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Research Article

When Questions Change Behavior

The Role of Ease of Representation

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ABSTRACT—*In three experiments, we examined the mere-measurement effect, wherein simply asking people about their intent to engage in a certain behavior increases the probability of their subsequently engaging in that behavior. The experiments demonstrate that manipulations that should affect the ease of mentally representing or simulating the behavior in question influence the extent of the mere-measurement phenomenon. Participants who were asked about their intention to engage in various behaviors were more likely to engage in those behaviors than participants not asked about their intentions in situations in which mentally simulating the behavior in the intention question was relatively easy. We tested this ease-of-representation hypothesis using both socially desirable and socially undesirable behaviors, and our dependent variables comprised both self-reports and actual behaviors. Our findings have implications for survey research in various social contexts, including assessments of risky behaviors by public health organizations.*

People are often asked to predict their likelihood of engaging in a behavior in the near or distant future. For instance, political pollsters survey potential voters about their likelihood of voting during election years; market researchers survey customers about their likelihood of purchasing a product; public-health officials survey people about their likelihood of engaging in safe sex. The implicit assumption in virtually all survey research is that the act of responding to the question does not affect the respondent's probability of subsequently engaging in the behavior. As Fishbein and Ajzen (1975) commented, "If one wants to know whether or not an individual will perform a given be-

havior, the simplest and probably most efficient thing that one can do is to ask the individual whether he intends to perform that behavior" (p. 369).

Although making such predictions might be "simple," it is not benign. Sherman (1980) showed that errors in predictions of future behavior can be "self-erasing": People who had predicted compliance with socially desirable behaviors were more likely to subsequently engage in those behaviors than were people in a control group, who had made no predictions about the behaviors. Similarly, Greenwald, Carnot, Beach, and Young (1987) reported a 25% increase in voting probability for people who had been asked whether they intended to vote in the following day's election. Interestingly, questions about behaviors for which people possess negative attitudes (e.g., socially undesirable behaviors) lead to a decrease in the propensity to engage in those behaviors (Sherman, 1980).

The self-erasing nature of errors in predictions even extends to predicted purchases of very large items, such as automobiles (Morwitz, Johnson, & Schmittlein, 1993). In a study conducted on a nationally representative sample of more than 40,000 participants, asking a simple question about purchase intent increased actual rates of automobile purchase in the following 6 months more than 35%. Morwitz et al. labeled this phenomenon the *mere-measurement effect*, as merely measuring intentions changed respondents' behavior.

The mere-measurement effect has been attributed to increased accessibility of an attitude toward the target behavior in the intention question (Feldman & Lynch, 1988; Morwitz & Fitzsimons, 2004). For instance, Fitzsimons and Morwitz (1996) found that asking a category-level intent question about the likelihood of buying an automobile in the next 6 months led to a systematic pattern of behavior at the subcategory level. Respondents who had experience in the category (i.e., who were automobile owners) were substantially more likely to purchase a new automobile of the brand that they currently owned than were respondents who were not asked the intent question. For

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nonowners, the purchase increase associated with answering the intent question was observed for brands with a large share of the market. The authors' explanation was that although current car owners' attitude toward their automobile brand is most likely to be positive and accessible, nonowners have positive and accessible attitudes toward frequently advertised brands. Morwitz and Fitzsimons (2004) obtained similar results in a laboratory setting when they manipulated attitude accessibility using unfamiliar brands of Canadian candy bars for which participants did not have preexisting attitudes.

Although this empirical evidence is consistent with increased accessibility as an explanation for the mere-measurement effect, accessibility alone seems an incomplete explanation in light of the relatively ephemeral nature of semantic primes (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001), as well as evidence that mere-measurement effects in the financial-service industry peak approximately 6 months following the intent survey (Dholakia & Morwitz, 2002). This increase cannot be explained by attitude accessibility alone. Indeed, Sherman's (1980) original explanation for his finding was that participants had engaged in unspecified "pre-behavioral cognitive work" (p. 219).

