Forget Framing Might Involve the Assumption of Mastery, but Probably Does Not Activate the Notion of Forgetting

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Soliciting predictions about hypothetical memory performance (without having participants engage in a related memory task) is a simple way for researchers to examine people’s metacognitive beliefs about how memory functions. Using this methodology, researchers can vary what information is provided as part of the scenario or how the memory prediction is framed to examine how such factors alter people’s memory predictions. For example, Koriat, Bjork, Sheffer, and Bar (2004) found that participants would factor expected retention intervals into their memory predictions (worse performance over longer intervals) when they were asked to predict future forgetting, but not when they were asked to predict future remembering. In the present experiments, we examined the effects of forget framing on memory predictions and whether we indicated that the hypothetical learners had mastered the information before the retention interval began. Although we hypothesized that stating initial mastery might similarly activate participants’ knowledge that memory should decline with longer retention intervals, in our experiments, neither the forget frame nor mastery information seemed to consistently trigger participants’ beliefs about forgetting. Furthermore, participants’ remember-framed predictions were higher when we indicated mastery than when we did not, but forget-framed predictions were not affected by the mastery information. Taken together, the present results suggest that the forget frame might involve the assumption of an initially high level of mastery but probably does not activate a “notion of forgetting” that alerts participants to the fact that memory declines over increasing retention intervals.

Keywords: metacognition, memory predictions, retention intervals, framing, judgments of learning

Metacognition involves people’s (and, perhaps, some animals’) monitoring, control, and knowledge of other cognitive states or processes (for overviews, see Beran, Brandl, Perner, & Proust, 2012; Briñol & DeMarree, 2012; Dunlosky & Metcalfe, 2009; Hacker, Dunlosky, & Graesser, 2009; Tarricone, 2011). Understanding what factors cause people to utilize or ignore available information to make metacognitive judgments is important for refining theories of metacognition (e.g., Dunlosky & Tauber, 2013; Koriat, 1993, 1997; Schwartz, Benjamin, & Bjork, 1997). In the present experiments, we examined how people’s metacognitive knowledge about memory and forgetting over time can be activated by changing what information we ask them to consider or what information we provide to them. Specifically, we examined whether participants are more likely to factor an expected retention interval (e.g., 10 min, 1 year) into memory predictions when judging forgetting than when judging remembering (cf. Koriat et al., 2004) and whether participants are more likely to factor an expected retention interval into memory predictions after stating or not stating that participants had mastered the materials before the retention interval began. In the following sections, we provide a quick overview of several lines of research relevant to the present experiments.

**Metacognitive Judgments**

In most empirical investigations of metacognition, participants judge or predict their performance in some cognitive domain (e.g., memory; reading comprehension) and then attempt to perform a task in that domain (i.e., studying for and completing a memory test; reading a text and answering comprehension questions about it). Researchers can then compare participants’ metacognitive predictions of their performance to their actual performance to gauge the accuracy of the participants’ predictions (for further reviews of this general methodological approach, see Dunlosky & Metcalfe, 2009; Dunlosky, Serra, & Baker, 2007).

Current theories of metacognition assume that people make such judgments based on inferences from cues related to the performance of that cognition (e.g., Koriat, 1993, 1997; Schwartz et al., 1997). When people make metacognitive judgments, their judgments often reflect a mix of theory-based information (e.g., Briñol, Petty, & Tormala, 2006; Mueller, Tauber, & Dunlosky, 2013; Serra & Ariel, 2014; Serra & Dunlosky, 2010; Shanks & Serra, 2014) and experience-based information (e.g., Koriat & Ackerman, 2010; Koriat, Nussinson, Buss, & Shaked, 2008; Serra & Ariel, 2014; Serra & Magreehan, 2016) about the task. For example, imagine a student who is studying a science textbook for an

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upcoming test. The student needs to estimate their current level of understanding for the material in order to decide how much longer to study the materials. The student might have metacognitive beliefs or knowledge that the presence of photos or diagrams in a textbook aids learning (theory-based information); if so, they might judge their learning for the chapters to be high—appropriately or not—because visual aids are present in the learning materials (e.g., Jaeger & Wiley, 2014; McCabe & Castel, 2008; Serra & Dunlosky, 2010). In contrast, those same visual aids might produce the subjective experience of ease or fluency (experience-based information), which the student might misattribute to their learning or comprehension being good when in fact it might not be (e.g., Briñol et al., 2006; Carpenter, Wilford, Kornell, & Mullaney, 2013; Rhodes & Castel, 2008; Serra & Magreehan, 2016; but see Magreehan, Serra, Schwartz, & Narciss, 2016).

