Transfer Appropriate Processing, Response Fluency, and the Mere Measurement Effect

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The mere measurement of the intention to behave has been shown to influence the likelihood of engaging in the behavior. The mere measurement effect has been attributed to the increased accessibility of the information supporting the attitude toward the behavior. A second source of the mere measurement effect may be the redundancy in the processes used to generate the mere measurement response and the processes used to decide whether or not to engage in the behavior. Process redundancy creates a fluency that can be interpreted as supportive of the behavioral tendency. Seven studies are used to show that processing fluency also contributes to the mere measurement effect.

There is considerable evidence that the mere measurement of intent influences subsequent preference judgments, behavioral intent, and behavior (cf. Morwitz and Fitzsimons 2004; Spangenberg and Greenwald 1999). Specific intent questions can influence specific behavior (e.g., Greenwald et al. 1987; Sherman 1980) or general behavior (e.g., Spangenberg and Obermiller 1996) and general intent question can influence general behavior (e.g., Morwitz, Johnson, and Schmittlein 1993) or specific behavior (e.g., Fitzsimons and Morwitz 1996; Morwitz and Fitzsimons 2004). Moreover, mere measurement influences the performance of shopping behaviors, health-related activities, and pro- or anti-social behaviors (cf. Morwitz and Fitzsimons 2004).

The pervasiveness of the mere measurement effect makes the identification of a single underlying process difficult. Short-term, ephemeral mere measurement effects have been attributed to semantic priming and information accessibility. For example, Fitzsimons and Shiv (2001) propose that prior consideration of information about a target will influence subsequent judgments about the target because the prior information remains accessible and contaminates the subsequent judgment (see also Fitzsimons and Williams 2000). Long-term, persistent mere measurement effects have been attributed to the increased accessibility of attitudes (Fitzsimons and Morwitz 1996) and the increased accessibility of normative beliefs (Sprott, Spangenberg, and Fisher 2003). Morwitz and colleagues (Chandon, Morwitz, and Reinartz 2004; Dholakia and Morwitz 2002; Fitzsimons and Morwitz 1996; Morwitz and Fitzsimons 2004) provide evidence suggesting preexisting attitudes exert a strong, long-term influence on brand loyalty and consumption as a consequence of being measured.

It is possible that there is an additional source of the mere measurement effect. There is now considerable evidence that people are not only sensitive to the content of the information

generated in cognition, but also to the characteristics of the processes used to generate the information (Klinger and Greenwald 1994; Schwarz 2004; Whittlesea and Leboe 2000). Processing fluency refers to the ease of executing a cognitive activity, whether it be the generation of a perception (i.e., perceptual fluency), the retrieval of information from memory (i.e., retrieval fluency), or the assigning of meaning to an event (i.e., conceptual fluency). Attributions about processing fluency have been shown to influence judgments about preference, truth, and memory (Hasher, Goldstein, and Toppino 1977; Mandler, Nakamura, and Van Zandt 1987; Whittlesea, Jacoby, and Girard 1990) as well as influence eating behavior, social interaction, and compliance with requests (Burger et al. 2001; Capaldi 1996; Zajonc 1968). We propose a similar bias, based on the processing fluency of response planning, can contribute to the mere measurement effect.

This article investigates the influence of mere measurement on subsequent intentions to purchase the product. Our objective is to show that attributions about the processing fluency experienced during response planning, termed response fluency, can contribute to the mere measurement effect. We will show that response fluency effects are independent of information accessibility and attitude accessibility effects, while acknowledging both information content and attributions about process contributed to mere measurement effects. In experiment 1, we show that response fluency increases a subsequent purchase intention. Experiments 2A and 2B show that it is the degree of overlap in the processing activities used to answer the mere measurement question and the processing activities used to respond to the purchase intention question that creates the response fluency responsible for the mere measurement effect. Experiment 3 and 4 identify a boundary condition of the response fluency effect, showing attributions about response fluency are limited to situations where response fluency is high relative a baseline. Experiment 5

documents that people will not rely on attributions about response fluency when more diagnostic information is available.

MERE MEASUREMENT

The mere measurement effect occurs when the act of responding to an intent question alters respondents' subsequent evaluations and behaviors (Morwitz et al. 1993; Sherman 1980). Empirically similar to the self-prophecy effect, the influence of mere measurement has been documented in a wide variety of situations including automobile and home personal computer purchases (Morwitz et al. 1993), voting behavior (Greenwald et al.1987; Simmons, Bickart, and Lynch 1993), and socially desirable behaviors (e.g., volunteering, exercising, recycling) or socially undesirable behaviors (e.g., illegal drug use, eating fatty food, cheating) (Sherman 1980; Spangenberg 1997; Spangenberg and Obermiller 1996; Spangenberg et al. 2003; Williams, Fitzsimons, and Block 2004). In each of these cases, mere measurement biases subsequent judgments or behaviors in a pro-attitudinal or socially desirable direction, each factor exerting an independent, and occasionally countervailing, influence.

Accessible Information

Gregory, Cialdini, and Carpenter (1982) were the first to claim that mere measurement increases the accessibility of information that is consistent with the attitude toward the behavior. They asked participants to imagine using a cable television subscription service. Participants asked to consider using cable television were more likely to subscribe than those who were not asked. Gregory et al. (1982) explained this phenomenon as follows: when asked to imagine a scenario, people access information related to that scenario, and later on, when asked to act, they base their decision on the information that is most salient and accessible. Thus, imagining one

outcome gives more weight to the information consistent with that outcome. Similarly, Morwitz et al. (1993) argue that measuring intent increases the number of pro-purchase related thoughts and that these thoughts are more accessible during subsequent purchase judgments.

Morwitz and Fitzsimons (2004) provide evidence that measuring intent also increases the accessibility of the attitude toward the behavior (see also Morwitz and Fitzsimons 2002). Participants were asked to form attitudes about competing Canadian candy bars, list reasons for purchasing / not purchasing a particular candy bar, and to indicate if they would purchase a Canadian candy bar (i.e., general intent question). Participants asked to report their purchase intent were more (less) likely to choose a bar if they listed positive (negative) reasons for purchasing than participants that were not asked to report intent. Those who responded to the intent question were also more (less) likely to recall the more (less) accessible alternative and could more quickly judge the alternative as good (bad). Morwitz and Fitzsimons (2004) contend that "simply asking a general intentions question makes attitudes toward choice options that were previously accessible even more accessible" (p. 66).[1]

Despite the robust evidence that mere measurement increases the accessibility of pro-purchase related thoughts and summary attitudes, there are two findings that suggest there may be an additional source of the mere measurement effect. First, when a general intent question is asked subsequent to attitude formation for a single brand, it results in a mere measurement effect, whereas when a general intent question is asked subsequent to attitude formation for a single brand and purchase intention formation for five competing brands, there is no mere measurement effect (Morwitz and Fitzsimons 2002, experiments 1, 3 and 4). It is curious that attitude accessibility effects are negated when intentions toward all brands are measured prior to the

[1] Morwitz and Fitzsimons (2002, Experiments 1 and 4) find that mere measurement effects are not influenced by the accessibility of a behavioral intention.

general intent question. Second, mere measurement effects are stronger for people with limited product experience compared to people with extensive product experience (Morwitz et al. 1993). This finding is at odds with the information accessibility and the increased accessibility of attitudes explanations. Novices should have few pro-purchase related thoughts and weaker attitudes. If mere measurement increases the accessibility of attitudinally consistent information and/or atttitudes, then novice consumers should exhibit a weaker mere measurement effect than experienced consumers.[2]

Attributions about Processing Fluency

The inability of the information accessibility and attitude accessibility explanations to account for all of the findings in the mere measurement literature suggests there may be additional factors that contribute to the mere measurement effect. One possibility is that mere measurement effects occur because of attributions about the processing fluency experienced at the time a behavior is considered. A person may become more likely to make an attribution that the course of action is worthwhile, and be more willing to engage in that action, when it is easier to execute the cognitive processes supporting the consideration of the action (i.e., they experience response fluency). Our support of the response fluency hypothesis involves a discussion of the sources of processing fluency, the attributions people make about processing fluency, and the situations in which people are likely to make these attributions.