In the experiments we report here, we investigated the nature of the cognitive work that people engage in when responding to intent questionnaires. We conjecture that intention questions trigger the use of a simulation heuristic (Kahneman & Tversky, 1982), such that respondents mentally represent the target behavior and the instances in which they might engage in that behavior. Our *ease-of-representation hypothesis* posits that the effect of measuring intentions to engage in a behavior on subsequent behavior is an increasing function of the ease with which the behavior is mentally represented by the respondent. Respondents may interpret ease of representation as reflecting likelihood of the behavior, as suggested by research that links ease of retrieval with perceived likelihood (Anderson & Godfrey, 1987; Schwarz & Vaughn, 2002; Tversky & Kahneman, 1973); this ease might, in turn, spur an implementation intention (Gollwitzer, 1999). Thus, intention questions lead to two related mental operations: representation of the target behavior and assessment of how easily the representation came about. Questions about easy-to-represent behaviors should lead to more pronounced mere-measurement effects relative to questions about harder-to-represent behaviors.

We tested our hypothesis in three experiments. When possible, we held constant the accessibility of the attitude toward the target behavior, while manipulating ease of representation. Our dependent variables included participants' actual choices, as well as self-reported behaviors.

EXPERIMENT 1

In our first test of the ease-of-representation hypothesis, we manipulated the self-relevance of the intention question. We

predicted that respondents would find it easier to imagine themselves engaging in a behavior than to imagine an average classmate engaging in the behavior (at least for behaviors that respondents were likely to have experienced previously). Therefore, we expected that respondents asked about their own behavior would show a pronounced mere-measurement effect relative to control participants who were not asked the intention question, but that participants asked about an average classmate's behavior would show either a smaller or no mere-measurement effect.

Method

One hundred forty-five executive M.B.A. students were randomly assigned to one of three conditions. In the control condition ($n = 46$), participants were asked to indicate their likelihood of reading for pleasure in the next 2 weeks. In the self-intent condition ($n = 51$), participants were asked about their likelihood of flossing their teeth in the next 2 weeks. Finally, in the other-intent condition ($n = 48$), participants were asked to indicate the likelihood that one of their classmates would floss his or her teeth in the next 2 weeks.

Two weeks following the initial questionnaire, the same participants were asked to report how many times they had flossed and how many times they had read for pleasure in the preceding 2 weeks.

Results

The data conformed to our predictions. Participants in the self-intent condition reported flossing on a significantly greater number of occasions than did control participants (6.25 vs. 4.11), $t(96) = 2.06$, $p_{\text{rep}} = .89$, $d = 0.42$. Thus, a mere-measurement effect was obtained when the respondent was the actor in question. In contrast, this pattern did not emerge in the other-intent condition (4.23 vs. 4.11), $t(93) = 0.13$. Furthermore, the difference between the self- and other-intent conditions was significant, $t(98) = 2.02$, $p_{\text{rep}} = .88$, $d = 0.41$. There were no significant differences in the number of times participants in the three conditions reported reading for pleasure. The pattern of data supports our ease-of-representation hypothesis because respondents who were expected to experience ease in imagining a behavior showed a pronounced mere-measurement effect relative to control participants, but participants who were expected to have more difficulty imagining the behavior did not.

To bolster our ease-of-representation account, we administered a follow-up questionnaire to a sample from a similar population. Participants were asked to indicate on a scale from 1 (*extremely difficult*) to 10 (*extremely easy*) either how easy it was to imagine themselves flossing ($n = 37$) or how easy it was to imagine one of their classmates flossing ($n = 36$). As expected, the results indicated that it was easier for participants to imagine themselves flossing ($M = 8.76$) than a classmate flossing ($M = 5.58$), $t(71) = 6.04$, $p_{\text{rep}} = .99$, $d = 1.43$. Nevertheless, it is

possible that in addition to manipulating ease, our self-relevance manipulation manipulated self-investment. The subsequent experiments overcame this limitation.

EXPERIMENT 2

In this experiment, we manipulated ease of representation by varying the question frame. Participants in the treatment conditions were asked either a straightforward, positively framed question about their intent to engage in a behavior (*intent* condition) or one of two questions about the opposite intent: likelihood of not engaging in the behavior (*negation* condition) or likelihood of avoiding it (*avoidance* condition).

On the basis of previous research, we expected that an intent question about a target behavior for which people possess a negative attitude would lead to a decrease in the propensity to engage in that behavior (Sherman, 1980). Therefore, we expected that participants in the intent condition would be less likely to engage in a negative behavior than would participants in the control group. We expected this effect to be magnified in the avoidance condition because the congruence between people's negative attitude and the avoidant behavior would make the avoidant behavior easy to represent.