Researchers have developed several methods to separate the influence of theory and experience on people’s metacognitive judgments (e.g., Ariel & Dunlosky, 2011; Castel, 2008; Koriat & Ackerman, 2010; Mueller et al., 2013; Serra & Ariel, 2014; Serra & Dunlosky, 2010; Vesonder & Voss, 1985). The approach we utilized in the present experiments involves participants making explicit metacognitive judgments or predictions about performing a task under the conditions of interest to the researcher (cf., Koriat et al., 2004). Such studies often involve having participants report how they might behave in a hypothetical situation or to predict what might have been the pattern of results in a previously conducted experiment. For example, Li, Jia, Li, and Li (2016) examined participants’ knowledge about the animacy advantage in memory (i.e., better memory for animate concepts than for inanimate concepts; see Popp & Serra, 2016, 2018) and how that might relate to their memory judgments. In their first experiment, participants studied animate and inanimate words for a memory test; they made memory judgments as they studied each one. Their performance and their judgments reflected the typical animacy advantage. In a later experiment, new participants read a description of the first experiment, but did not study items for a memory test. These new participants estimated how many animate and inanimate words the participants in the first experiment recalled. Given that most of the participants in the latter experiment predicted greater recall of animate than inanimate words in the first experiment, Li et al. (2016) concluded that they had applied an explicit belief about the animacy advantage when making their judgments.

Framing and Memory Predictions

To date, most research on the effects of framing on people’s memory predictions (both theory-based and experience-based) has compared predictions framed in terms of the likelihood of remembering to predictions framed in terms of the likelihood of forgetting (e.g., England, Ortegaen, & Serra, 2017; Finn, 2008; Friedman & Castel, 2011; Halamish, McGillivray, & Castel, 2011; Koriat et al., 2004; Kornell & Bjork, 2009; Rhodes & Castel, 2008; Serra & England, 2012; Townsend & Heit, 2011a). Other studies have compared predictions of remembering to predictions of improvement in memory (Townsend & Heit, 2011b) and to predictions of both forgetting and the duration of retention (Tauber & Rhodes, 2012). Still other studies have compared memory predictions made for different retention intervals (e.g., Koriat et al., 2004; Rawson, Dunlosky, & McDonald, 2002; Tauber & Rhodes, 2012), examined asking participants to indicate whether they will “remember” versus “know” recently studied information on an upcoming test (McCabe & Soderstrom, 2011), and compared predictions of learning framed in terms of study benefits to predictions framed in terms of testing benefits (Ariel, Hines, & Hertzog, 2014).

Despite the variety of methods and specific judgment frames that researchers have so far examined, one conclusion has been consistently reached: altering the frame of memory predictions can change the information (i.e., cues; Koriat, 1997) that people use as the basis for those predictions (e.g., Korniat, Lichtenstein, & Fischhoff, 1980; Serra & England, 2012; see also Kahneman & Tversky, 1984). Importantly, changing the information that people use to make memory predictions by framing the metacognitive prompt differently can affect several aspects of the judgments including the magnitude and accuracy of the judgments (Serra & England, 2012), the scaling of subjective confidence to the response scale (England et al., 2017), and how people use them to make restudy decisions (Finn, 2008).

Belief Saliency and Utilization

Although people hold beliefs about memory and these beliefs often affect their memory predictions, in some situations their predictions do not always reflect such beliefs. For example, under a variety of situations, people seem to demonstrate a stability bias in their memory predictions (e.g., Kornell & Bjork, 2009; see also Ariel et al., 2014). This pattern of results refers to the observation that people often fail to understand—or, at least, fail to utilize their belief—that one’s memory can change over time (i.e., by increasing with additional study time or study opportunities; by decreasing over long study–test latencies). Most relevant to the present studies, participants in the experiments reported by Koriat et al. (2004) were asked to predict how many memory items a hypothetical student would remember over a given retention interval. Although the critical retention intervals varied quite a bit (e.g., 10-min, 1-week, 1-year), participants did not factor these intervals into their memory predictions when the intervals were varied between-participants. Instead, they predicted that the hypothetical student would remember just as many items 10 min after studying them as they would a year after studying them (also demonstrating a stability bias in memory predictions).