Sources of Processing Fluency. There are three sources of processing fluency. The first source of processing fluency is the increased activation associated with a stimulus representation owing to prior processing of the identical stimulus (e.g., Mandler, Nakamura, and Van Zandt

[2] Dholakia, Morwitz, and Westbrook (2004) show that novices participating in a customer satisfaction survey subsequently increase their patronage because they interpret the survey as concern on the part of the vendor (i.e., a positivity effect). The Morwitz et al. (1993) procedure did not have a sponsoring firm, so the positivity effect cannot account for their results.

1987). This type of fluency might be termed stimulus-specific retrieval fluency because stimuli are identical at training and test.[3] Stimulus-specific retrieval fluency can be obtained for items that are novel or meaningless, leading some to conclude that the processing fluency occurs as a consequence of perceptual processes (Shapiro 1999**;** Whittlesea 1987; 1993). Consistent with this claim, artificially increasing the activation of a stimulus at test (e.g., altering the contrast between a stimulus and its background) does increases processing fluency (Reber and Schwarz 1999; Reber, Winkleman, and Schwarz 1999; Whittlesea 1993; Whittlesea et al. 1990).

A second source of processing fluency is the overlap in the procedures or processes used for both a training and test task (Kolers 1973). To the extent that the component processes involved in a training and test task overlap, there is a potential for the training task to influence performance on the test task, independent of the stimuli used to complete each task. For example, practicing the reading of inverted text can facilitate subsequent reading of inverted text. The procedural approach has subsequently been called the transfer appropriate processing (TAP) approach owing to its emphasis on the overlap between processes used during training and test. This approach is often used to account for dissociations in performance on implicit and explicit memory tests (cf. Blaxton 1989; Roediger 1990; Roediger et al. 2002).

A third source of processing fluency is the combined overlap in processes and stimuli used for both training and test tasks, something we will term the enhanced transfer appropriate processing (ETAP) view (see Franks et al. 2000 for discussion). The ETAP view posits that there is additional processing fluency that results from "the unique interaction of a particular intentional act engaged with a particular stimulus situation" (Franks et al. 2000, p. 1140). For example, Franks et al. (2000) conduct 13 experiments in which two training tasks (e.g., lexical decision: "Is it a word?, animacy: "Is it alive?") are crossed with two identical test tasks (e.g.,

[3] Mandler et al. (1987) termed this type of fluency nonspecific activation.

lexical decision, animacy) for repeated and novel stimuli. Three interesting findings emerge. First, the majority of the studies show that common training and test tasks do not enhance reaction times to novel items (i.e., there is no TAP effect). Second, reaction times are facilitated when tasks and stimuli are repeated relative to situations when tasks are repeated and stimuli are novel (i.e., animicy – animacy is faster for old items than new items). Third, in the cross-task conditions, the reduced reaction time to repeated stimuli only occurs when the test task is subsumed by the acquisition task (i.e., the animicy training task – lexical decision test task combination results in an advantage for old items, but the lexical decision training task - animacy test task combination results in no advantage for old items). These last two findings are evidence for an ETAP effect in which the influence of the shared processes is specific to the stimulus.

Attributions about Processing Fluency. Attributions about processing fluency have been shown to influence a wide variety of judgments, including liking (Janiszewski 1993; Lee and Labroo 2004; Zajonc 1968), the fame of a name (Jacoby et al. 1989), the truth of a statement (Begg and Armour 1991; Hasher, Goldstein, and Toppino 1977), message comprehensibility (Masson 1995), memory accuracy (Whittlesea et al. 1990), and consideration set formation (Shapiro 1999). For example, if a person needs to make a judgment about liking, and experience has taught the person that easily processed stimuli are liked, then the person should attribute fluency with the stimulus to liking (Klinger and Greenwald 1994). For the most part, these demonstrations have depended on stimulus-specific retrieval fluency.

Constraints on Fluency Attributions. It is important to recognize that there are a specific set of stimulus and task characteristics that accompany the use of a processing fluency heuristic. First, although there are hundreds of demonstrations of the use of a processing fluency heuristic, a large majority of these demonstrations involve novel stimuli (Bornstein 1989; Schwarz 2004).

The large concentration of reported evidence with novel stimuli suggest a processing fluency heuristic may be more useful when there are no other sources of information for making a decision (Bornstein and D'Agostino 1994; Fiedler 2000; Schwarz 2004). Second, consistent with most attributional processes, attributions about processing fluency are influenced by the available contextual and target information. For example, Mandler et al. (1987) show that previously seen irregular octagons were more likely to be judged lighter *and* darker than novel octagons. The implication is that the attributions about processing fluency are not limited to one direction on a dimension, but are contingent on the constraints of the task. Similarly, prior exposure to positively (negatively) valenced, novel names increased the likelihood the names were recognized as famous senators (criminals), but not as famous criminals (senators) (Klinger and Greenwald 1994). In this case, the attribution about fluency was contingent on the task and the information being considered to complete the task.

Documenting the Use of Processing Fluency

We contend that purchase intention judgments can be sensitive to attributions about response fluency, just as liking, truth, and memory judgments are sensitive to attributions about processing fluency. We also contend that the complexity and specificity of a purchase intention judgment suggests that the processing fluency associated with response planning is a function of ETAP. Yet, we recognize that making a claim that processing fluency exerts a mere measurement influence above and beyond that of information content and/or attitude accessibility requires that we identify and demonstrate effects that have been uniquely associated with processing fluency.

Processing fluency effects have been shown to have a number of interesting properties. First, processing fluency effects are persistent. In a meta-analysis of mere exposure effects,

Bornstein (1989) finds that mere exposure effects are maintained as the delay between exposure and test increases from one minute to up to two weeks. Similarly, Kolers (1976) shows that unique text presentation formats can facilitate a person's ability to reread identical sentences 13 to 15 months after the initial reading. In contrast, information accessibility owing to semantic priming is known to decay quickly (Posner and Snyder 1975; Ratcliff and McKoon 1988), with a half-life of five minutes (Goshen-Gottstein and Kempinsky 2001).

