Two coders agreed on 95 percent of the coding; disagreements were resolved by discussion.

Mean number of claims recalled is in Table 6. Recall is highly accurate (96 percent), and accuracy does not differ by condition (p's $> .1$). The average total number of claims (including warranty claim, warranty disclosure, nonwarranty claims, and irrelevant items) recalled is 3.8, which

TABLE 6

EXPERIMENT 3: SLR CAMERA QUALITY AND RECALL MEANS—EFFECTS OF OPPORTUNITY AT JUDGMENT

Opportunity at judgment	Disclosure type	
	Validating	Invalidating
Low:		
Quality	5.30[a]	5.87[a]
Open-ended recall:		
Warranty disclosure	.75	.33
Warranty claim	1.00	.83
Nonwarranty claims	1.38	1.50
Irrelevant claims	.00	.67
Total claims	3.75	4.00
High:		
Quality	5.78[a]	4.90[b]
Open-ended recall:		
Warranty disclosure	.75	1.00
Warranty claim	.88	1.13
Nonwarranty claims	1.88	.88
Irrelevant claims	.00	.13
Total claims	4.13	3.50

NOTE.—Quality means in the same row with different superscripts are significantly different from each other at $p < .05$. All conditions represent low capacity at encoding. SLR = single-lens reflex.

does not differ by condition (p's $> .4$), reflecting the fact that all subjects had equal opportunity to process the brand claims and to recall information. However, as described below, the type of claims recalled differs by condition, suggesting that subjects in different conditions elaborated on different brand claims at the time of judgment.

ANOVA. A 2 (opportunity) × 2 (disclosure-type) ANOVA on open-ended recall of the warranty disclosure reveals a significant main effect of opportunity at judgment ($F(1, 26) = 4.22$, $p < .05$) and a significant interaction between opportunity and disclosure type ($F(1, 26) = 4.92$, $p < .05$). When the disclosure is invalidating, open-ended recall of the disclosure is greater when opportunity at judgment is high as compared to low ($F(1, 26) = 9.14$, $p < .01$). When the disclosure is validating, its open-ended recall is not affected by opportunity ($F < 1$). These results parallel those for brand-quality judgments. Not only did subjects who had time to reflect make judgments that incorporated the negative disclosure (and were therefore less favorable); the apparent mechanism by which this occurred was elaboration on the disclosure at the time of judgment (as indicated by greater open-ended disclosure recall).

We also examined open-ended recall of warranty information (aggregated across warranty claim and disclosure) and of nonwarranty claims separately. For warranty information, a 2 (opportunity) × 2 (disclosure-type) ANOVA reveals that the pattern is the same as for open-ended recall of the disclosure alone. When the disclosure is invalidating, warranty recall is higher when opportunity is high vs. low (M's = 2.13 vs. 1.17; $F(1, 26) = 9.01$, $p < .01$). When the disclosure is validating, however, warranty recall is unaffected by opportunity (M's = 1.63 vs. 1.75 for high and low opportunity, respectively; $F(1, 26) < 1$). For nonwarranty claims, however, when the disclosure is invalidating, open-ended recall tends to be less when opportunity is high versus low ($F(1, 26) = 2.30$, $p < .10$). It appears that subjects who were given an invalidating disclosure about warranty and sufficient opportunity to process it substituted thoughts about warranty for other brand thoughts.

Mediation Analysis. An ANCOVA using open-ended disclosure recall as a covariate also provides some evidence of mediation by disclosure elaboration on quality judgments. The covariate is significant ($F(1, 25) = 3.93$, $p < .05$), while the interaction between opportunity at judgment and disclosure type decreases in significance ($F(1, 25) = 3.68$, $p = .07$).

Regression analyses on quality judgments in the invalidating disclosure condition also confirm that disclosure elaboration mediates brand quality judgments (Baron and Kenny 1986). Opportunity at judgment has a significant effect on quality judgments ($\beta = -.56$, $p < .05$). Open-ended disclosure recall also has a significant effect on quality judgments ($\beta = -.70$, $p < .01$). Finally, when both variables are included in the equation, the effect of opportunity becomes nonsignificant ($\beta = -.372$, $p > .7$), whereas the effect of open-ended disclosure recall remains marginally significant ($\beta = -1.95$, $p < .08$).