One possibility suggested by Koriat et al. (2004) is that information about forgetting over time may not always be salient to participants or activated during the task. They proposed that people’s memory predictions will only utilize such information about forgetting that occurs over time when those beliefs (which they referred to as the notion of forgetting) are activated at the time the memory prediction is made. In accord with this prediction, Koriat et al. demonstrated that participants would spontaneously incorporate the expected retention interval into their memory predictions when they asked participants to make their predictions in terms of the number of items the hypothetical student would forget—as opposed to remember—over the given interval. This method produced different predictions for the different retention intervals even when the retention interval varied between participants (see Figure 1, which presents mean memory predictions from relevant studies in Koriat et al., 2004). As such, framing memory predictions in terms of forgetting seemed to activate participants’
beliefs about forgetting, and they then made more accurate (or, at least, more discriminative) memory predictions than when predictions were framed in terms of remembering (cf. Finn, 2008).

To date, however, only Koriat et al. (2004) has provided evidence that forget-framed memory judgments might activate a notion of forgetting, and no study has examined a specific mechanism for why this might happen. For these reasons, we examined the possibility that a forget frame activates the notion of forgetting because participants assume a high level of initial mastery on the part of the hypothetical learners in order to then estimate how many items those hypothetical learners might have forgotten.

**Mastery Information**

We know that participants will utilize information about past performance or normative performance when making memory predictions for themselves or for other people. For example, people strongly favor information about their own (Serra & England, 2012) or other people’s (Serra & Ariel, 2014) performance on previous memory trials to make memory predictions for the current memory trial. Providing (sham) information that indicates the memory task at hand is normatively difficult or normatively easy can reduce or increase the magnitude of memory predictions, respectively (England et al., 2017; Serra & England, 2012). In the present experiments, all participants made memory predictions for some hypothetical other person (cf. select experiments in Koriat et al., 2004; Li et al., 2016). Critically, for some groups we provided information stating that the hypothetical participants learned all the to-be-recalled items prior to the onset of the retention interval. The present experiments were framed in terms of remember (i.e., “mastery”), from which they estimate forgetting (loss) of information. Such a possibility could indicate a mechanism by which the forget frame activates the notion of forgetting (cf. Koriat et al., 2004) and could also explain why

In Koriat et al.’s (2004) experiments, the actual participants were never given information about how well the hypothetical learners knew the materials before the study–test interval began. Therefore, their remember-framed memory predictions might have reflected a theory about the initial acquisition of information (i.e., “Most people would learn about one-third of the items”), which is why the stated retention interval did not affect memory predictions for those groups. In contrast, their forget-framed memory predictions might have reflected a theory about forgetting from an initial level of acquisition (i.e., “If most people learned about four-fifths of the items, then forgot one fifth of the items before the test, I’d say they ‘forgot’ two-fifths of the items”). This might be why the stated retention interval affected memory predictions for those groups: The expected retention interval became relevant for their predictions. This explanation is fully compatible with Koriat et al.’s (2004) notion of forgetting explanation—it simply adds a more specific mechanism. Importantly, it also provides a potential method to make remember-framed predictions more like forget-framed predictions: Providing mastery information for remember-framed predictions could make them as discriminative as forget-framed predictions.

The mastery manipulation and the aforementioned explanation might also inform a current enigma involving forget-framed memory predictions. In the majority of studies to date comparing remember-framed and forget-framed memory predictions, forget-framed predictions were typically of higher magnitude after reverse-scoring than were remember-framed predictions, indicating more optimistic memory predictions (for a review, see Serra & England, 2012; see also England et al., 2017; Lineweaver & Brolsma, 2014; Townsend & Heit, 2011a; but see Finn, 2008). Importantly, this does not seem to be due to the forget frame altering people’s confidence in their memory (England et al., 2017; Serra & England, 2012). Rather, it is possible that forget-framed memory predictions require the assumption of some level of mastery or baseline acquisition that is higher than people assume when making remember-framed predictions. This might have the ironic effect of making people’s forget-framed memory predictions higher in magnitude—but only seemingly more optimistic—than remember-framed predictions. Put differently, the higher magnitude of forget-framed memory predictions compared with remember-framed predictions might be a carryover effect of assuming an initially high level of memory acquisition from which participants estimate forgetting, rather than reflecting greater confidence in memory. If this hypothesis is correct, then a more interesting (and potentially informative) prediction is that stating mastery might increase the magnitude of remember-framed memory predictions but not that of forget-framed memory predictions, as the latter already involve the assumption of a higher initial level of learning.

