Response Fluency and the Mere Measurement Effect

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There is considerable evidence that the mere measurement of intent influences subsequent preference judgments, behavioral intent, and behavior (cf. Morwitz and Fitzsimons 2004; Spagenberg and Greenwald 1999). Specific intent questions can influence specific behavior (e.g., Greenwald et al. 1987; Sherman 1980) or general behavior (e.g., Spagenberg 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). 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 information priming and 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; Sprott, Spagenberg, and Fisher 2003). Morwitz and Fitzsimons (2004) provide evidence suggesting mere measurement encourages the spontaneous formation of attitudes that subsequently influence candy bar preferences. Morwitz and colleagues (Dholakia and Morwitz 2002; Fitzsimons and Morwitz 1996) 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 other processes contribute to the mere measurement effect. Mere exposure has been shown to bias a variety of judgments including preference, truth, and memory (Bornstein 1989; Hasher, Goldstein, and Toppino 1977; Whittlesea and LeBoe 2000) as well as influence eating behavior, social interaction, and compliance with requests (Burger et al. 2001; Capaldi 1996; Zajonc 1968). Mere exposure biases have been attributed to perceptual fluency at the time of judgment (Bornstein and D’Agostino 1994; Whittlesea 1993, 1997). Initial exposures to a stimulus require a person to produce a perception. As a consequence, the production of a perception at the time of judgment becomes easier and attributions about this perceptual fluency bias judgment (Klinger and Greenwald 1994). We propose a similar bias, based on response fluency, may contribute to mere measurement effects.

This article will investigate the influence of the mere measurement of the intention to purchase a product on subsequent intentions to purchase the product. In experiment 1, we show that response fluency, not the increased accessibility of an attitude toward a product, increases subsequent purchase intention. Experiment 2 shows that it is the overlap in the processing used to answer the mere measurement question and the processing used to respond to the purchase intention question that creates the response fluency responsible for the mere measurement effect. Experiment 3 provides further evidence for the response fluency account, showing conditions where response fluency can either encourage, or have no influence, on a purchase intention. Experiment 4 provides evidence consistent with our claims using a purchase task.
MERE MEASUREMENT

The mere-measurement effect occurs when the act of forming and reporting a response to an intent question alters respondents’ subsequent evaluations and behavior (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 2002). In each of these cases, mere measurement biases subsequent judgments or behaviors in a pro-attitudinal or socially desirable direction.

Accessibility

Gregory, Cialdini, and Carpenter (1982) were the first to use accessibility theory to explain the influence of mere measurement. 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 relative 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 this outcome. Fitzsimons and Shiv (2001) use a similar logic to argue that a hypothetical question influences subsequent judgments, “by engendering highly accessible cognitions related to the
content of the questions” that “may then be incorporated into subsequent judgments or even actions” (p. 225).

Morwitz and colleagues refined the accessibility explanation in their account of the influence of mere measurement on general and specific behaviors. Morwitz et al. (1993) asked members of a consumer panel when they planned to acquire a new car and three months later measured their purchase rate. They found that households that were asked the intent question had a higher purchase rate than those that were not asked the intent question. Morwitz et al. (1993) argued that measuring intent increased the number of pro-purchase related thoughts and that these thoughts were more accessible during subsequent purchase judgments.

In a follow-up paper, Fitzsimons and Morwitz (1996) asked consumer panel members when they intended to buy a new car and what brand they were most likely to purchase. The results showed that the more favorable a consumer was toward the brand he was currently using, the more likely the consumer was to repurchase the brand and that this relationship was greater for the group that responded to the intent question. Fitzsimons and Morwitz (1996) argued that measuring intentions increases the accessibility of thoughts concerning the most accessible product in the choice set. As the category (“car”) is primed by the intent question, activation spreads to the general behavior nodes (“buying a car”) and then, if the person has preformed attitudes, this activation spreads to the specific choice options as a function of how accessible these choice options were before asking the question. In the second stage of the process, people screen alternatives based on overall attitudes and general information. If a person holds a positive attitude toward a brand, the intent question will reinforce this feeling and the
impact on purchase will be higher than when not asked about intent. If brand attitudes cannot be used to discriminate among brands, the person will select the option with the highest level of accessibility.