Discussion

High capacity at judgment can compensate for low capacity at encoding, leading to elaboration of an encoded disclosure and hence to its use in correcting a quality inference. This finding suggests that consumers who are exposed to disclosures under limited-capacity conditions—as when the disclosure is briefly presented in a broadcast ad—may use these disclosures for subsequent capacity-unconstrained decisions, as long as the disclosure is accessible to them. It should be noted, however, that our results are based on judgments made immediately after encoding. With significant delays, disclosures may no longer be accessible as inputs to judgments unless they are present in the external environment.

TABLE 7

EXPERIMENT 3: ANOVA ON SLR CAMERA QUALITY—EFFECTS OF OPPORTUNITY AT JUDGMENT

Source	df	F	p
Main effects:			
Opportunity at judgment	1	.45	.51
Disclosure type	1	.54	.47
Two-way interaction:			
Opportunity × type	1	6.36	.02
Explained	3	2.74	.08
Residual	26		
Total	29		

NOTE.—SLR = single-lens reflex.

Our analyses in this experiment are restricted to subjects who exhibited cued recall of the disclosure. This restriction is justified because we are interested in examining use of disclosures given that they are encoded. However, discarding subjects reduces the sample size to seven to eight subjects per cell and may create a biased sample. Nonetheless, bias seems unlikely because the 10 subjects who were discarded were equally distributed across conditions. In contrast to the other experiments, our results on brand quality do not hold if all subjects are included in the analysis. This difference may reflect the error associated with using cued recall as a measure of encoding (e.g., subjects who do not recall the disclosure may have encoded it anyway) coupled with our initially small sample size. Experiment 4 was conducted to increase confidence in our findings regarding the effects of high capacity at judgment on disclosure use and regarding the underlying processes.

EXPERIMENT 4

The goal of this experiment is to examine how consumers allocate processing resources at the time of judgment when capacity at encoding and at judgment are high. As cognitive resources increase relative to processing demands, the additional resources may be allocated in a variety of ways. Research that has examined this issue has found increased correction with increased resources, often to the point of overcorrection (cf. Kardes 1993; Martin and Achee 1992). We therefore expect that the extent of correction will be the highest when capacity at encoding and at judgment are high. In this experiment, we hold capacity at encoding constant at a high level and vary capacity at judgment via opportunity, operationalized as time pressure. We therefore expect that the disclosure will be utilized in all conditions (as found in the high-capacity conditions in experiment 1), but that subjects with high capacity at judgment will allocate more resources to processing the claim with a corrective disclosure, resulting in greater weight given this claim in judgment.

We are also interested in how varying levels of capacity to use disclosures affects judgment confidence. Confidence is of interest because it may moderate information search and the use of judgments in behavioral decision making. To the extent that confidence is low, consumers may be motivated to engage in further information search. To the extent that confidence is high, judgments may be more likely to guide choice. As the results of the previous experiments show, correction is an effortful process. We therefore expect that correction is made with awareness. If this is true, then high capacity at judgment may lead to concerns about the appropriate extent of correction and—to the extent that correction is greater with higher capacity—concerns about overweighting the disclosure. Hence, we expect confidence for these judgments based on limited information to be lower under high capacity at encoding and judgment. Such lack of confidence is especially likely because there is no objectively correct amount of correction.

Finally, we collect cognitive response data to gain further support for the idea that elaboration on corrective disclosures underlies their use. Cognitive responses provide a better measure of elaboration than the open-ended brand recall used in experiment 3 because they are not restricted to brand information. Instead, they potentially capture all thoughts at the time of judgment.

Method

In a 2 (opportunity at judgment: high and low) × 2 (disclosure-type: validating and invalidating) design, 80 students who received a monetary incentive were assigned randomly to disclosure type and randomly in small groups to opportunity conditions. Stimuli, procedures, and dependent measures were the same as in experiment 3, except that capacity at encoding was held constant at a high level. After rating brand quality (using the single-item scale plus the five specific scales), subjects were asked how confident they were in their quality judgments on a seven-point scale anchored by "not at all" and "very." Finally, they were asked to retrospectively report on their thoughts during the judgment process.