**The Present Experiments**

As we stated in the preceding text, the primary purpose of the present experiments was to examine our hypothesis that the forget frame might lead participants to assume an initially high level of memory acquisition (i.e., “mastery”), from which they estimate forgetting (loss) of information. Such a possibility could indicate a mechanism by which the forget frame activates the notion of forgetting (cf. Koriat et al., 2004) and could also explain why
forget-framed memory predictions are often higher in magnitude (after reverse scoring) than are remember-framed predictions (e.g., England et al., 2017; Serra & England, 2012). The secondary purpose was to replicate the effects demonstrated by Koriat et al. (2004) that participants’ forget-framed memory predictions are sensitive to the expected retention interval even though their remember-framed predictions are not. To our knowledge, there is no published replication of those effects.

In the present experiments, we will provide some groups of participants with information stating that the hypothetical participants learned all the to-be-recalled items prior to the onset of the retention interval. In order to make either a remember-framed or a forget-framed memory prediction (that differs from 100% recall), participants will presumably need to consider forgetting. If mastery information is activated by the forget frame and that causes forget-framed memory predictions to be sensitive to retention interval (when remember-framed predictions are not), then providing participants with mastery information should be redundant with the forget frame in terms of how the two affect the magnitude of memory predictions and how sensitive participants are to the stated retention interval. In contrast, we assume that participants do not normally assume mastery under the remember frame. As such, adding the mastery information to remember-framed judgments should produce similar effects as the standard forget frame in terms of the magnitude of memory predictions and sensitivity to the stated retention interval: Memory predictions should become more optimistic (higher in magnitude) and should be sensitive to the expected retention interval.

Experiment 1

Method

Participants, materials, and design. The participants were 1,838 undergraduates from Texas Tech University. Their mean age was 19 years old. The sample was 33% male and 67% female. Including people who indicated belonging to more than one race or ethnic group, the sample was 70% White or European American, 18% Hispanic or Latino, 8% Black or African American, 5% Asian or Asian American, 2% Native American or Alaskan Native, and 2% who indicated they belonged to some unlisted group. All were currently enrolled as students at Texas Tech University, with 66% identifying as first-year students, 21% as second-year students, 9% as third-year students, and 4% as fourth-year students. The sample size for the present experiment was not related to power needs for the present design, but rather to the sample size used for the larger survey into which we embedded the critical question for the present experiment. As such, the per-group sample size in the present experiment is considerably greater than what Koriat et al. (2004) used across their studies.

The participants completed an online survey for partial course credit. The present experiment only involved one question from the survey; except for this critical question, the larger survey was not relevant to memory or memory predictions and hence we will not discuss the other results of the survey. More specifically, the participants first answered five demographics questions, then answered 10 multiple-choice assessment questions about research-methods content (these questions did not involve memory or learning content). Next, the participants answered one version of the critical question for the present experiment. Finally, participants answered 20 Likert questions indicating their beliefs about science in general and psychology as a science. All participants completed the survey question blocks in this order, but we randomized the order of the questions in each block for each participant.

The critical question asked participants to estimate the retention of 50 paired-associate items over a given study–test interval. More specifically, the present experiment used a 2 (frame: remember vs. forget) × 2 (mastery: stated as complete vs. not stated) × 4 (study—test interval: immediate vs. 10 min vs. 3 weeks vs. 1 year) between-participants factorial design. This design yielded 16 groups.