Second, processing fluency effects exhibit correspondence (Kolers and Roediger 1984; Newell and Bright 2003; Roediger and McDermott 1993). As discussed above, stimulus-specific retrieval fluency effects require that identical stimuli be presented during training and test. The Franks et al. (2000) ETAP demonstrations suggest a more stringent criterion, arguing that both the stimulus and the type of processing must be equivalent at training and test for processing fluency to occur. This conclusion is qualified by the finding that there can be generalization from a training task that includes a large number of processes (e.g., animacy) to a test task that includes a subset of those processes (e.g., lexical decision), assuming the subset of processes is meaningful in the training task (Moscovitch 1992; Roediger, Buckner, and McDermott 1999). The information accessibility literature makes no prediction about this issue, although it could be argued that the accessibility of information about a stimulus should be equivalent regardless of the order of two positively correlated tasks.

Third, processing fluency effects depend on relative fluency -- a judgment context where perception of the target stimulus is more fluent than expected (Whittlesea and Williams 1998; 2000). Expectations about processing fluency can be created by other stimuli that are being rated in the same test stimulus set (i.e., an acquaintance creates a stronger feeling of familiarity among strangers than friends) or by the environment (i.e., an acquaintance creates a stronger feeling of

familiarity in a novel location than in their home). In fact, it is interesting to note that demonstrations of processing fluency invariably use procedures that include repeated and novel stimuli in the test stimulus set, regardless of the area of inquiry (i.e., judgment, memory, behavioral response).

Summary

If attributions about the processing fluency experienced during response planning (i.e., response fluency) contribute to the mere measurement effect, then we should be able to observe the properties of persistence, correspondence, and relative fluency in demonstrations of the mere measurement effect. In experiment 1, we investigate the properties of correspondence and relative fluency. We show that the mere measurement effect occurs when target judgments have processes that overlap with prior judgments (i.e., overlapping component processes). We also show that the mere measurement effect only occurs when the response fluency is relatively diagnostic. When response fluency is equivalent for all possible courses of action, it has no impact on the course of action. In a follow-up to experiment 1, we show the persistence of the response fluency effect.

EXPERIMENT 1

Experiment 1 was designed to assess whether response fluency contributes to the mere measurement effect. Respondents were asked to review two unfamiliar, equally preferred ice cream treats (e.g., Royal Cornetto and Extreme). In the sole intent question condition, respondents were asked if they planned to purchase one of the two brands (e.g., “Would you like to buy Royal Cornetto?”). In the dual intent question condition, respondents were asked if they planned to purchase the first of the two brands (e.g., “Would you like to buy Royal Cornetto?”)

and then, in a second question, whether they planned to purchase the second of the two brands (e.g., "Would you like to buy Extreme?"). In a general intent question condition, respondents were asked, "Would you like to buy an ice cream treat?" Control respondents were not asked an intent question. Afterwards, all respondents were asked to indicate their purchase likelihood using a nine-point scale.

This experimental design allows us to assess the relative influence of different sources of the mere measurement effect. First, if mere measurement effects occur because measuring intention increases accessibility to information needed to form an intention, then there should be a significant influence of mere measurement in the sole intent, dual intent, and general intent conditions. All of these conditions make information supporting a purchase more accessible. Second, if mere measurement effects occur because measuring intention encourages the creation of an attitude that is subsequently made more accessible, then there should be a significant influence of mere measurement in the sole intent and dual intent conditions because these conditions increase the accessibility of attitudes toward the brands.[4] Finally, if mere measurement effects occur because of response fluency, then there should be a significant influence of mere measurement in the sole intent condition but not in the dual or general intent conditions. The dual intent condition does not create relative fluency because the measurement of purchase intent toward each brand encourages equivalent response fluency for each brand at the time of the test (i.e., a judgment about one brand is not relatively more fluent than a judgment about the other). The general intent question does not allow for sufficiently specific response fluency (i.e., it lacks correspondence) because it is not specific to a brand.

[4] It could be argued that purchase intentions depend on the relative accessibility of the attitudes of the competing brands, rather than the absolute accessibility of each brand's attitude. That is, if more than one attitude is highly accessible, each attitude blocks the other and no attitude information is accessed. Experiment 3 directly addresses this alternative explanation.

Design and Procedure

The experiment was a four-cell between-group design with three treatment groups (sole, dual, and general intent questions) plus a control group. Sixty-four respondents from an undergraduate subject pool were invited into a lab in groups of up to 20 and seated at personal computers. Respondents read an introduction stating that a European frozen confectionary company was planning to introduce ice cream products into the U.S. market. Respondents then viewed pictures of two European brands of ice cream treats (Royal Cornetto and Extreme). After viewing the product pictures for three seconds, the intent question(s) was/were asked (e.g., "Would you like to buy ___?") and respondents answered "no" or 'yes". Following a five-minute filler task, respondents indicated their likelihood of purchasing each treat using a nine-point scale with anchors "not at all likely" and "extremely likely". The brand associated with the intent question in the sole intent question condition, and the brand queried first in the dual intent question condition, were counterbalanced. Thus, we controlled for any potential brand effects.

Pretest. Forty-one respondents were asked to state their preference for each of the brands using a 1 – 10 scale with endpoints labeled "very negative" and "very positive". Preference did not significantly differ for the brands ($M_{\text{Royal Cornetto}} = 5.49$, $M_{\text{Extreme}} = 5.83$; $F(1, 40) = .59$, $p > .05$). Thus, the brands had relatively neutral and equal ratings.

Results

Thirteen respondents were removed from the analysis because they indicated they did not eat ice cream or were familiar with the brands, yielding a final sample of 51 respondents. The results are shown in figure 1.

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Respondents in the sole intent question condition had a significantly higher purchase likelihood for the brand that was measured ($M_{\text{measured intent}} = 7.38$) relative to the brand that was not measured ($M_{\text{not measured}} = 5.77$; $t(12) = 2.39$, $p < .05$) and for the measured brand relative to the average of the brands in the control condition ($M_{\text{treatment}} = 7.38$, $M_{\text{control}} = 6.03$; $F(1, 27) = 3.50$, $p < .05$).[5] There was no difference in purchase likelihood between the dual intent question condition and control conditions for Royal Cornetto ($M_{\text{control}} = 5.62$, $M_{\text{treatment}} = 5.92$; $F(1, 35) = 0.18$, $p > .05$), Extreme ($M_{\text{control}} = 6.44$, $M_{\text{treatment}} = 6.50$; $F(1, 35) = 0.01$, $p > .05$), or the combination of the two ($F(2, 34) = 0.10$, $p > .05$). There was no difference in purchase likelihood between the general intent question condition and control conditions for Royal Cornetto ($M_{\text{control}} = 5.62$, $M_{\text{treatment}} = 6.40$; $F(1, 35) = 1.16$, $p > .05$), Extreme ($M_{\text{control}} = 6.44$, $M_{\text{treatment}} = 6.80$; $F(1, 35) = 0.26$, $p > .05$), or the combination of the two ($F(2, 34) = 0.57$, $p > .05$).

Discussion

The results of experiment 1 suggest mere measurement effects may be sensitive to the response fluency created by the initial intent question. Consistent with results in the processing fluency literature, the mere measurement effect required correspondence as evidenced by the lack of a mere measurement effect in the general intent question condition. The mere measurement effect also required relative processing fluency, as evidenced by the lack of a mere measurement effect in the dual intent question condition.