Results

Manipulation and Confounding Checks. Knowledge of SLR cameras was low (M = 2.19) but did not differ significantly by condition (p's > .1). Subjects in the low-opportunity-at-judgment condition felt more hurried while making their quality ratings compared to subjects in the high-opportunity condition (M's = 5.25 vs. 3.18; $F(1, 76) = 29.88$, $p < .01$). Eighty-five percent of all subjects recalled the disclosure accurately; recall did not differ by disclosure type. Restricting data analyses to subjects who recalled the disclosure does not change the results in any substantive way. Interestingly, subjects under low and high opportunity at judgment reported spending the same amount of effort judging brand quality (M's = 4.98 vs. 4.90, $p > .25$).

Quality and Confidence Ratings. The six quality questions were averaged to form an index of brand quality (Cronbach's α = .92). Means are in Table 8. Not surprisingly, since capacity at encoding was always high, inferences were always corrected. A 2 (opportunity at judgment) × 2 (disclosure-type) ANOVA (see Table 9) reveals that there is a significant main effect for disclosure type such that quality ratings are lower when the disclosure is invalidating versus validating (M's = 4.87 vs. 5.70; $F(1, 76) = 18.56$, $p < .001$). This main effect is qualified by a marginally significant interaction with opportunity at judgment ($F(1, 76) = 2.71$, $p < .10$). As predicted, the invalidating disclosure tends to lower quality judgments more when opportunity is high ($F(1, 76) = 17.72$, $p < .001$) than when opportunity is low ($F(1, 76) = 3.55$, $p < .05$).

Also as expected, greater use of the disclosure is associated with reduced confidence in quality ratings (see Table 8). There is a marginally significant interaction of opportu-

TABLE 8

EXPERIMENT 4: SLR CAMERA QUALITY, CONFIDENCE, AND VTI MEANS—EFFECTS OF OPPORTUNITY AT JUDGMENT

Opportunity at judgment	Disclosure type: Validating	Disclosure type: Invalidating
Low:		
Quality	5.58[a]	5.07[b]
Confidence	5.00[a]	5.15[a]
Relevant VTI	.95[a]	.40[a]
Warranty VTI	1.10[a]	.40[b]
Nonwarranty VTI	.05[a]	.05[a]
High:		
Quality	5.81[a]	4.66[b]
Confidence	5.24[a]	4.37[b]
Relevant VTI	1.10[a]	−1.42[b]
Warranty VTI	.95[a]	−.68[b]
Nonwarranty VTI	.19[a]	−.68[b]

NOTE.—Means in the same row with different superscripts are significantly different from each other at $p < .05$. All conditions represent high capacity at encoding. SLR = single-lens reflex; VTI = valenced thought index.

nity at judgment and disclosure type ($F(1, 76) = 2.58$, $p < .10$). When opportunity at judgment is high, confidence is lower with an invalidating than with a validating disclosure ($F(1, 76) = 3.75$, $p < .05$). When opportunity at judgment is low, confidence is unaffected by disclosure type ($F < 1$), and confidence levels are similar to those in the high-opportunity, validating disclosure condition.

Cognitive Responses. Cognitive responses (CRs) (i.e., retrospective thoughts) were coded by two independent coders blind to the hypotheses into warranty-related, nonwarranty-related, and irrelevant thoughts. Because many reported thoughts integrate the warranty claim and the disclosure, it is difficult to separate disclosure thoughts from other warranty-related thoughts; therefore this experiment cannot isolate use of the disclosure alone as the mediating mechanism. Coders agreed on 98 percent of this coding. Each thought was further coded as positive, negative, or neutral with 97 percent agreement. All disagreements were resolved by discussion. The total number of thoughts averages 3.96 and does not differ by condition (p's $> .2$). A valenced thought index (VTI) was created for each thought category by subtracting the number of negative thoughts from the number of positive thoughts.