Procedure. Participants completed an online survey in which we embedded the critical question. The survey software randomly assigned each participant to one of the 16 groups; each participant only answered the version of the question relevant to that condition. The paragraph below presents the exact wording of the question, with variations indicated in square brackets. The mastery manipulation—included in curved brackets—was either included or excluded depending on the mastery condition:

Suppose a student is asked to Study 50 pairs of unrelated words such as DOG—SPOON and IRON—LEOPARD for an experiment on memory. The student knows that his or her memory for the pairs will later be tested [so, he or she will study the items well and learn all 50 pairs of words completely]. On the test, the student is shown the first word of each pair (e.g., DOG—?), and he or she will have to type in the second word of the pair (e.g., SPOON). Assuming that the student will take the test [immediately/10 min/3 weeks/1 year] after studying the last pair of words, how many of the 50 pairs of words do you think he or she will [remember/forget] when he or she takes the test at that time?

Participants made their retention prediction by typing any number from 0 to 50 into a field on the computer screen to indicate how many of the 50 items they thought the hypothetical learner would remember or forget over the given study–test interval.

Results

We reverse-scored forget-framed predictions (i.e., 50 – Predictions) as in Koriat et al. (2004) so we could directly compare them to remember-framed predictions (see also Finn, 2008; Serra & England, 2012). We then converted all predictions to percentages (i.e., the percentage of items out of 50 expected to be retained) for analysis and for easier comparison to Figure 1 (the data from Koriat et al., 2004). Figure 2 shows the mean memory prediction for the present 16 groups of participants. Although we utilized a between-participants design, this figure uses lines to highlight potential linear trends in predictions across study—test intervals. Each data point, however, represents the mean for one of the 16 groups.

We analyzed the mean predictions using a 2 (frame: remember vs. forget) × 2 (mastery: stated as complete vs. not stated) × 4 (study—test interval: immediate vs. 10 min vs. 3 weeks vs. 1 year) fully factorial analysis of variance (ANOVA). Forget-framed memory predictions were higher (after reverse-scoring) than were remember-framed memory predictions, $F(1, 1822) = 61.6, \text{MSE} =$
678.6, \( p < .001 \), \( \eta^2 = .03 \), and memory predictions were higher when the level of mastery was stated as complete compared with when it was not mentioned at all, \( F(1, 1822) = 8.4, \text{MSE} = 678.6, p = .004, \eta^2 = .005 \). The expected study–test interval also affected memory predictions, \( F(3, 1822) = 16.0, \text{MSE} = 678.6, p < .001, \eta^2 = .03 \). Follow-up comparisons (Tukey’s honestly significant difference [HSD]), however, revealed that predictions for the 1-year study–test interval were significantly lower than were predictions for the other intervals (all \( ps < .001 \)), but predictions for the other intervals did not differ from each other (all \( ps > .9 \)).

In addition, the interaction between the remember/forget frame and study—test interval was significant, \( F(3, 1822) = 3.2, \text{MSE} = 678.6, p = .02, \eta^2 = .005 \), in that forget-framed predictions were higher than remember-framed predictions for all study—test intervals (all \( ps < .001 \)) except for the immediate interval (when they did not differ, \( p = .08 \)). The triple interaction between the remember/forget frame, mastery, and study—test interval was also significant, \( F(3, 1822) = 3.9, \text{MSE} = 678.6, p = .009, \eta^2 = .006 \), in that forget-framed predictions were higher than remember-framed predictions for all study—test intervals regardless of mastery (all \( ps < .05 \)) except for the immediate interval when mastery was stated as complete (when they did not differ, \( p = .5 \)). The interaction between the remember/forget frame and mastery was not significant, \( F(1, 1822) = 0.5, \text{MSE} = 678.6, p = .5, \eta^2 < .001 \), nor was the interaction between mastery and study—test interval, \( F(3, 1822) = 0.2, \text{MSE} = 678.6, p = .9, \eta^2 < .001 \).

We also conducted four separate contrasts examining the mean predictions across the study—test intervals for the four major cells in the design (i.e., mastery stated vs. not stated by remember frame vs. forget frame). Memory predictions for the 1-year study—test interval were lower than those for the 3-week study—test interval under all frames (all \( ps < .005 \)) except for under the forget frame when mastery was stated (\( p = .7 \)). No other predictions differed significantly, but memory predictions for the immediate study—test interval were marginally greater than those for the 10-min study—test interval under the remember frame when mastery was stated (\( p = .09 \)).