If our interpretation of the data from experiment 1 is correct, then there are three additional pieces of evidence that would be informative about how attributions about response fluency contribute to mere measurement effects. First, we should show that the effects observed in experiment 1 are persistent, as is the case with processing fluency effects (Bornstein 1989) and ETAP effects (Kolers 1976). Second, we should more convincingly show that information

[5] Given the unidirectional predictions of the mere measurement hypothesis, all hypothesis tests are one-tailed.

accessibility is not an alternative explanation for the claimed response fluency effect. For example, consistent with findings in the ETAP literature, we should be able to actively manipulate the level of correspondence between a mere measurement question and a subsequent dependent measure to promote or suppress the mere measurement effect. Third, we should show that the mere measurement effect depends on relative response fluency. For example, dual intent questions should not result in a mere measurement effect when the only brands under consideration for purchase are the queried brands, as in experiment 1, but should result in a mere measurement effect when there are additional brands available for purchase. There will be no response fluency associated with these additional brands, hence the response fluency associated with the brands subjected to an intent question becomes relevant to the subsequent purchase judgment.

To demonstrate that the effects observed in experiment 1 are persistent, we reran the control condition and sole intent question condition with a five minute delay or 30 minute delay between the initial intent question and the purchase likelihood measure. The long delay was created by having respondents watch two videos inserted between the initial intent question and dependent measure. Respondents showed a significantly higher purchase likelihood for the intent question brand in the five minute ($M_{\text{not measured}} = 6.17$, $M_{\text{measured intent}} = 6.78$; $F(1, 26) = 5.08$, $p < .05$) and 30 minute ($M_{\text{not measured}} = 5.85$, $M_{\text{measured intent}} = 6.59$; $F(1, 33) = 4.44$, $p < .05$) conditions. The persistence of the mere measurement effect suggests semantic priming is not responsible for the effect we observed in experiment 1. Most semantic priming effects dissipate in minutes (Posner and Snyder 1975; Ratcliff and McKoon 1988).

Although the results of experiment 1 are consistent with the hypothesis that people are making attributions about their response fluency, one could argue that information accessibility

was responsible for the results. It could be argued that the general intent question did not create enough accessibility to the information needed to increase purchase likelihood and that the dual intent questions diffused accessibility because each intent question accessed different types of information. In each case, this lack of accessibility led to a null result. Experiment 2 addresses this issue by investigating the role of correspondence in the mere measurement effect.

EXPERIMENTS 2A AND 2B

The goal of experiment 2 is to show that the response fluency explanation can be differentiated from the information accessibility explanation by conceptually replicating the correspondence results from the ETAP literature. Recall that the correspondence results suggests response fluency should occur (1) when the processes and stimuli are identical at training and test or (2) the stimuli are identical at training and test and the processes at training subsume the processes at test, but not when the stimuli are identical at training and test and the processes at training are a subset of the processes at test. In contrast, an information accessibility explanation predicts that making the appropriate information available at training (i.e., when asking the intent question) should influence the response at test (i.e., purchase intention) regardless of the overlap in processes.

To investigate these predictions we conducted two concurrent experiments. In the whole-part experiment (experiment 2A), we used mere measurement questions that assessed a purchase intention (i.e., process A and B) or part of the information supporting a purchase intention (i.e., process A). More specifically, we asked respondents if they planned to purchase a product (e.g., "Would you like to buy Royal Cornetto?") or if they thought a product was appealing (e.g., "Is Royal Cornetto an appealing product?"). Subsequently, we asked respondents to report their

purchase likelihood (i.e., process A and B) or to judge the appeal of the product (i.e., process A). Thus, we created a two by two between-participant design with a whole or part initial intent question and a whole or part dependent measure.

In accordance with the correspondence findings in the ETAP literature, we expected the influence of the mere measurement question would be limited to specific cases (see figure 2). The mere measurement effect should be obtained when the processes are identical at training and test (i.e., whole-whole and part-part) or the processes at training subsume the processes at test (i.e., whole-part), but not when the processes at training are a subset of the processes at test (i.e., part-whole). The information accessibility explanation predicts the mere measurement questions should influence subsequent judgments in all four conditions.

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One potential limitation of experiment 2A is the key differentiating prediction. The ETAP correspondence prediction is that people who respond to an initial, general intent question will subsequently rate a product as more appealing, but that people who respond to an initial appeal question will not increase their purchase likelihood. This later prediction is especially troubling for the information accessibility explanation because product appeal should be relevant information for a purchase likelihood judgment. Still, one could argue that the information accessibility explanation could predict the same pattern of results as the response fluency explanation if it was assumed that (1) information is most diagnostic when there is a match between the intent question and the subsequent dependent measure (e.g., whole-whole, part-part) and (2) the general intent question simply increases commitment (a possibility in the whole-part

condition). Experiment 2B addresses this modified information accessibility explanation by trying to show that general intent questions do not uniformly enhance responses on subsequent measures.

In the general-specific experiment (experiment 2B), specificity was manipulated at the level of intent. The objective was to create a situation where there was no overlap between the general intent (i.e., process A and B) and the specific intent (i.e., process C and D) questions. Respondents were asked whether they planned to purchase a product (e.g., "Would you like to buy Royal Cornetto?") or whether they planned to purchase the product for a specific occasion (e.g., "Would you buy Royal Cornetto for a children's party?"). The two subsequent purchase likelihood dependent measures corresponded to each of these scenarios. The ETAP correspondence prediction is that there should be a mere measurement effect in the general-general and specific-specific conditions, but not in the other two conditions (see figure 3). The modified information accessibility explanation predicts an additional mere measurement effect in general-specific condition. As in experiment 2A, the unmodified information accessibility explanation predicts a mere measurement effect in all four conditions.

Similar to the sole condition of experiment 1, each experimental design included a third within-subject manipulation of the brand receiving the mere measurement question (i.e., the intent question was asked about only one of the two brands). The brand receiving the mere measurement question was counterbalanced.

Results

The procedure was the same as the procedure in experiment 1. Sixty-six respondents from an undergraduate subject pool participated in the whole-part experiment and 66 undergraduate respondents participated in the general-specific experiment. The brand

counterbalance factor associated with the mere measurement question did not interact with any of the experimental manipulations, so means were collapsed across this variable. The results are shown in figure 4.

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Whole-part experiment 2A. As predicted by both the accessibility and the ETAP-based response fluency explanations, there was an influence of the initial purchase intent question on the purchase likelihood dependent measure ($M_{\text{not measured}} = 5.04$, $M_{\text{measured intent}} = 6.00$; $t(22) = 2.33$, $p < .05$) and the initial product appeal question on the product appeal dependent measure ($M_{\text{not measured}} = 6.62$, $M_{\text{measured appeal}} = 7.31$; $t(12) = 2.25$, $p < .05$). As predicted by the ETAP-based response fluency explanation, there was an influence of the initial purchase intent question on the product appeal dependent measure ($M_{\text{not measured}} = 5.60$, $M_{\text{measured intent}} = 7.20$; $t(14) = 2.26$, $p < .05$), but no influence of the initial product appeal question on the purchase likelihood dependent measure ($M_{\text{not measured}} = 6.33$, $M_{\text{measured appeal}} = 6.20$; $t(14) = 0.34$, $p > .40$).