Morwitz and Fitzsimons (2004) further refine this position by arguing that it is the attitude toward a choice option that promotes the mere measurement effect and that measuring intent increases the accessibility of the attitude. 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. The participants were also more (less) likely to recall the more (less) accessible alternative and were more quickly able to judge the alternative as good (bad) as a consequence of responding to the intent question. 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).

Assessment. Despite the appeal of the accessibility explanation, there are three findings that are inconsistent with the explanation. First, memory-based choices should exhibit a stronger mere measurement effect than stimulus-based choices because accessibility should exert little impact in a stimulus-based choice. Morwitz and Fitzsimons (2004) directly tested this hypothesis and found no difference between memory-based and stimulus-based choices. Second, measuring brand attitudes should make these attitudes more accessible and result in a mere measurement effect.
Spagenberg et al. (2003) found that making attitudes more accessible did not generate a mere prophecy effect. Likewise, Chapman (2001) showed that measuring attitudes had no effect on the likelihood of a subsequent behavior occurring and that measuring intentions was necessary, in effect, replicating the results of Morwitz and Fitzsimons (2004). Third, increased accessibility should lead to a biased retrieval of information consistent with the stated intention and the neglect of information inconsistent with the intention (Higgins 1996). Increased accessibility of knowledge in memory should create selective encoding, selective attention, and biased information retrieval. Chapman (2001) found that information is not differentially accessible subsequent to an intent question and measuring intentions does not lead to a retrieval bias favoring information consistent with the declared intentions. The implication is that an alternative explanation may account for the mere measurement effect or, at a minimum, supplement the accessibility explanation.

**Fluency**

The inability of the accessibility explanation to fully account for 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 by a process that is similar to the process responsible for mere exposure effects. Wherein mere exposure effects have been attributed to perceptual fluency, mere measurement effects may be a consequence of response fluency. That is, mere measurement effects may be sensitive to similarities in the production of a judgment at measurement and the production of a judgment that directs a behavior at a subsequent time.

**Perceptual fluency.** Mere exposure to a stimulus has been shown to influence a wide variety of judgments, including liking (Zajonc 1968), the fame of a name (Jacob et
al. 1989), the truth of a statement (Begg and Armour 1991; Hasher, Goldstein, and Toppino 1977), message comprehensibility (Masson 1995), memory accuracy (Whittlesea 1993; Whittlesea and Williams 2000), and consideration set formation (Shapiro 1999). The generally accepted account of these mere exposure effects is that people make attributions about their perceptual fluency at the time of judgment (Bornstein and D’Agostino 1994; Whittlesea 1997). This perceptual fluency is a direct consequence of prior exposure. Initial exposures to a stimulus require the production of a perceptual experience. At the time of test, people again have to produce a perceptual experience, but the production of this second experience is easier owing to production of the experience at the prior exposure. People can use the ease of producing a perceptual experience as input into a heuristic when making judgments about the stimulus, provided the heuristic is reasonable in the current context (Whittlesea 1993, 1997). 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).

Perceptual fluency has been shown to have a number of interesting properties. First, perceptual fluency effects are persistent. In a meta-analysis of mere exposure effects, Bornstein (1989) finds that exposure effects are maintained or increased as the delay between exposure and test increases from one minute to up to two weeks. In fact, mere exposure effects are strongest in naturalistic settings where the delay between exposure and behavior is often quite significant. Second, exposure effects exhibit correspondence (Newell and Bright 2003; Shapiro 1999). The stimulus presented during mere exposure and the stimulus presented during test need to be identical for exposure
effects to operate. This conclusion is qualified by the finding that there can be generalization from the whole to the part of a stimulus (i.e., exposing a name in a sentence can create a false fame effect for the name), but not from the part to the whole of a stimulus (i.e., exposure to words from a sentence can not make the sentence truer) (Whittlesea and Wright 1997). Third, mere exposure 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 can be created by other stimuli that are being rated (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).