To examine whether forget-framed memory predictions involve the assumption of some level of mastery, we conducted two separate 2 (mastery: stated vs. not stated) \( \times 4 \) (study—test interval: immediate vs. 10 min vs. 3 weeks vs. 1 year) ANOVAs for the remember- and forget-framed groups. In accordance with this hypothesis, stating that the hypothetical learners had mastered the materials produced higher remember-framed predictions than when mastery was not stated, \( F(1, 935) = 16.7, \text{MSE} = 643.9, p = 0.08, \eta^2 = .007 \), but did not affect forget-framed predictions, \( F(1, 887) = 2.2, \text{MSE} = 715.1, p = .1, \eta^2 = .003 \).

**Discussion**

Although visual inspection of our means (see Figure 2) suggests that the mastery frame activated the notion of forgetting for remember-framed predictions, inferential statistics indicate that this conclusion cannot be made. Therefore, the results of Experiment 1 did not support our hypothesis that the inclusion of mastery could activate the notion of forgetting for remember-framed predictions. These results do not necessarily disprove the notion of forgetting hypothesis, but they also do not provide support for it, and they do not indicate that the mastery frame can activate such beliefs. In the present situation, participants largely ignored the cue of stated retention interval (save for the 1-year retention interval) under both the remember frame and the forget frame and when mastery was stated and was not stated.

Overall, the present results did not replicate those of Koriat et al. (2004) regarding people’s theory-based memory predictions, even though the groups for which we did not mention mastery comprise a fairly direct replication of Koriat et al.’s across-experiment methodology. Whereas Koriat et al.’s participants incorporated study—test intervals into their forget-framed predictions but not their remember-framed predictions when study—test interval varied between-participants (see Figure 1), our participants ignored all but the 1-year study—test interval for both remember-framed and forget-framed predictions (see the left half of Figure 2). Given our results, it seems that a 1-year study—test interval is so extreme that it triggers participants’ notion of forgetting even when the prediction is framed in terms of remembering. The other study—test intervals, however, do not seem to trigger such thinking, even when the prediction is requested in terms of forgetting (or when mastery is stated). Much as in Koriat et al.’s studies, though, our participants did not expect memory to decline either 10 min or three weeks after studying (compared with the predictions for an immediate test).

We did replicate one important aspect of Koriat et al.’s results, however: forget-framed predictions were of higher magnitude after reverse-scoring than were remember-framed predictions (see also England et al., 2017; Serra & England, 2012). Related, the present results provide some support—albeit indirect—for our hypothesis that individuals’ forget-framed memory predictions involve the assumption of some initial level of mastery from which they
subtract an amount based on the expected retention interval to make their forgetting judgment.

Experiment 2

We conducted a second experiment to examine some lingering issues from the first experiment. First, we wanted to replicate the between-participants results of Experiment 1 (which utilized college students as the participants) using another very large sample but from a different population of participants: Amazon Mechanical Turk (MTurk) workers. Compared with college students, MTurk workers are typically somewhat older and more educated, and hence might respond to the critical questions differently. Second, we wanted to replicate the results of Experiment 1 in a situation where the critical question was the only task at hand. Specifically, the participants in Experiment 1 answered the critical questions in the middle of a larger (albeit unrelated) survey, and perhaps did not devote substantial time or effort to arriving at their responses. Finally, and most importantly, we wanted to test the assumption that the forget frame activates the notion of forgetting (as suggested by Koriat et al., 2004), and whether mastery activates the notion of forgetting.

To examine these latter questions, we added a third set of conditions in which we attempted to activate people’s notion of forgetting by explicitly reminding them at the time of the question that memory typically declines over time. Assuming that this statement activates the notion of forgetting and that activating the notion of forgetting leads participants to factor retention intervals into their memory predictions, then participating in the notion of forgetting groups should make differential predictions for the different retention intervals regardless of whether or not they are predicting their performance under a remembering or forgetting frame. Further, if the forgetting frame or the mastery frame also activates the notion of forgetting, then predictions for those groups should also differ by retention interval.