General-specific experiment 2B. There was an influence of the initial general purchase intent question on the general purchase likelihood dependent measure ($M_{\text{not measured}} = 6.00$, $M_{\text{measured intent}} = 6.81$; $t(15) = 1.98$, $p < .05$) and the initial specific purchase intent question on the specific purchase likelihood dependent measure ($M_{\text{not measured}} = 6.25$, $M_{\text{measured intent}} = 7.25$; $t(15) = 2.28$, $p < .05$). There was no influence of the initial general purchase intent question on the specific purchase likelihood dependent measure ($M_{\text{not measured}} = 5.42$; $M_{\text{measured intent}} = 6.00$; $t(18) = 1.22$, $p > .15$). There was no influence of the initial specific purchase intent question on the

general purchase likelihood dependent measure ($M_{\text{not measured}} = 5.53$, $M_{\text{measured intent}} = 5.67$; $t(14) = 0.40$, $p > .40$).

Discussion

The purpose of experiment 2A and 2B was to provide additional evidence that attributions about response fluency contribute to the mere-measurement effect. The results of the experiments show that the correspondence between the processes performed during the response to the intent question and the response to the subsequent dependent measure contribute to the mere measurement effect. Of course, this result assumes the stimulus (i.e., brand) at the initial measurement and test is identical.[6]

The first four experiments attempt to provide evidence that ETAP-based response fluency can contribute to the mere measurement effect. An effort has been made to show that the entire pattern of results cannot be explained by an information accessibility hypothesis. The entire pattern of results also cannot be explained by stimulus-specific retrieval fluency or TAP fluency. Stimulus-specific retrieval fluency would predict mere measurement effects in all eight of the conditions in experiments 2A and 2B. TAP fluency would predict a null effect in the whole-part condition of experiment 2A, and an effect in the general-specific and specific-general conditions of experiment 2B. Still, we admit that the ETAP explanation is hard to definitively support because it relies on attributions about response fluency that is sensitive to a combination of information content and process. In other words, it is hard to differentiate the influence of content-based processing from the influence of content itself. Experiment 3 addresses this issue.

[6] A reviewer points out that the means of the no intent question brand are higher in the general-general ($M = 6.00$) than the specific-general ($M = 5.53$) and in the specific-specific ($M = 6.25$) than the general-specific ($M = 5.42$) conditions. This suggests there may be a TAP effect in that the intent question need not be asked about the target brand for a mere measurement effect to occur.

EXPERIMENT 3

In experiment 1, we found that measuring a purchase intention toward one brand influenced the subsequent purchase likelihood of the brand, but measuring the purchase intention toward two brands did not influence the subsequent purchase likelihood of either brand. We argued that the lack of a mere measurement effect was due to the absence of relative response fluency in the dual intent question condition. In the dual intent condition, the generation of a purchase likelihood judgment was not more fluent for one brand relative to the other because respondents had previously stated their purchase intention for both brands. Therefore, respondents did not make attributions about their response fluency when making the purchase likelihood judgment.

A variation of the increased attitude accessibility explanation could account for the results of experiment 1. It may be that measuring intent on two brands interfered with the accessibility of attitudes about either brand (see footnote 4). To rule out this alternative attitude accessibility explanation, we attempted to manipulate the relative fluency of the target brands using a procedure that should not create interference. We kept the dual intent question procedure identical to experiment 1, but varied the number of brands available at test. Similar to experiment 1, one consideration set condition measured the purchase likelihood of only the two target brands. A second consideration set condition measured the purchase likelihood of novel brands prior to measuring the purchase likelihood of the target brands. If response fluency is responsible for the mere measurement effects we are observing, then we should observe a mere measurement effect in the expanded consideration set condition. If the results of experiment 1 were a consequence of interference, consistent with the attitude accessibility account, then we should observe a null effect in each consideration set condition.

Design and Procedure

The experiment consisted of a two-by-two design: dual intent questions (present or absent) and the number of brands about which respondents were asked to rate their purchase likelihood (two brands or five brands). The procedure mimicked the procedure from experiment 1. In the dual intent question – two brands condition, respondents were shown two brands, asked an intent question about each of the brands, and subsequently asked to rate their purchase likelihood of the same two brands. In the dual intent question – five brands condition, respondents were shown two brands, asked an intent question about each of the brands, and then were asked to rate their purchase likelihood of three "no intent" brands and the two "intent brands" (dependent measure order was new brand, intent brand, new brand, intent brand, new brand). A Latin square design was used to select the two brands, from the set of five, that were subjected to the intent question.[7] The intent questions were not administered in the intent question absent conditions (i.e., respondents simply saw pictures of two brands). We expected that a mere measurement effect would occur only in the dual intent question – five brands condition.

Results

One hundred five undergraduate respondents received extra credit to participate in the experiment. The results are shown in figure 5.

****
Place Figure 5 about here
****

The two factors (the number of brands shown and the presence of the intent question) interacted significantly ($F(1, 101) = 3.95$, $p < .05$). There was no effect of intent question order

[7] All five brands were unfamiliar frozen confectionary treats (Batonnet 8, Extreme, Picard, Pilpa, and Royal Cornetto).

($F(1, 85) = .99$, $p > .05$) and the brand counterbalance did not interact with any manipulated variable. The reported means are the arithmetic average of the two brands that were viewed initially. There was no difference in purchase likelihood between the dual intent question and control conditions when two brands were in the consideration set ($M_{\text{not measured – 2 brands}} = 6.03$, $M_{\text{measured intent – 2 brands}} = 6.36$; $F(1, 101) = .61$, $p > .05$). This result replicated the results of experiment 1. However, as predicted, there was a significant difference in purchase likelihood between the dual intent question and control conditions when five brands were in the consideration set ($M_{\text{not measured – 5 brands}} = 5.76$, $M_{\text{measured intent – 5 brands}} = 7.20$; $F(1, 101) = 15.58$, $p < .05$). In the dual intent question conditions, the intent question had a greater influence on purchase likelihood when there were five brands present ($M_{\text{measured intent – 5 brands}} = 7.20$) as opposed to two brand present ($M_{\text{measured intent – 2 brands}} = 6.36$; $F(1, 101) = 5.05$, $p < .05$) at test.

Discussion

The results of experiment 3 provide additional evidence that attributions about response fluency contribute to the mere measurement effect. The mere measurement effect was obtained only when the previously measured brands were subsequently judged in a context where less fluent judgments were also made (e.g., the five brand condition). We were able to vary the relative fluency of the purchase likelihood judgments by varying the number of brands judged. Thus, experiment 3 provides further evidence for the property of relative response fluency.

Experiment 3 also provides evidence that is inconsistent with a number of competing explanations. First, the mere measurement effect in the five brand condition suggests information interference among equally accessible attitudes is not responsible for the lack of a mere measurement effect in the two brand condition. Interference among equally accessible attitudes should persist whether there are two or five brands at test. Second, the results suggest that

stimulus-specific *retrieval-based fluency* is not sufficient to influence subsequent purchase likelihood judgments. Exposure to the two brands, sans a purchase intention measure, did not result in higher purchase likelihood in the intent measure absent – five brand condition. Third, the lack of a higher purchase likelihood in the intent measure absent – five brand condition also rules out the possibility of a demand effect wherein initial exposure alerted respondents that they should express a greater willingness to purchase the brands when considered in a larger set of brands. Fourth, the lack of a mere measurement effect in the intent measure present – two brand condition is inconsistent with the hypothesis that measurement itself alerts respondents that they should express a greater willingness to purchase the brands.