Response fluency. Wherein exposure allows a person to produce a perceptual experience, the production of which can influence subsequent judgments independently of the output, mere measurement requires a person to produce a response, the production of which may influence subsequent judgments independently of the contents of the response. Although this hypothesis may seem novel, it is directly derived from the procedural approach to information processing (cf. Kolers and Roediger 1984). First proposed by Kolers (1973), and later championed by Roediger (Roediger, Buckner, and McDermott 1999) and Moscovitch (1992), the procedural approach to information processing argues that people retain the acts of information construction, not the contents or outcomes that result from the acts, although reexecution of a procedure can generate the same contents or outcomes. More specifically, Roediger, Gallo, and Geraci (2002) contend that any processing task is a collection of “component processes that are underpinned by local neurocognitive systems” (p. 327) (cf. Roediger at al. 1999). To the
extent the component processes involved in the initial and subsequent task overlap, there is a potential for the initial task to influence performance on the subsequent task. The degree of overlap between two tasks may be high in some cases, and low in others, thus the same initial processing task can create dissociations (i.e., facilitation on measure one, inhibition on measure two), across or within different classes of measures (Kolers 1976; Roediger et al. 2002).

Evidence provided by researchers advocating the procedural approach to information processing is consistent with findings in the area of perceptual fluency, thus suggesting that response fluency may behave in a manner similar to perceptual fluency. First, procedural effects are persistent. 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, the implication being that the pattern analysis procedure required to decode text is inseparable from the semantic analysis procedure required to understand text. Second, procedural effects exhibit correspondence, but at the level of the procedure and not at the level of the processing (Franks, Bilbrey, and Lien 2000; Roediger et al. 2002). For example, the neurocognitive systems involved in perceiving a behavior (i.e., observing a behavior) are highly similar to those involved in initiating and performing a behavior (Rizzolatti, Fogassi, and Gallese 2000). Similarly, perception of a stimulus and remembering a stimulus involve the same neurocognitive systems. Thus, perception or memory of a behavior can make the execution of the behavior more likely because processing procedures used in these mental acts are common. In effect, the procedural approach to processing assumes that neurocognitive activities are not hostage to certain levels of processing, so that the same activities can be involved in perception, preference
formation, memory, and volitional behavior. Third, procedural effects appear to depend on relative fluency. For example, the tendency to errantly recognize words as repeated when they have meanings consistent with memory cues or legitimate targets, is sensitive to the novelty of the surrounding foils (Whittlesea and Leboe 2000; Whittlesea and Wright 1997).

If response fluency does 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, leaving the property of persistence to study 1a. 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 experiment 2, we provide further insight into the property of correspondence. In experiment 3, we provide further insight into the property of relative response fluency. In experiment 4, we show the influence of response fluency on purchase behavior.

**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. Thus, the experimental design included three treatment groups, one with a within-group control, plus a between-group control.

This experimental design allowed us to differentiate between competing accounts of the mere measurement effect. If mere measurement effects occur because a prior attitude becomes more accessible, then there should be no significant influence of mere measurement on purchase likelihood because the brands were unfamiliar. If mere measurement effects occur because measuring intention encourages the creation of an attitude that is subsequently made accessible, then there should be a significant influence of mere measurement in the sole intent and dual intent conditions because these conditions encourage the formation of an attitude about the brands. 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. Finally, if mere measurement effects occur because of response fluency, then there should be a significant influence of mere measurement in the sole intent but not in the dual or general intent conditions. The dual intent condition does not create relative fluency because mere 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., lacks correspondence) because it is not specific to a brand.

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 respondent 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) along with a one-sentence description of each product.
After viewing the product pictures for three seconds, the intent questions were asked.
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.