ANOVA. A 2 (opportunity at judgment) × 2 (disclosure-type) ANOVA on the VTI for warranty thoughts reveals a significant main effect for opportunity at judgment (M's: high = .18, low = .75; $F(1, 76) = 6.96$, $p < .05$) and for disclosure type (M's: validating = 1.02, invalidating = −.13; $F(1, 76) = 25.98$, $p < .001$). These main effects are qualified by a significant interaction ($F(1, 76) = 4.18$, $p < .05$). Simple effects tests reveal that warranty thoughts parallel effects on quality judgments. Warranty thoughts are significantly less favorable when the disclosure is invalidating rather than validating under low as well as high-opportunity conditions. However, the difference in favorability is significantly greater under high opportunity at judgment conditions (M's validating = .95, invalidating = −.68; $F(1, 76) = 25.49$, $p < .001$) compared to low opportunity at judgment conditions (M's validating = 1.10, invalidating = .40; $F(1, 76) = 4.68$, $p < .05$). Further, results are similar for the VTI of all relevant thoughts and for the VTI of nonwarranty thoughts. As expected, elaboration is less positive—and thus biased in the direction of the negative disclosure—when opportunity at judgment is high.

Information Weights. We also expected that the weight given to the warranty information would be greater with greater capacity. We examine the weight given to warranty information via a hierarchical regression in the invalidating disclosure condition (cf. Maheswaran and Chaiken 1991; Maheswaran, Mackie, and Chaiken 1992). First, we regress brand quality on warranty VTI and nonwarranty VTI; only warranty VTI has a significant impact on quality ($\beta = .27$, $p < .05$). Next, interactions between warranty VTI and capacity at judgment (coded as low = 0 and high = 1) and between nonwarranty VTI and capacity at judgment are added. Both effects are significant (warranty $\beta = .60$, $p < .05$; nonwarranty $\beta = -.52$, $p < .05$), with the effect for warranty VTI being positive and for nonwarranty VTI being negative. As expected, the weight given to warranty increases, and the weight given to other brand information decreases as capacity at judgment increases.

Discussion

Additional processing capacity was used to further elaborate on the qualified warranty claim, resulting in thoughts that were biased in the direction of the warranty information, greater weight given to information related to the warranty, and greater correction. However, greater elaboration and use of the qualified warranty claim lowered confidence in quality judgments. While it is not possible to establish an unambiguous baseline for detecting overcorrections for quality judgments (i.e., it is not clear how much less favorable a quality inference should be when a warranty is limited vs. when it is not), the lowered confidence we observed is consistent with the idea that subjects may have

TABLE 9

EXPERIMENT 4: ANOVA ON SLR CAMERA QUALITY—EFFECTS OF OPPORTUNITY AT JUDGMENT

Source	df	F	p
Main effects:			
Opportunity at judgment	1	.16	.69
Disclosure type	1	18.56	.00
Two-way interaction:			
Opportunity × type	1	2.71	.10
Explained	3	7.12	.00
Residual	76		
Total	79		

NOTE.—SLR = single-lens reflex.

been concerned about overcorrection. Another possibility is that increased elaboration simply decreases willingness to rely on limited brand information. Whatever the reason for this reduced confidence, it may in the real world reduce reliance on the judgment in decisions and even lead to the positive consequence of information search.

GENERAL DISCUSSION

The primary goals of this work are to understand the process whereby consumers use disclosures to correct invalid inferences and, further, to use this knowledge to develop practical strategies for facilitating disclosure use. Our results have theoretical, methodological, and substantive implications. From a theoretical standpoint, we show that correction is a two-stage process in which disclosures are first encoded and then utilized. We also show that inferences based on highly accessible inference rules are not easily blocked. Finally, we show that—as is true for the use of brand information in general—disclosure use is moderated by ability, motivation, and opportunity. From a methodological standpoint we demonstrate that disclosure recall is not a good measure of disclosure effectiveness. From a substantive standpoint we show that effective interventions must address ability, opportunity, and motivation to use the disclosure rather than just to encode it.

The Use of Disclosures in Judgment

We focus on the use of disclosures to correct invalid inferences and find that correction is a two-stage process in which disclosures are first encoded and then utilized. Evidence for this two-stage process comes from experiments 1–3, in which we separate encoding from use by ensuring encoding via instructions, while sometimes limiting processing capacity via manipulations of ability (implicit vs. explicit corrections), motivation (incentives for accuracy), and opportunity (processing time). Even when the disclosure is successfully encoded, it is used to correct judgments only when capacity is high. The finding that correction requires capacity is consistent with other work that shows that correction is an effortful process (Gilbert et al. 1990; Gilbert et al. 1993; Martin and Achee 1992; Martin et al. 1990; Meyers-Levy and Sternthal 1993; Meyers-Levy and Tybout 1997).