In contrast, despite the fact that both the avoidance and the negation frames asked participants about their likelihood of engaging in the opposite of the target behavior, we expected that negation-frame participants would exhibit the same likelihood of engaging in the negative behavior as their intent-frame counterparts. This prediction was derived from Johnson-Laird's research on comprehension and reasoning (Johnson-Laird, 1983; Johnson-Laird, Legrenzi, Girotto, Legrenzi, & Caverni, 1999), which suggests that when individuals interpret discourse, they construct mental representations of what is true in a proposition. Negations are not mentally construed because they increase the load on working memory, which renders their representation difficult. Instead, information about falsity is typically treated as a "mental footnote" that is soon "forgotten" (Johnson-Laird et al., 1999, p. 66). Consequently, we expected that the negation frame would not facilitate a representation of avoidant behavior, but that instead the negation information would be forgotten and the question would be spontaneously recoded into a positively framed (intent) statement. This recoding would then give rise to the same behavior as in the intent condition.

Method

Ninety-nine undergraduates participated in this experiment. Upon arrival in the lab, they completed a 10-question "market research survey" about various consumption habits. The target intent question, which appeared last, concerned consumption of fatty foods in the following 1-week period. Participants were randomly assigned to experimental conditions in which they were asked to indicate their likelihood (on a 7-point scale) of (a)

consuming fatty foods in the coming week (intent condition; $n = 23$), (b) not consuming fatty foods (negation condition; $n = 25$), or (c) avoiding consumption of fatty foods (avoidance condition; $n = 26$). In a fourth, control condition ($n = 25$), participants were asked about their likelihood of consuming orange drinks in the coming week. All participants then proceeded with an hour-long set of unrelated experiments.

As the session came to a close, respondents were informed that their last task would be a taste test. They entered a separate room where they were offered two snacks: mini rice cakes (low-fat snack) and mini chocolate-chip cookies (high-fat snack). They received a form and were instructed to consume either snack in order to evaluate its taste. Participants' choices were recorded surreptitiously.

Results

The results conformed to our predictions. Whereas nearly all (92%) participants in the control condition chose to eat the cookies over the rice cakes, this propensity dropped equally in the intent (65%) and the negation (68%) conditions, $\chi^2(1, N = 48) = 5.21$, $p_{\text{rep}} = .92$, $w = -.70$, and $\chi^2(1, N = 50) = 4.5$, $p_{\text{rep}} = .90$, $w = -.75$, respectively. In the avoidance condition, in which a representation of avoidant behavior was facilitated by the wording of the problem, the propensity to eat cookies fell much more dramatically (38%). The drop was significant relative to the control condition, $\chi^2(1, N = 51) = 15.99$, $p_{\text{rep}} = .99$, $w = -.32$; the intent condition, $\chi^2(1, N = 49) = 3.50$, $p_{\text{rep}} = .86$, $w = -.04$; and the negation condition, $\chi^2(1, N = 51) = 4.46$, $p_{\text{rep}} = .90$, $w = -.07$.

To bolster our assertion that negation is more difficult to represent than avoidance, we conducted a follow-up manipulation-check study. A separate sample of the same participant population was randomly assigned to the intent ($n = 29$), negation ($n = 26$), and avoidance ($n = 26$) conditions. Participants again answered a series of questions that were ostensibly part of a market-research questionnaire. The target question again appeared last, but this time was preceded by an unrelated negation question to be used as a covariate ("How likely are you to not purchase sneakers in the next three months?"). Participants' response time was measured for both the covariate and the target questions. We included the covariate question to partial out the additional time that it might take respondents to read the target negation question; any remaining variance in response time could therefore be attributed to difficulty of representation. We assumed that easy-to-represent behaviors would be associated with faster reaction times than harder-to-represent behaviors (i.e., reaction times were an indirect measure of ease). Following the covariate and target questions, participants were asked to rate explicitly how easy it was to imagine the target behavior, using a scale from 1 (*extremely difficult*) to 7 (*extremely easy*).