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 ($M_{\text{not measured}} = 5.77$; $t(12) = 2.39, p < .05$). 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

In prior research, it has been claimed that mere measurement encourages people to subsequently engage in a behavior because mere measurement (1) makes the attitude toward the object, and acts contingent on this attitude, more accessible, (2) encourages the creation of an attitude that is subsequently more accessible, or (3) makes information used to respond to the mere measurement question more accessible. Experiment 1 fails to find support for these hypotheses. Instead, mere measurement appears to be sensitive to
the response fluency created by the initial measurement. Consistent with results in the mere exposure literature, mere measurement requires correspondence as evidenced by the lack of a mere measurement effect in the general intent question condition, and relative response 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 the processes responsible for mere measurement effects. First, we should show that the effects observed in experiment 1 are persistent, as is the case with perceptual fluency effects (Jacoby 1983) and procedural processing effects (Kolers 1976). Second, we should more convincingly show that response fluency, not information activation, is responsible for the mere measurement effect. For example, 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 dual consideration (i.e., asking initial intent questions about multiple brands) negates the influence of mere measurement only under limited conditions. For example, dual intent questions should not result in a mere measurement effect when the only brands under consideration are the initial brands, 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 subsequent judgments.

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 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 priming is not responsible for the effect we observed in experiment 1.

Although the results of experiment 1 are consistent with the response fluency hypothesis, 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 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 correspondence of the mere measurement effect.

**EXPERIMENT 2**

The goal of experiment 2 was to better differentiate between the response fluency and information accessibility explanations by conceptually replicating the correspondence results from the perceptual fluency literature. Recall that the perceptual fluency literature shows that exposure and test stimuli must be identical and that prior exposure to the whole stimulus can create perceptual fluency for the part stimulus, but that prior exposure to the part stimulus cannot create perceptual fluency for the whole
stimulus. To illustrate this idea using response fluency, imagine that a response to a general intent question requires processes A, B, and C. If a subsequent response relies only on process A, then the intent question should have an influence on the subsequent response. In contrast, if a subsequent response requires a larger set of processes (e.g., A, B, C, D, E) or a different set of processes (e.g., A, D, E), then the intent question should have a much smaller influence on the subsequent behavior (see Franks et al. 2000 for similar discussion in the procedural processing paradigm).

To investigate these predictions we conducted two concurrent experiments. In the whole-part experiment, we used mere measurement questions that assessed purchase intention (i.e., process A, B, C) 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 assess their purchase likelihood (i.e., process A, B, C) 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.

If the initial mere measurement questions simply increase the accessibility of the information used to answer those questions, then the initial purchase intent question should influence the response to the subsequent purchase likelihood question and the initial appeal question should influence the response to the subsequent appeal question. If the mere measurement effect is a consequence of response fluency, then there should be an additional finding. The initial purchase intent question (i.e., process A, B, C) should
influence the appeal dependent measure (i.e., process A) because the entire process
needed to perform the appeal judgment was previously executed in the purchase intent
judgment. The initial appeal question (i.e., process A) should not influence the purchase
likelihood dependent measure (i.e., process A, B, C) because appeal is only a part of the
purchase likelihood judgment. The experimental design, and the hypothesized overlap
between the processes supporting the response to the initial question (gray) and
subsequent question (black), is shown in figure 2.

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One potential limitation of this test is the key differentiating prediction. We
predict that respondents who indicate an intent to purchase a product in an initial intent
question will subsequently rate the product more appealing. This prediction seems
obvious. Once a person indicates initial purchase intent, s/he should be generally positive
about the product. One defense against this limitation is the prediction that respondents
who initially indicate a product is appealing will not subsequently increase their purchase
likelihood, a counterintuitive prediction. A second way to address this limitation is to
show that expressing a positive intent during initial measurement does not influence any
subsequent response.