Thus far, our demonstrations that attributions about response fluency contribute to the mere measurement effect have relied on reported purchase likelihood as opposed to volitional behavior. Although there is considerable evidence that mere measurement does influence anticipated and actual behavior equivalently, claims that response fluency contribute to the mere measurement effect would be reinforced by a replication of our results using a volitional behavioral dependent measure. Experiment 4 provides this evidence.

EXPERIMENT 4

Experiment 4 was a replication of experiment 3 with product purchase as a dependent measure. Owing to the difficulty of working with frozen confectionary treats, the stimuli were changed to candy. The procedure was a modification of the procedure used in experiment 1. Respondents were told that the experiment investigated the influence of snack consumption on movie enjoyment. First, respondents were shown pictures of fifteen candy bars and asked to indicate their preference for each bar using a 0-100 scale. Then respondents were told that they

had $2 to purchase candy. Respondents in the intent question conditions were asked if they planned to purchase their second favorite candy followed by the same question for their third favorite candy. Respondents in the no intent question conditions were not asked the intent questions. After a short filler task, respondents were given an electronic order form that listed their second and third favorite candy (two brand condition) or their five favorite candies (five brand condition). Respondents could spend the $2 to purchase bite-size candies priced at $.15 per piece. The experimenter then fulfilled the purchase order and the respondent watched a 15-minute movie clip. The respondent then evaluated the movie watching experience.

We predicted that there would be no difference in candy purchase volume between the intent and no intent question conditions when the order form contained only the respondent's second and third favorite brands, but that respondents answering the intent questions would purchase more of their second and third favorite brands when the order form contained their top five brands.

Results

One hundred twenty-seven undergraduate respondents received extra credit to participate in the experiment. The results are shown in figure 6.

****
Place Figure 6 about here
****

The reported means are the average purchase volume of the second and third favorite types of candy. There was no difference in purchase volume between the intent question and no intent question conditions when two brands were on the order form ($M_{\text{not measured}} = 3.36$, $M_{\text{measured intent}} = 3.91$; $F(1, 61) = 1.39$, $p > .05$). This null result was not a ceiling effect as respondents

could have purchased an average of 6.5 of each type of candy.[8] However, as predicted, there was a significant difference in purchase volume between the intent question and no intent question conditions when five brands were on the order form ($M_{\text{not measured}} = 1.95$, $M_{\text{measured intent}} = 2.53$; $F(1, 62) = 3.40$, $p < .05$). These results replicate the results of experiment 3 with an actual purchase response.

EXPERIMENT 5

The results of the six experiments might encourage one to conclude that attributions about response fluency are the sole source of mere measurement effects. As we have argued throughout the article, this is not the case. In fact, it is only under specific conditions that response fluency will contribute to the mere measurement effect. Consistent with the literature on processing fluency effects, response fluency effects should only occur when there is no competing diagnostic information. For example, in the case of our stimuli, the brands are novel. Thus, respondents have little substantive information about the brands and are unlikely to have formed attitudes about the brands. We expect that when people do have information about brands, they will rely on this information and the influence of response fluency will be mitigated.

Design and Procedure

The experiment consisted of a two-by-two between-subject design: sole intent question (absent or present) and brand information (absent or present). At time one, respondents were presented with two frozen confectionary brands, one of which received the intent question in the intent question present conditions (intent question counterbalanced by brand). At time two, information was provided about one of the two brands in the information present conditions. The information was listed below one of the two brands and consisted of "is made from natural

[8] Only three participants in each two-brand condition bought the maximum 13 candies.

ingredients", "is some of the creamiest ice cream you will ever eat", and "is incredibly rich and flavorful". In the intent question plus information condition, information was provided about the intent question brand. At time three, respondents in the information condition were asked to state which of the product features was more appealing and why and which of the product features was least appealing and why. After a delay of five minutes, purchase likelihood toward each brand was measured.

Results

Ninety-eight undergraduate respondents received extra credit to participate in the experiment. The results are shown in figure 7.

****
Place Figure 7 about here
****

Respondents in the sole intent question condition had a significantly higher purchase likelihood for the brand that was measured ($M_{\text{measured intent}} = 6.15$) relative to the brand that was not measured ($M_{\text{not measured}} = 5.33$; $t(26) = 2.41$, $p < .05$) and for the measured brand relative to the average of the brands in the control condition ($M_{\text{treatment}} = 6.15$, $M_{\text{control}} = 5.00$; $F(1, 46) = 4.08$, $p < .05$). This replicates the response fluency based mere measurement effect from experiment 1.

It was predicted that there would be no additional influence of mere measurement in the information condition. The appropriate test assesses if there is an advantage for the mere measurement / information brand ($M_{\text{treatment}} = 5.74$) relative to the control ($M_{\text{control}} = 5.13$) as compared to the information brand ($M_{\text{treatment}} = 6.15$) relative to the control ($M_{\text{control}} = 5.33$). This interaction is not significant ($F(1, 45) = 0.02$, $p > .05$). However, as one might expect, people did prefer the information brand ($M_{\text{treatment}} = 6.12$) relative to the no information brand ($M_{\text{control}} =$

5.54; $F(1, 45) = 5.16$, $p < .05$). In summary, mere measurement provided no advantage above and beyond brand information.

Discussion

The results of experiment 5 suggest attributions about response fluency will only generate a mere measurement effect when there is no diagnostic content that can inform the judgment. When there is diagnostic information, such as attribute information, people will rely on the attribute information and fail to make an attribution about response fluency. It is interesting to note that one may have anticipated that the information-based explanations of the mere measurement effect would have predicted a mere measurement effect in the intent question plus information condition. We expect the lack of an effect can be attributed to the fact that people were not forced to crystallize attitudes prior to answering the intent question, as was the case in Morwitz and Fitzsimons (2004). Providing brand attribute information after the intent question made the attribute information a second, independent source of information about the brand.

GENERAL DISCUSSION

An information processing activity consists of two types of events. The first type of event consists of the acts or procedures used to manipulate information in accordance with the demands of the task (i.e., processing activity). The second type of event is the output or experience generated by those processing activities (i.e., information content). Traditionally, mere measurement effects have been attributed to information content. We show that mere measurement effects are also sensitive to the fluency associated with the processing activity. Consistent with the enhanced transfer appropriate processing perspective, we show that when people use similar processes to manipulate similar information during an initial intent response

and in a subsequent purchase likelihood or purchase response, they can experience response fluency when generating the subsequent response. They can attribute this response fluency to be evidence that they are predisposed toward the behavior and, consequently, be more predisposed to engage in the behavior.