An obvious question is whether disclosure use necessarily involves inference correction. Might not the disclosure simply be used in the initial judgment as another input to be considered? While this certainly may occur, our concern is that disclosures are most needed when an invalid inference is most likely. Because marketers emphasize informational cues that succinctly communicate brand quality and other desirable global characteristics, many communications contain cues associated with highly accessible inference rules (e.g., a long warranty implies high quality). As our pretests and experiment 1 results show, inferences based on highly accessible rules are readily made even under low-opportunity conditions and are not easily blocked. That is, the inference is made regardless of the availability of a disclosure that invalidates the inference rule. Our subjects made brand-quality inferences that did not incorporate the disclosure even when the disclosure was processed prior to the inference cue. Their judgments reflected the impact of the disclosure only when capacity was sufficient to allow correction of the initial inference. Hence, in the kind of situations in which disclosures may be most needed, the disclosure is likely to be used—if at all—as a correction to the inference, not as an initial input to it.

The ability, motivation, and opportunity framework provides a good accounting of the moderators of disclosure use. Across our four experiments, results for the facilitating effects of capacity are consistent and robust. Moderators of disclosure utilization are diverse, including person-specific variables (e.g., accuracy motivation), stimulus-specific variables (e.g., explicit vs. implicit disclosures), and task-specific variables (e.g., opportunity to process at encoding or at judgment). Consistent with the ability, motivation, and opportunity framework, the process mediating between capacity and disclosure use is elaboration on the disclosure, as evidenced by our retrospective brand recall and cognitive response data. The role of these mediating variables awaits further confirmation using more direct elaboration measures such as concurrent verbal protocols and unconstrained reading times.

Our confidence data provide suggestive evidence that the high levels of elaboration that occur with high capacity can undermine confidence. Because this reduced confidence is accompanied by even greater correction, we speculate that it may result from a concern about overcorrection, which in some cases may be well founded. One potential positive effect of this reduced confidence in the real world, however, may be increased information search. Overall, quality judgments and confidence data suggest that utilization of disclosures to correct invalid inferences is a deliberate process; it is not only effortful but is also intended and made with awareness. Clearly, further work that examines issues such as effects of disclosures on information search and consumption decisions is needed.

Measuring Disclosure Efficacy

Because encoding and use are separate stages, disclosure recall is an inadequate measure of efficacy. Although encoding is necessary, and many interventions that enhance encoding may also increase use (e.g., opportunity to encode and to use are both enhanced by short, simple disclosures), disclosures may be encoded and recalled without being used as inputs to judgment. The choice of an appropriate efficacy measure is a difficult one. As is always true in attempts to promote good decision making, it is often impossible to know what constitutes a good judgment. For some judgments (e.g., overall price superiority) there may be an objective right answer. For many judgments, however (e.g., product quality perceptions; the decision to smoke), there is no objectively right answer once one admits individual differences in importance weights, valuation of attributes,

and so forth. Therefore, a single index of efficacy such as impact on judgment is infeasible. Instead, we suggest multiple measures that focus on process as well as outcomes. Evidence of encoding is useful but not sufficient. Other measures should focus on evidence that the implications of the disclosures are understood (i.e., ability is adequate), that typical processing conditions provide sufficient opportunity to bring this understanding to bear on judgment, and that—at least for targeted consumer groups—the disclosure is presented in a manner that enhances motivation to process it. Some evidence that judgments are affected is also desirable, although calibration to account for individual differences in judgment even under ideal processing conditions is both necessary and difficult to implement.

Interventions to Increase Disclosure Use

How can the ability, motivation, and opportunity framework and the recognition that disclosure encoding and use are separate stages help us to design more effective disclosure strategies? This is an important question because communications that contain disclosures—mandatory or voluntary—are unlikely to be suspected as misleading. This issue is especially salient in today's environment, given the recent debate over a tobacco industry settlement involving regulation of the size of warnings in cigarette advertising and with the FDA's aggressive stance with regard to the consumer friendliness of disclosures.