In the general-specific experiment, specificity was manipulated at the level of
intent. 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. We predicted that the general purchase intent question (i.e., process A, B, C) would influence the general purchase likelihood dependent measure (i.e., process A, B, C) and the specific purchase intent question (i.e., process A, B, D, E) would influence the specific purchase likelihood dependent measure (i.e., process A, B, D, E). We also expected that the general purchase intent question (i.e., process A, B, C) would not influence the specific purchase likelihood dependent measure (i.e., process A, B, D, E) and that the specific purchase intent question (i.e., process A, B, D, E) would not influence the general purchase likelihood dependent measure (i.e., process A, B, C). The experimental design, and the hypothesized overlap between the processes supporting the response to the initial question (gray) and subsequent question (black), is shown in figure 3.

**Results**

The procedure was the same as the procedure in experiment 1. Sixty-six respondents from an undergraduate participant pool participated in the whole-part experiment and 66 undergraduate respondents participated in the general-specific experiment. The results are shown in figure 4.

**Whole-part experiment.** As predicted by both the accessibility and 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 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 ($M_{\text{not measured}} = 6.33$, $M_{\text{measured appeal}} = 6.20$; $t(14) = 0.34, p > .05$).

**General-specific experiment.** There was an influence of the initial general purchase intent question on the general purchase likelihood dependent measure ($M_{\text{not measured}} = 6.00$, $M_{\text{measured intent}} = 6.81$; $t(15) = 1.98, p = .07$) 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 ($M_{\text{not measured}} = 5.42$, $M_{\text{measured intent}} = 6.00$; $t(18) = 1.22, p < .05$). There was no influence of the initial specific purchase intent question on the general purchase likelihood dependent measure ($M_{\text{not measured}} = 5.53$, $M_{\text{measured intent}} = 5.67$; $t(14) = 0.40, p < .05$).

**Discussion**

The purpose of experiment 2 was to provide additional evidence that the mere-measurement effect is caused by response fluency. The results of experiment 2 show that the correspondence between the procedures performed during the response to the intent question and the response to the subsequent dependent measure are responsible for the mere measurement effect. Mere measurement occurs because procedures used to respond to the dependent measure reemploy part or whole of the procedures used to respond to the intent question.
Thus far, we have argued that the mere measurement effect can be explained by response fluency. In addition, we have argued that response fluency is persistent, dependent on correspondence, and dependent on the existence of non-fluent background procedures. In experiment 1, we found that mere measurement effects did not occur for two brands when there was an initial purchase intent question about each brand. We argued that that the initial intent measure about both brands made the response fluency for each brand equivalent and reduced the diagnostic value of the fluency. In experiment 3, we show that relative response fluency is responsible for the mere measurement effect.

**EXPERIMENT 3**

In experiment 1, we found that measuring 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, 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. We can provide further support for the relative fluency hypothesis by adding additional, non-queried brands into the stimulus set at the time of the purchase likelihood judgment. For example, if the consideration set consisted of five brands, two of which were subjected to mere measurement, then purchase likelihood should be higher for the mere measurement brands than the remaining brands. In this situation, the fluency generated by the initial
intent questions will be relatively higher for the two previously judged brands than for the remaining brands (therefore mimicking the effect of the sole intent question).

**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 (either 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 two same 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. The intent questions were not administered in the intent question absent conditions. 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.
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 order effect \((F(1, 85) = .99, p > .05)\) 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 rated by respondents \((M_{\text{not measured - 2 brands}} = 6.03, M_{\text{measured intent - 2 brands}} = 6.36; F(1, 101) = .61, p > .05)\). 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 rated by respondents \((M_{\text{not measured - 5 brands}} = 5.76, M_{\text{measured intent - 5 brands}} = 7.20; F(1, 101) = 15.58, p < .05)\). 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 \((M_{\text{measured intent - 2 brands}} = 6.36; F(1, 101) = 5.05, p < .05)\).