The results of the follow-up study support our interpretation of the results of the main experiment. Participants' log-

transformed response times were significantly greater in the negation condition ($M = 7.00$ s) than in either the intent condition ($M = 5.13$ s), $F(1, 77) = 10.20$, $p_{\text{rep}} = .98$, $d = 0.73$, or the avoidance condition ($M = 5.32$ s), $F(1, 77) = 5.29$, $p_{\text{rep}} = .92$, $d = 0.52$, but did not differ between the intent and avoidance conditions ($F < 1$). (Note that this analysis included the covariate; the results were also significant without the covariate.) We interpret these results to mean that the behavior was easier to imagine—and therefore elicited quicker responses—in the intent and avoidance questions than in the negation question. This interpretation is supported by the direct measurements of ease. Participants reported greater difficulty imagining the target behavior in the negation condition ($M = 4.08$) than in either the intent condition ($M = 5.38$), $F(1, 78) = 9.89$, $p_{\text{rep}} = .98$, $d = 0.71$, or the avoidance condition ($M = 5.12$), $F(1, 78) = 5.96$, $p_{\text{rep}} = .93$, $d = 0.55$, which in turn did not differ from each other, $F(1, 78) = 0.41$.

Note that the manipulation used in this experiment varied content in addition to ease of representation. Not only did negation prove more difficult to represent than avoidance, but because the negation question was mentally transformed, the mental representation itself was also different in the two conditions. The work of Johnson-Laird et al. (1999) hints at a causal link between ease and content: The mental transformation may occur *because* representing negations taxes working memory and is therefore difficult. Consequently, the pattern of ease observed does not map directly onto the pattern of behavior. Although participants in the negation and intent conditions behaved equivalently, it was the participants in the avoidance and intent conditions who indicated equivalent levels of ease. Thus, the pattern of behavior observed in the main study reflects differences both in ease of representation and in content. In Experiment 3, ease of representation was varied, while content remained constant across conditions.

EXPERIMENT 3

In this experiment, we tested the ease-of-representation hypothesis by manipulating both the regularity of the target behavior and the frequency referenced in the question. By definition, regular behaviors occur at regular frequencies (e.g., daily), so we expected that assessing the likelihood that regular behaviors will occur at regular frequencies should be relatively easy. In contrast, thinking about performing a regular behavior at an irregular frequency should be more difficult (Menon, 1993). For instance, a respondent asked to predict the likelihood of engaging in a once-a-day activity eight times in the coming week would have to speculate whether there might be a day when the behavior would occur more than usual. No such uncertainties arise for irregular behaviors because their frequency is not tethered to regular intervals—one might be just as likely to perform an irregular activity eight times in 1 week as two times or seven times. Hence, frequency regularity should affect the

ease of representation for regularly occurring target behaviors, but not for irregularly occurring behaviors.

We therefore expected a pronounced mere-measurement effect for a regular target behavior when the question frame referenced a regular frequency, but not when the question frame referenced an irregular frequency. By contrast, we expected the extent of the mere-measurement effect to be independent of frequency regularity for items concerning irregular behaviors. It is noteworthy that for regular behaviors, questions referencing an irregular frequency, rather than a regular frequency, might actually cause respondents to think more or “harder” because they would need to surmise when the unusual occurrence might take place. If so, a simple attitude-accessibility explanation would predict a pronounced mere-measurement effect in this condition because the elaboration required to answer the question should increase accessibility.

Method

Sixty-three undergraduates were randomly assigned to one of four experimental conditions in a two-by-two factorial design. In the manipulation of target behavior, participants were asked to indicate their likelihood (on a 7-point scale) of either (a) flossing in the coming week or (b) reading for pleasure in the coming week. The frequency-frame manipulation consisted of two levels: regular and irregular. In the regular-frequency conditions, participants were asked about the target behavior occurring either 7 or 21 times in the coming week (i.e., in a regular frequency). In the irregular-frequency conditions, participants were asked about the target behavior occurring either 2 or 8 times in the coming week (i.e., in an irregular frequency).¹ Note that flossing is typically considered a regularly occurring behavior, but reading for pleasure—especially for undergraduate students—is typically irregular.

One week later, participants were given a follow-up questionnaire in which they were asked to report how many times they had read for pleasure and how many times they had flossed in the past week (the order of these questions was counterbalanced; there were no order effects). Hence, participants whose target behavior in the initial survey had been reading served as controls for participants who had been asked initially about flossing, and vice versa.