First, we know that encoding does not ensure use. However, encoding is typically a first step in disclosure use, so standards that facilitate encoding are important. Efforts toward making disclosures more prominent (e.g., the FDA's font and placement requirements) are likely to facilitate encoding and should be applauded, although research explicitly evaluating these remedies for their ability to increase encoding is needed.

Second, we must focus specifically on ability, motivation, and opportunity to use the disclosure. Ability may be effectively increased by making the disclosure easier to process. Simple, nontechnical disclosures may thus be more used by consumers than are more complete and complex disclosures. This idea has been proposed, for example, in the case of prescription drugs (Sheffet and Reece 1994). Ability may also be increased by making accessible the knowledge structures needed to interpret the disclosure (MacInnis et al. 1991). Explicit disclosures that include the implications of the disclosed information (e.g., "low fat does not mean a food is generally healthy") increase ability in this way. An alternative or supplement to explicit disclosures are ads or public service announcements containing messages that provide the needed knowledge structures. An example of such a message would be one stating that in order to be healthy, foods need to possess many attributes, not just low fat or low salt. This message may facilitate the use of an advertising disclosure stating that "this brand of low-fat snack food is not also low in sodium" to correct the inference that the low-fat snack is generally healthy.

Most strategies for increasing motivation to process require more expansive communications than are feasible for simple disclosures (e.g., telling stories, combining visual and verbal information); however, some techniques merit further study. Motivation may be increased by increasing self-relevance (MacInnis et al. 1991). Disclosures that seek to create identification with specific consumer groups may increase motivation in this way (e.g., disclosures that begin "if you are pregnant or nursing" or "if you are dieting"). Although such disclosures are occasionally employed, we are aware of no studies that examine their efficacy, particularly with regard to the issue of motivation. Motivation may also be increased via messages—in ads or public service announcements—that advocate thoughtful processing of disclosures. For example, Wright (1979) found that a message encouraging consumers to read warnings on packages of over-the-counter drugs could be effective in increasing this behavior.

As is true for ability, opportunity can be effectively increased by reducing the processing demands of the disclosure; hence, short and simple disclosures are more likely to be processed. Opportunity can also be increased via techniques that expand time available for processing, for example, content-to-time ratios, or the use of "dead time," a pause following a critical point in a broadcast message (MacInnis et al. 1991).

Recognizing that high capacity at judgment can overcome low capacity at encoding, we should also focus on facilitating ability, motivation, and opportunity at the time of judgment, when consumers may be more motivated to use disclosures and may create opportunity by taking the time to reflect. One approach to ensuring accessibility of corrective disclosures at judgment is to place disclosures on package labels and other point-of-purchase materials. Reinforcing advertising disclosures on package labels would also help consumers to encode and utilize the disclosures. This effort would require coordination by the FTC (responsible for advertising) and the FDA (responsible for packaging).

In summary, the most feasible means of facilitating the use of corrective disclosures to prevent high-consensus inference errors appears to be a more focused version of our current course, but one that acknowledges that obviously effective disclosures (e.g., those that are encoded, those that are explicit, etc.) are often ineffective. Guided by the ability, motivation, and opportunity framework, we must identify concrete interventions that facilitate utilization of corrective disclosures and apply this knowledge to create guidelines for key disclosures: requirements for explicitness, appeals to self-relevance, low message-to-disclosure ratios. Finally, validation of the effectiveness of disclosures in cases of complaints must examine both encoding and use, including—particularly in the case of product safety—evidence of impact on consumption decisions. However, recognizing that individual differences in values and importance weights result in varying judgments and decisions, even when a corrective disclosure is fully considered, we should also examine evidence that the disclosure achieved adequate ability, motivation, and opportunity to process, regardless of its impact on judgment.

[Received November 1998. Revised July 1999. Robert E. Burnkrant served as editor, and Deborah MacInnis served as associate editor for this article.]

REFERENCES

Alba, Joseph W. (1984), "Nature of Inference Representation," *American Journal of Psychology,* 97 (Summer), 215–233.