**Discussion**

The results of this experiment provide additional evidence that response fluency contributes 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 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 results suggest that perceptual 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. The lack of 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. 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 tests of the response fluency explanation of 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 contributes to the mere measurement effect would be reinforced by a replication of our results using a volitional behavioral dependent measure. Experiment 4 was designed to provide 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 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 at $.15 a 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 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 the 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.
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 ($M_{\text{not measured}} = 3.36, M_{\text{measured intent}} = 3.91; F(1, 61) = 1.39, p > .05, 1\text{-tail})$.\(^1\) This null result was not a ceiling effect as respondents could have purchased an average of 6.5 of each type of candy.\(^2\) However, as predicted, there was a significantly difference in purchase volume between the intent question and no intent question conditions when five brands were on the order form ($M_{\text{not measured}} = 1.95, M_{\text{measured intent}} = 2.53; F(1, 62) = 3.40, p < .05, 1\text{-tail})$. These results replicate the results of experiment 3 with a purchase response.

**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 characteristics of the processing activity.

Six studies are used to demonstrate that response fluency contributes to the mere measurement effect. We show that the mere measurement effect depends on correspondence, is sensitive to relative fluency, and is persistent, properties that have been associated with perceptual fluency and procedural processing accounts of

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\(^1\) The test was a replication of the test performed in experiment 3, hence a 1-tail test is appropriate.

\(^2\) Only three participants in each two-brand condition bought the maximum 13 candies.
information processing. Experiments 1 and 2 show that mere measurement effects only occur when there is correspondence or overlap between the mere measurement question and a subsequent purchase likelihood question. These studies also suggest that it is not information content, but response fluency, that enhances purchase likelihood responses. Experiments 1, 3, and 4 show that mere measurement effects are sensitive to the relative response fluency associated with making a judgment. When all brands in a consideration set are subjected to mere measurement, people do not become more likely to purchase any of the brands (e.g., dual intent condition of experiments 1 and 3). It is only when a subset of the brands are subjected to mere measurement (experiment 1) or the brands that subjected to mere measurement are later assessed in the context of a larger set of brands (experiments 3 and 4) that mere measurement effects are observed. Finally, experiment 1b shows mere measurement effects that depend on response fluency are persistent, similar to the persistence that has been observed in other demonstrations of the mere measurement effect.

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 (Fitzsimons and Williams 2000). 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; Spagenberg et al. 2003).

Our results cannot be used to comment on the social desirability explanation of the self-prophecy effect advocated by Spagenberg and colleagues (Spagenberg 1997; Spagenberg and Greenwald 1999; Spagenberg et al. 2003). The stimuli used in our studies (e.g., frozen confectionary treats and 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, the response fluency explanation should be viewed as a possible explanation that operates outside the domain of socially desirable behavior.

Our results can also not be used to claim the measurement of intent is necessary for the increases in the likelihood of behavior. Evidence on behavior priming (Bargh, Chen, and Burrows 1996) and mimicry (Chartrand and Bargh 1999) suggests measured intent may be unnecessary to produce a “mere observation” effect. Bargh and colleagues show that the mere observation of a person engaging in a behavior, or the priming of a class of behaviors, is sufficient to encourage the behavior. In many cases, the behaviors allow a person to achieve social goals, but in other cases the behaviors do not seem to have any meaningful purpose. It may be that the perception of a behavior, owing to observation or a prime, activates the neurocognitive systems involved in performing the behavior (Rizzolatti, Fogassi, and Gallese 2000). Hence, when a repertoire of behaviors is considered, the response fluency associated with a previously seen behavior is more fluent and the behavior becomes a more likely candidate for execution.

Finally, we expect that 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 or engaging in a pro-social behavior is concrete and can 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 overlap with the general intent question. In addition, intent questions should be more effective for infrequent or novel acts. Purchasing a car, registering to vote, participating in a recycling program, and judging new products are events where there are not well-established patterns of behavior. As such, the construction benefit provided as a consequence of answering the intent question can have much more impact on behavior. We note that exceptions to this claim are the health club, drug use, and flossing examples by Williams et al. (2002).
REFERENCES


Greenwald, Anthony, Catherine Carnot, Rebecca Beach, and Barbara Young (1987), “Increasing Voting Behavior by Asking People if They Expect to Vote,” *Journal of Applied Psychology*, 72 (May), 315-318.