Seven experiments are used to demonstrate how, and when, response fluency contributes to the mere measurement effect. Experiments 1 and 2 show that response fluency driven mere measurement effects occur when there is correspondence between the processes used to respond to the initial intent question and a subsequent response. These experiments suggest that it is not solely information content and it is not solely the fluency of an information process (i.e., TAP fluency) that contributes to the mere measurement effect. It is also the response fluency that occurs from reprocessing material in a similar manner (i.e., ETAP fluency). Experiments 1, 3, and 4 also show that mere measurement effects are sensitive to the relative response fluency associated with making a judgment. If the response to all of the brands available for purchase is equally fluent, people do not become more likely to purchase any of the brands. It is only when a subset of the responses to brands are fluent that mere measurement effects are observed. Finally, as shown in experiment 5, attributions about response fluency will not influence behavior if more diagnostic information content is available.

Implications

The response fluency source of the mere measurement effect may be able to explain some of the more anomalous findings in the mere measurement literature. For example, consider the finding that mere measurement effects are stronger for inexperienced consumers (Morwitz et al. 1993). If we assume that inexperienced consumers have less information about a brand and are less likely to have formed attitudes, then it may be the case that they are more likely to rely on

attributions about response fluency, as illustrated in our experiment 5 results. Similarly, consider the finding that a general intent question results in a mere measurement effect when asked subsequent to attitude formation about a single brand, but not subsequent to attitude formation about a single brand and reported purchase intent toward a consideration set of brands. It is possible that reporting intent about all brands reduces the response fluency advantage of the brand for which the attitudinal response was solicited, similar to our relative fluency demonstrations in experiments 1, 3, and 4.

It is interesting to note that mere measurement effects are part of a class of effects showing that people's behavior is sensitive to the mere consideration of information. Evidence on behavior priming (Bargh, Chen, and Burrows 1996) and mimicry (Chartrand and Bargh 1999) suggests that the mere consideration of a concept or the mere observation of behavior can alter a person's behavior. In many cases, the behaviors that result from mere consideration or mere observation allow a person to achieve social or task goals, thus could be considered volitional and deliberately chosen. In other cases, the behaviors that result from mere consideration or mere observation do not seem to have any meaningful purpose. As a consequence, it has been argued that the perception of a behavior or activation of a behavioral-based concept can directly activate the neurocognitive systems involved in performing the behavior, a type of perception-to-behavior link (Martin et al. 1995; Rizzolatti, Fogassi, and Gallese 2000). ETAP-based response fluency is an alternative explanation for these mere observation and consideration effects. It may be the case that observing a behavior makes consideration of that behavioral response more fluent and, thus, increases the likelihood the behavior will be performed. Hence, when a repertoire of behaviors is available, a previously seen behavior can influence the response

fluency associated with one of the behaviors and the behavior becomes a more likely candidate for execution.

Limitations

The results should not be taken as evidence that information content is not relevant to the mere measurement effect. For example, if our respondents did not like ice cream, then they did not express a willingness to try the products we advertised. For these subjects, mere measurement could not contribute to an increase in purchase likelihood. Thus, response fluency enhances attitudinally consistent behavior. In effect, response fluency is interpreted and used as evidence to support the strength of a response. The direction of the response is determined by the valence of the information content or output. This finding is consistent with claims that the mere measurement effect and self-prophecy effect are limited to attitudinally consistent behaviors (Morwitz and Fitzsimons 2004; Sherman 1980; Spangenberg et al. 2003).

Our results cannot be used to comment on the social desirability explanation of the self-prophecy effect advocated by Spangenberg and colleagues (Spangenberg 1997; Spangenberg and Greenwald 1999; Spangenberg et al. 2003). The stimuli used in our studies (e.g., frozen confectionary treats, candy) do not involve socially desirable acts and would not cause dissonance in the event a person did not behave in accordance with his/her prediction. As such, attributions about response fluency should be viewed as a source of mere measurement that operates outside the domain of socially desirable behaviors.

Finally, we expect that response fluency driven mere measurement effects are limited to certain classes of behaviors. Intent questions should be more effective at changing behavior with respect to an act versus an outcome. An act, like purchasing a product, is concrete and can be considered in the context of the intent question. An outcome, like losing weight or becoming a

better person requires a series of specific behaviors that have limited ETAP overlap with the intent question. In addition, as suggested by the results of experiment 5, intent questions should be more effective for infrequent or novel acts for which there is little competing information. What is not clear is whether response fluency can bias responses for behaviors that a consumer is knowledgeable about. For example, although a person may know a considerable amount about the product they wish to purchase, the person may not recruit detailed attribute information at the time the purchase decision is being made. Thus, we expect that people will not rely on response fluency when they are also considering attribute information (experiment 5), but also that response fluency may exert an influence when people fail to consider attribute information.

FIGURE 1

EXPERIMENT 1 RESULTS

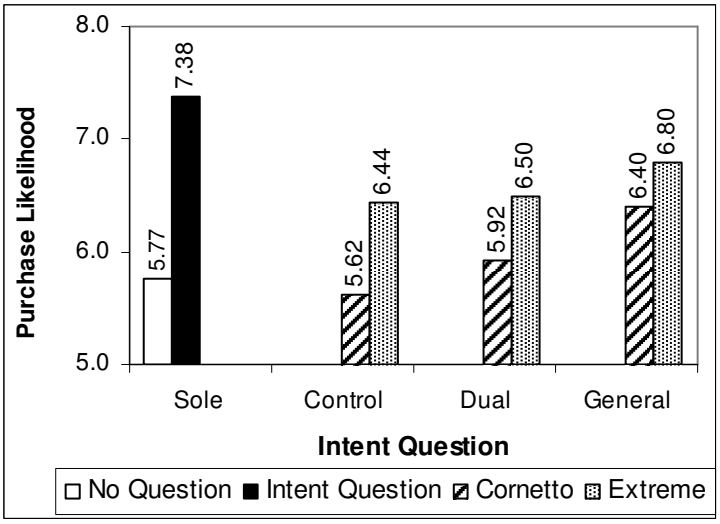
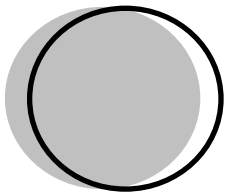
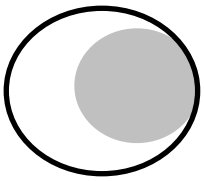
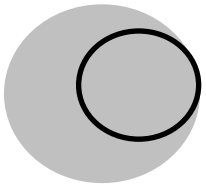
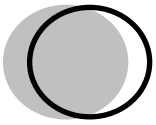


FIGURE 2

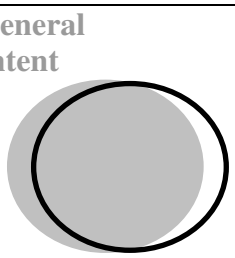
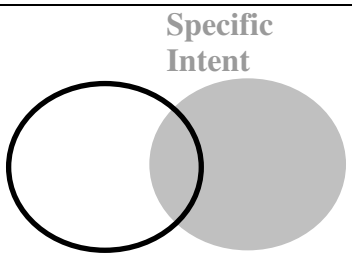
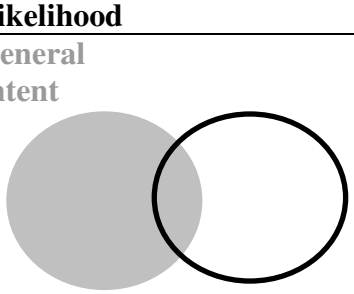
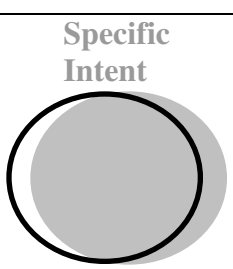
ILLUSTRATION OF CONDITIONS IN EXPERIMENT 2A