Anderson, Craig A. (1983), "Abstract and Concrete Data in the Perseverance of Social Theories: When Weak Data Lead to Unshakable Beliefs," *Journal of Experimental Social Psychology,* 19 (March), 93–108.

Andreasen, Alan R. (1991), "Consumer Behavior Research and Social Policy," in *Handbook of Consumer Behavior,* ed. Thomas S. Robertson and Harold H. Kassarjian, Englewood Cliffs, NJ: Prentice-Hall, 459–506.

Baron, Reuben M. and David A. Kenny (1986), "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," *Journal of Personality and Social Psychology,* 51 (December), 1173–1182.

Federal Trade Commission (1994), *Enforcement Policy Statement on Food Advertising,* Washington, DC: Federal Trade Commission.

Friedmann, Keyla (1988), "The Effect of Adding Symbols to Written Warning Labels on User Behavior and Recall," *Human Factors,* 30 (August), 507–515.

Gilbert, Daniel T. (1989), "Thinking Lightly about Others: Automatic Components of the Social Inference Process," in *Unintended Thought,* ed. James S. Uleman and John A. Bargh, New York: Guilford Press, 189–211.

———, Douglas S. Krull, and Patrick S. Malone (1990), "Unbelieving the Unbelievable: Some Problems in the Rejection of False Information," *Journal of Personality and Social Psychology,* 59 (October), 601–613.

———, Brett W. Pelham, and Douglas S. Krull (1988), "On Cognitive Busyness: When Person Perceivers Meet Persons Perceived," *Journal of Personality and Social Psychology,* 54 (May), 733–740.

———, Romin W. Tafarodi, and Patrick S. Malone (1993), "You Can't Not Believe Everything You Read," *Journal of Personality and Social Psychology,* 65 (August), 221–233.

Harris, Richard Jackson, Tony M. Dubitsky, and Kristin J. Bruno (1983), "Psycholinguistic Studies of Misleading Advertising," in *Information Processing Research in Advertising,* ed. R. J. Harris, Hillsdale, NJ: Erlbaum, 241–262.

Hogarth, Robin M. and Hillel J. Einhorn (1992), "Order Effects in Belief Updating: The Belief-Adjustment Model," *Cognitive Psychology,* 24 (January), 1–55.

Johar, Gita V. (1995), "Involvement and Deception from Implied Advertising Claims," *Journal of Marketing Research,* 32 (August), 267–279.

——— (1996), "Intended and Unintended Effects of Corrective Advertising on Beliefs and Evaluations: An Exploratory Analysis," *Journal of Consumer Psychology,* 5 (3), 209–230.

Johnson, Hollyn M. (1994), "Processes of Successful Intentional Forgetting," *Psychological Bulletin,* 116 (September), 274–292.

Kardes, Frank R. (1993), "Consumer Inference: Determinants, Consequences, and Implications for Advertising," in *Advertising Exposure, Memory and Choice,* ed. Andrew A. Mitchell, Hillsdale, NJ: Erlbaum, 163–191.

Kruglanski, Arie W. and Tallie Freund (1983), "The Freezing and Unfreezing of Lay-Inferences: Effects on Impressional Primacy, Ethnic Stereotyping, and Numerical Anchoring," *Journal of Experimental Social Psychology,* 19 (September), 448–468.

MacInnis, Deborah J. and Bernard J. Jaworski (1989), "Information Processing from Advertisements," *Journal of Marketing,* 53 (October), 1–23.

———, Christine Moorman, and Bernard J. Jaworski (1991), "Enhancing Consumers' Motivation, Ability, and Opportunity to Process Brand Information from Ads: Conceptual Framework and Managerial Implications," *Journal of Marketing,* 55 (October), 32–53.

Maheswaran, Durairaj and Shelly Chaiken (1991), "Promoting Systematic Processing in Low-Motivation Settings: Effect of Incongruent Information on Processing and Judgment," *Journal of Personality and Social Psychology,* 61 (July), 13–25.

———, Diane M. Mackie, and Shelly Chaiken (1992), "Brand Name as a Heuristic Cue: the Effects of Task Importance and Expectancy Confirmation on Consumer Judgments," *Journal of Consumer Psychology,* 1 (4), 317–336.