Method

Participants, materials, and design. We utilized a very large sample size in the present Experiment 2 to match the average per-group sample size in the present Experiment 1. The participants were 2,639 Amazon MTurk workers; they participated for $0.05. Their mean age was 36 years old. We required participants to be in the United States and to have an approval rate over 90% for completing prior tasks on MTurk. The sample was 35% male, 65% female, and 1% other. Including people who indicated belonging to more than one race or ethnic group, the sample was 79% White or European American, 6% Hispanic or Latino, 8% Black or African American, 8% Asian or Asian American, 1% Native American or Alaskan Native, and 1% who indicated they belonged to some unlisted group. In terms of the highest level of education obtained by the participants, 3% of the sample reported that they held a doctoral-level degree, 12% held a masters-level degree, 5% attended graduate school without earning a degree, 30% held a bachelors-level degree, 11% held an associates-level degree, 28% attended college without earning a degree, 9% held a high-school diploma or GED, and 1% attended high school without earning a diploma.

In order to complete the task, participants had to accept the task on MTurk, follow written instructions to open a new Internet browser window, travel to an external website to complete the task, answer the questions, receive a visually presented confirmation code, then return to the MTurk window to enter that confirmation code and receive payment. We only utilized data from participants for which there was a matching confirmation code given at the data collection website and entered at the MTurk website. We believe that these steps reduced the likelihood that the responses stemmed from artificial intelligence “bots” programmed to complete such online tasks. To this end, an additional 61 MTurk workers attempted to earn payment for the task without having a valid confirmation code or any other evidence that they completed the task; we did not pay these workers and we did not include them in the sample size, as we had no evidence that they even attempted the task.

Experiment 2 used a 2 (frame: remember vs. forget) × 3 (secondary frame: mastery stated as complete vs. mastery not stated vs. notion of forgetting provided) × 4 (study—test interval: immediate vs. 10 min vs. 3 weeks vs. 1 year) between-participants design. This design yielded 24 groups. For the mastery stated as complete and mastery not stated groups, the critical questions were the same as in Experiment 1 (making these groups replications of Experiment 1, but with a different population of participants). For the notion of forgetting groups, the critical questions were the same as for the mastery not stated groups, with one change: each question opened with a statement appearing in a bold font designed to activate people’s notion of forgetting. Specifically, this statement read, “As you answer the following question, please think carefully about how memory performance typically declines over time.” As in Experiment 1, participants in Experiment 2 each only answered one version of the critical question. Unlike in Experiment 1, in Experiment 2 this was the only question (besides demographics) that the participants responded to; we collected no other related or unrelated data in the survey.

Procedure. We posted a paid research opportunity on the Amazon MTurk website seeking participants for a very short survey about memory. This post stated that participants would be paid $0.05 for participation. Interested participants were directed to an online survey on another website. First, participants answered one of the 24 different versions of the critical question. This was the only question visible at that time. After entering their response, participants answered demographics questions concerning their age, gender, race/ethnicity, and level of education. Participants could choose to not answer any of these demographics questions and still receive payment. On the final screen, participants received a short debriefing and a visual confirmation code which they entered into the MTurk website to receive their payment.

Results

We reverse-scored forget-framed predictions (i.e., 50 – Predictions) as in Koriat et al. (2004) so we could directly compare them to remember-framed predictions (see also Finn, 2008; Serra & England, 2012). We then converted all predictions to percentages (i.e., the percentage of items out of 50 expected to be retained) for analysis and for easier comparison to Figure 1 (the data from Koriat et al., 2004). Figure 3 shows the mean memory prediction for the present 24 groups of participants. Although we utilized a between-participants design, this figure uses lines to highlight
potential linear trends in predictions across study—test intervals. Each data point, however, represents the mean for one of the 24 groups of participants.

We analyzed the mean predictions using a 2 (frame: remember vs. forget) × 3 (secondary frame: mastery stated as complete vs. mastery not stated vs. notion of forgetting provided) × 4 (study—test interval: immediate vs. 10 min vs. 3 weeks vs. 1 year) fully factorial ANOVA. Forget-framed memory predictions were higher (after reverse-scoring) than were remember-framed memory predictions, \( F(1, 2615) = 28.0, \text{MSE} = 605.0, p < .001, \eta_p^2 = .01 \). Memory predictions also differed by secondary framing condition, \( F(2, 2615) = 37.2, \text{MSE} = 605.0, p < .001, \eta_p^2 = .03 \). More specifically, follow-up comparisons (Tukey’s HSD) revealed that predictions were higher for the mastery stated groups than for the mastery not stated groups (\( p < .001 \)), and predictions were higher for the mastery not stated groups than for the notion of forgetting groups (\( p < .05 \)). Predictions were also higher for the mastery stated groups than for the notion of forgetting groups (\( p < .001 \)).