	General Intent Question at Time 1	**Specific Appeal Question at Time 1**
Purchase Likelihood at Time 2	**Intent**  **Purchase Likelihood**	**Appeal**  **Purchase Likelihood**
Brand Appeal at Time 2	**Intent**  **Brand Appeal**	**Appeal**  **Brand Appeal**

Note. – The hypothesized overlap between the processes supporting the response to the initial mere measurement question (gray) and subsequent response question (black)**.**

FIGURE 3

ILLUSTRATION OF CONDITIONS IN EXPERIMENT 2B

	General Intent Question at Time 1	**Specific Intent Question at Time 1**
General Purchase Intention at Time 2		
Specific Purchase Intention at Time 2		

Note. – The hypothesized overlap between the processes supporting the response to the initial mere measurement question (gray) and subsequent response question (black)**.**

FIGURE 4

EXPERIMENT 2A and 2B RESULTS

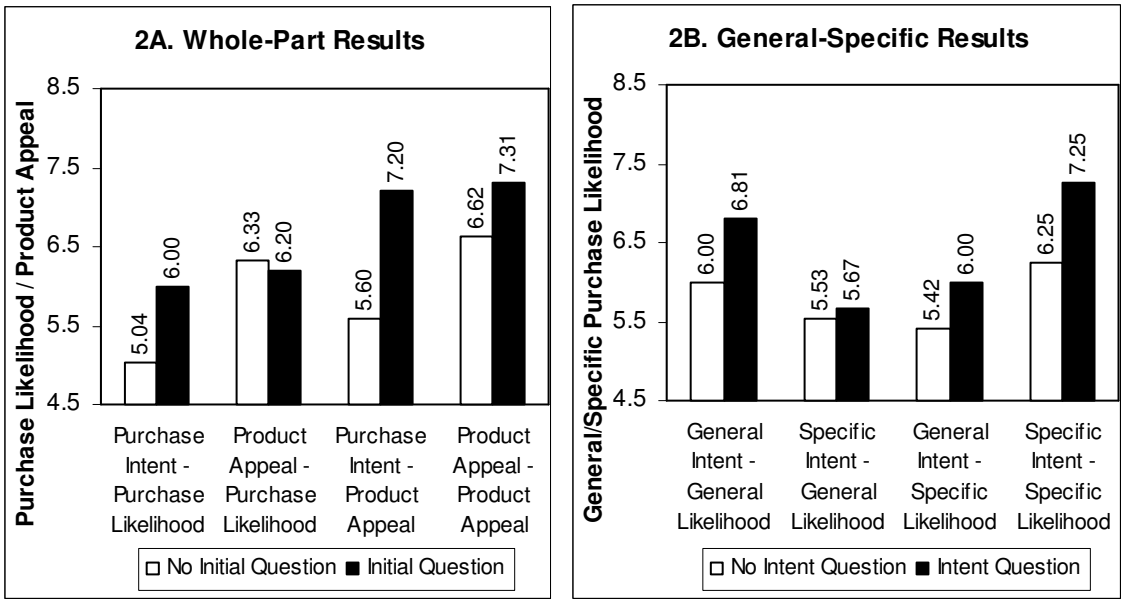


FIGURE 5

EXPERIMENT 3 RESULTS

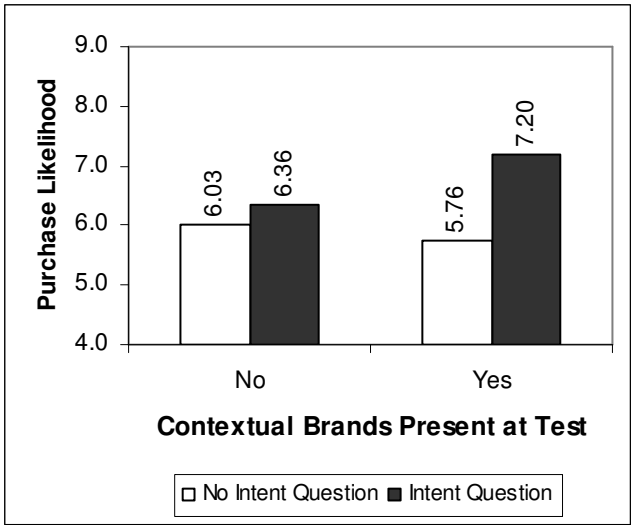


FIGURE 6

EXPERIMENT 4 RESULTS

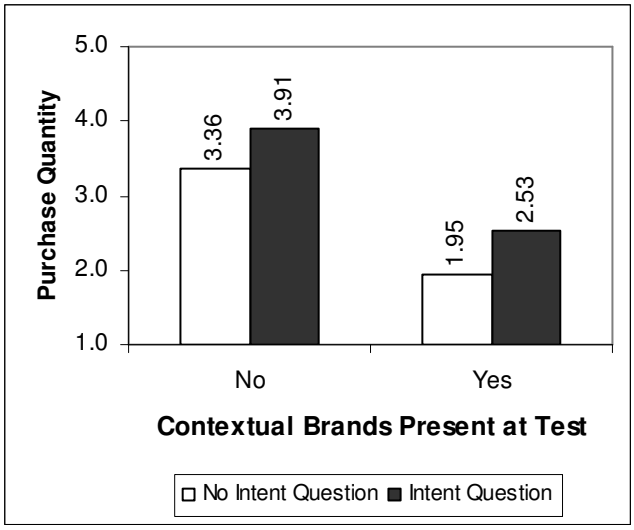
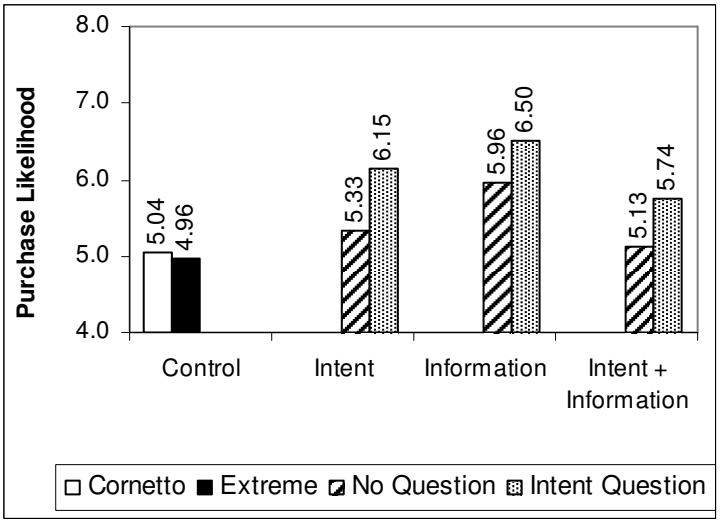


FIGURE 7

EXPERIMENT 5 RESULTS



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