FIGURE 1

EXPERIMENT 1 RESULTS

![Bar Chart]

- **Intent Question**
  - Sole: 5.77
  - Control: 5.62
  - Dual: 5.92
  - General: 6.40

- **Purchase Likelihood**
  - Cornetto: 7.38
  - Extreme: 6.44
  - 6.50

Legend:
- No Question
- Intent Question
- Cornetto
- Extreme
FIGURE 2

ILLUSTRATION OF CONDITIONS IN EXPERIMENT 2A

<table>
<thead>
<tr>
<th>Purchase Likelihood at Time 2</th>
<th>General Intent Question at Time 1</th>
<th>Specific Appeal Question at Time 1</th>
</tr>
</thead>
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<tr>
<td>Purchase Likelihood</td>
<td>Intent</td>
<td>Appeal</td>
</tr>
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<table>
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<tr>
<th>Brand Appeal at Time 2</th>
<th>General Intent Question at Time 1</th>
<th>Specific Appeal Question at Time 1</th>
</tr>
</thead>
<tbody>
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<td>Intent</td>
<td>Appeal</td>
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<td>Brand Appeal</td>
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FIGURE 3
ILLUSTRATION OF CONDITIONS IN EXPERIMENT 2B

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<th>General Intent Question at Time 1</th>
<th>Specific Intent Question at Time 1</th>
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<td><strong>General Purchase Intention at Time 2</strong></td>
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<td>General Purchase Likelihood</td>
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<td><img src="image4" alt="General Purchase Likelihood" /></td>
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<tr>
<td>Specific Purchase Intention at Time 2</td>
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<td><img src="image6" alt="Specific Intent" /></td>
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<tr>
<td>Specific Purchase Likelihood</td>
<td><img src="image7" alt="Specific Purchase Likelihood" /></td>
<td><img src="image8" alt="Specific Purchase Likelihood" /></td>
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FIGURE 4

EXPERIMENT 2 RESULTS

Whole-Part Results

<table>
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<tr>
<th>Purchase Intent - Purchase Likelihood</th>
<th>Product Appeal - Purchase Likelihood</th>
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</thead>
<tbody>
<tr>
<td>5.04</td>
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<tr>
<td>5.60</td>
<td>6.20</td>
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<tr>
<td>6.33</td>
<td>6.82</td>
</tr>
<tr>
<td>6.62</td>
<td>7.31</td>
</tr>
</tbody>
</table>

General-Specific Results

<table>
<thead>
<tr>
<th>General Intent - General Likelihood</th>
<th>Specific Intent - General Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.00</td>
<td>6.00</td>
</tr>
<tr>
<td>5.42</td>
<td>5.53</td>
</tr>
<tr>
<td>6.81</td>
<td>5.67</td>
</tr>
<tr>
<td>6.25</td>
<td>7.25</td>
</tr>
</tbody>
</table>

Legend:
- □ No Initial Question
- ■ Initial Question
FIGURE 5

EXPERIMENT 3 RESULTS

Contextual Brands Present at Test

Purchase Likelihood

- No Intent Question
- Intent Question

No
Yes

4.0 5.0 6.0 7.0 8.0 9.0

6.03 6.36 5.76 7.20
FIGURE 6

EXPERIMENT 4 RESULTS

<table>
<thead>
<tr>
<th>Contextual Brands Present at Test</th>
<th>No Intent Question</th>
<th>Intent Question</th>
</tr>
</thead>
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<tr>
<td>No</td>
<td>3.36</td>
<td>3.91</td>
</tr>
<tr>
<td>Yes</td>
<td>1.95</td>
<td>2.53</td>
</tr>
</tbody>
</table>

Purchase Likelihood