Martin, Leonard L. and John W. Achee (1992), "Beyond Accessibility: The Role of Processing Objectives in Judgment," in *The Construction of Social Judgments,* ed. Leonard L. Martin and Abraham Tesser, Hillsdale, NJ: Erlbaum.

———, John J. Seta, and Rick A. Crelia (1990), "Assimilation and Contrast as a Function of People's Willingness and Ability to Expend Effort in Forming an Impression," *Journal of Personality and Social Psychology,* 59 (July), 27–37.

Meyers-Levy, Joan and Brian Sternthal (1993), "A Two-Factor Explanation of Assimilation and Contrast Effects," *Journal of Marketing Research,* 30 (August), 359–368.

——— and Alice M. Tybout (1997), "Context Effects at Encoding and Judgment in Consumption Settings: The Role of Cognitive Resources," *Journal of Consumer Research,* 24 (June), 1–14.

Moorman, Christine (1990), "The Effects of Stimulus and Consumer Characteristics on the Utilization of Nutrition Information," *Journal of Consumer Research,* 17 (December), 362–374.

Pechmann, Cornelia (1996), "Do Consumers Overgeneralize One-Sided Comparative Price Claims, and Are More Stringent Regulations Needed?" *Journal of Marketing Research,* 33 (May), 150–162.

Petty, Richard E. and John T. Cacioppo (1986), "The Elaboration Likelihood Model of Persuasion," in *Advances in Experimental Social Psychology,* ed. L. Berkowitz, Orlando, FL: Academic Press, 123–205.

——— and Duane T. Wegener (1993), "Flexible Correction Processes in Social Judgment: Correcting for Context-Induced Contrast," *Journal of Experimental Social Psychology,* 29 (March), 137–165.

Rosenthal, Robert and Ralph L. Rosnow (1985), *Contrast Analysis: Focused Comparisons in the Analysis of Variance,* New York: Cambridge University Press.

Ross, Lee, Mark R. Lepper, and Michael Hubbard (1975), "Perseverance in Self-Perception and Social Perception: Biased Attributional Process in the Debriefing Paradigm," *Journal of Personality and Social Psychology,* 32 (November), 880–892.

Schul, Yaacov and Eugene Burnstein (1985), "When Discounting Fails: Conditions under Which Individuals Use Discredited

Information in Making a Judgment," *Journal of Personality and Social Psychology,* 49 (October), 894–903.

—— and David Mazursky (1990), "Conditions Facilitating Successful Discounting in Consumer Decision Making," *Journal of Consumer Research,* 16 (March), 442–451.

Sheffet, Mary Jane and Bonnie B. Reece (1994), "Direct-to-Consumer Advertising of Prescription Drugs: Issues and Concerns," in *Marketing and Public Policy Conference Proceedings,* ed. Debra J. Ringold, Baltimore: University of Baltimore, 5–9.

Skowronski, John J. and Donal E. Carlston (1989), "Negativity and Extremity Biases in Impression Formation: A Review of Explanations," *Psychological Bulletin,* 105 (January), 131–142.

Stewart, David W. and Ingrid M. Martin (1994), "Intended and Unintended Consequences of Warning Messages: A Review and Synthesis of Empirical Research," *Journal of Public Policy and Marketing,* 13 (Spring), 15–28.

Wegner, Daniel M., Gary F. Coulton, and Richard Wenzlaff (1985), "The Transparency of Denial: Briefing in the Debriefing Paradigm," *Journal of Personality and Social Psychology,* 49 (August), 338–346.

Wilkie, William L. (1987), "Affirmative Disclosures at the FTC: Communication Decisions," *Journal of Public Policy and Marketing,* 6, 33–42.

Wilson, Timothy D. And Nancy Brekke (1994), "Mental Contamination and Mental Correction: Unwanted Influences on Judgments and Evaluations," *Psychological Bulletin,* 116 (July), 117–142.

Wright, Peter (1979), "Concrete Action Plans in TV Messages to Increase Reading of Drug Warnings," *Journal of Consumer Research,* 6 (December), 256–269.

Wyer, Robert S. and T. L. Budesheim (1987), "Person Memory and Judgments: The Impact of Information That One Is Told to Disregard," *Journal of Personality and Social Psychology,* 53 (July), 14–29.