Results

We tested the significance of the interaction of target behavior and frequency frame on reported flossing and reported reading, separately (see Fig. 1). We expected a significant interaction for reported flossing, but not for reported reading. As expected, a significant interaction was observed for reported flossing, $F(1,$

¹The different instantiations of regular and irregular frequencies were used to test the robustness of our theory to various frequencies. Responses did not differ across instantiations, so the data were collapsed by regularity.

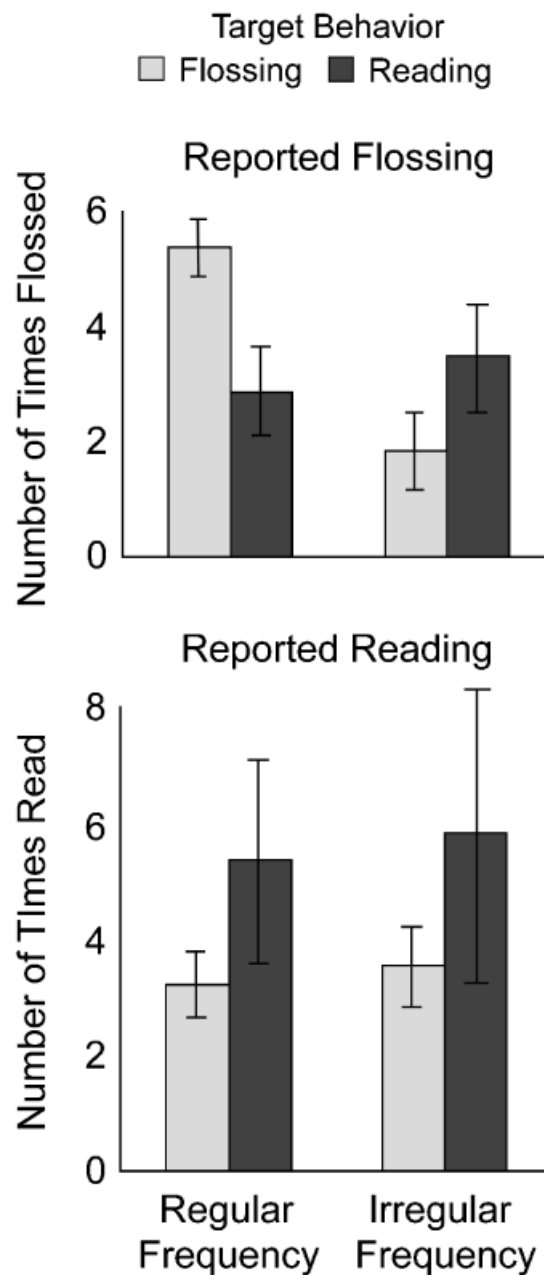


Fig. 1. Number of occasions participants reported flossing (top panel) and reading for pleasure (bottom panel) in the week following the initial survey in Experiment 3. In the initial survey, each participant was asked about his or her intention of engaging in one of the target behaviors a specific number of times (which represented either a regular or an irregular frequency of the behavior). Error bars indicate ± 1 standard error of the mean.

59) = 7.92, $p_{\text{rep}} = .96$, $d = 0.73$. Participants asked about their intent to floss at a regular frequency showed a pronounced mere-measurement effect, and participants asked about their intent to floss at an irregular frequency showed a depressed mere-measurement effect compared with control participants. In contrast, the identical interaction test for reported reading was not significant.

A planned contrast comparing reported flossing by participants whose target behavior was flossing was significant as expected ($M_s = 5.41$ and 1.86 for the regular and irregular frequency frames, respectively), $F(1, 59) = 11.22$, $p_{\text{rep}} = .98$, $d = 0.90$. Also as expected, in the regular-frequency condition, participants asked about their intent to floss reported significantly greater flossing rates than their counterparts who had not been asked about their intent to floss (i.e., who had been asked about their intention to read; $M = 2.86$), $F(1, 59) = 5.80$, $p_{\text{rep}} = .93$, $d = 0.63$. For the target behavior reading, we simply replicated the mere-measurement effect: Irrespective of frequency frame, participants asked about reading ($M = 5.66$) reported reading more than control participants ($M = 3.41$), although not significantly so, $F(1, 58) = 1.61$, $p_{\text{rep}} = .72$, $d = 0.33$. The results support the ease-of-representation hypothesis: Regularity of the frequency referenced in the question affected reported behavior only for regularly occurring behaviors.

GENERAL DISCUSSION

We have presented evidence that the simple act of stating one's intent to engage in a behavior is associated with an increased likelihood of subsequently engaging in the behavior when it is easy to mentally represent or imagine. Participants asked their intention to engage in a behavior were more likely to enact the behavior when mentally simulating it was an easier task. When possible, attitude accessibility was held constant across conditions, and arguably in one case our predictions and those of an attitude-accessibility account were in opposition.

Our data offer empirical evidence supporting Sherman's (1980) supposition that intention questions prompt respondents to engage in "pre-behavioral cognitive work." Using various manipulations, our experiments shed light on the nature of this work, and suggest that participants simulate the behavior in the intent question. Note that this simulation is not necessarily elaborative. It may instead be the case that the mental representation and simulation occur virtually automatically. Indeed, Fitzsimons and Williams (2000) demonstrated that the mere-measurement effect is due largely to nonconscious factors. Ease of representation may be viewed as one of these factors; respondents may use ease as a fluency cue (Bornstein, 1989; Reber, Winkielman, & Schwarz, 1998).

Even though we focused on ease of representation, our manipulations may have affected the content of mental representations, as well as their ease. To some degree this is inevitable—the content of one's representation of a behavior that is easy to represent will necessarily differ from the content of one's representation of a behavior that is difficult to represent. In Experiment 1, not only was a mental representation of oneself flossing easier to conjure than a mental representation of an average classmate flossing, but the content of these representations also differed because the actor differed. In Experiment 2, as we acknowledged earlier, a negation not only was more dif-

difficult to represent than avoidance, but also was represented differently. In Experiment 3, the representation of a regular behavior at an irregular frequency not only was more difficult than the representation of the same behavior at a regular frequency, but also was likely to have included imagination of unusual events in the coming week. Consequently, ease and content of representation were inextricably linked. We have focused on ease because it is the most parsimonious explanation for our results. Furthermore, the manipulation-check data indicate that our experimental treatments exerted a significant effect on ease.

Although our evidence suggests that ease of representation influences the question-behavior link, it is unclear whether the effect of ease is direct or is mediated by additional variables. For instance, does ease facilitate the formation of implementation intentions (Gollwitzer, 1999), which in turn lead to the mere-measurement effect? Support for this conjecture comes from Anderson and Godfrey (1987), who showed that imagining oneself—but not other people—enacting a behavioral script increases one's expectations of engaging in the behavior. The increased expectations may spur the formation of implementation intentions; ease may trigger a stronger intention than difficulty, which may trigger no intention at all. This hypothesized relation between ease and implementation intentions may explain why mere-measurement effects endure beyond the typical duration of priming effects—it is the implementation intentions that endure, not the behavioral primes.

Alternatively, does ease affect accessibility? In particular, one interpretation of the results of Experiment 1 is that respondents in the other-intent condition could conjure fewer instances of the behavior than could respondents in the self-intent condition, and as a result of these fewer instances their attitudes were less accessible. Answers to these questions will enhance psychologists' understanding of the question-behavior link in particular and the attitude-behavior link in general.

The unintended impact of measuring intentions is wide-ranging, and the unintended change in behavior may be harmful to the respondent. For example, researchers often query at-risk populations about their likelihood of engaging in risky or unhealthy behaviors (e.g., drug use) as a way to assess the need for prevention programs. Regrettably, respondents' history of engaging in unhealthy behaviors may facilitate their imagining repeating such behaviors. In recent research, simply responding to a question about their likelihood of recreational drug use in the upcoming 2 months led to increased use among drug users, but not among nonusers (Williams, Block, & Fitzsimons, in press). Note that the source of ease in that study was somewhat different from the source of ease in our Experiments 2 and 3. Non-drug users in the study by Williams et al. may have found the intention question difficult to answer because they had no representation of themselves using drugs whatsoever (just as other-intent participants in Experiment 1 were unlikely to have had an accessible representation of their classmate flossing). In

our experiments, however, participants did have accessible representations of engaging in the target behavior itself (e.g., flossing), but they may not have had an easily accessible representation of engaging in the behavior in the circumstance cited in the question (e.g., flossing eight times). The general robustness of the mere-measurement effect, as well as its significantly increased magnitude for behaviors that are easy to represent and imagine, suggests the need to focus research on assessment tools that prevent an increase in the probability of unwanted behaviors.

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