The expected study—test interval also affected memory predictions, \( F(3, 2615) = 89.7, \text{MSE} = 605.0, p < .001, \eta_p^2 = .09 \). Follow-up comparisons (Tukey’s HSD) revealed that predictions for the 1-year study—test interval were significantly lower than were predictions for the other intervals (all \( ps < .001 \)). Predictions for the immediate and 10-min intervals did not differ from each other (\( p > .9 \)), but both predictions were higher than for the 3-week interval (both \( ps < .01 \)).

In addition, the interaction between the remember/forget frame and the secondary frame was significant, \( F(2, 2615) = 6.9, \text{MSE} = 605.0, p = .001, \eta_p^2 = .005 \). Specifically, forget-framed predictions were higher than remember-framed predictions when mastery was not stated (\( p < .001 \)) and when the notion of forgetting was provided (\( p = .01 \)), but not when mastery was stated (\( p = .5 \)). The interaction between the secondary frame and the study—test interval was also significant, \( F(6, 2615) = 5.6, \text{MSE} = 605.0, p < .001, \eta_p^2 = .01 \). Predictions for the 1-year interval were lower than for the other intervals under all secondary frames (all \( ps < .001 \)). Immediate and 3-week predictions only differed under the mastery stated frame (\( p < .001 \)), and 10-min and 3-week predictions only differed when the notion of forgetting was provided (\( p = .009 \)).

We also conducted six separate contrasts examining the mean predictions across the study—test intervals for the six major cells in the design (i.e., mastery stated as complete vs. mastery not stated vs. notion of forgetting provided by remember frame vs. forget frame). When mastery was not stated, memory predictions for the 1-year study—test interval were lower than for all other intervals under both the remember frame and the forget frame (all \( ps < .005 \), but no other intervals differed. When mastery was stated, memory predictions for the 1-year study—test interval were again lower than for all other intervals under both the remember frame and the forget frame (all \( ps < .001 \)). No other intervals differed under the forget frame, but immediate predictions were higher than 3-week predictions under the remember frame (\( p = .005 \)). When the notion of forgetting was provided, memory predictions for the 1-year study—test interval were lower than for all other intervals under the remember frame (all \( ps < .001 \)), but were only lower than for the immediate and 10-min intervals under the forget frame (both \( ps < .05 \)). Predictions for the 10-min interval were higher than for the 3-week interval under the remember frame (\( p = .007 \)), but no other intervals differed.

To examine whether forget-framed memory predictions involve the assumption of some level of mastery, we conducted two separate 2 (secondary frame: mastery stated as complete vs. mastery not stated) × 4 (study—test interval: immediate vs. 10 min vs. 3 weeks vs. 1 year) ANOVAs for the remember- and forget-framed groups. In accordance with this hypothesis, remember-framed predictions were higher when it was stated that the hypothetical learners had mastered the materials compared with when mastery was not stated, \( F(1, 870) = 44.7, \text{MSE} = 602.9, p < .001, \eta_p^2 = .01 \).
.05, but this framing did not affect forget-framed predictions, $F(1, 882) = 2.1$, $MSE = 660.1$, $p = .1$, $\eta^2_p = .002$.

To examine whether forget-framed memory predictions activate the notion of forgetting, we conducted two separate 2 (secondary frame: mastery not stated vs. notion of forgetting provided) $\times$ 4 (study—test interval: immediate vs. 10 min vs. 3 weeks vs. 1 year) ANOVAs for the remember- and forget-framed groups. The secondary frame did not interact with the study—test interval under the remember frame, $F(3, 865) = 2.0$, $MSE = 522.4$, $p = .1$, $\eta^2_p = .007$, or under the forget frame, $F(3, 871) = 0.6$, $MSE = 618.6$, $p = .6$, $\eta^2_p = .002$. Critically, however, this lack of an interaction under the forget frame was not because the forget frame produced differences in memory predictions regardless of whether the notion of forgetting was mentioned. Instead, when mastery was not stated, forget-framed predictions for the 1-year interval were significantly lower than for all other intervals (all $p$s < .001), but no other differences by interval occurred. When the notion of forgetting was provided, forget-framed predictions for the 1-year interval were only lower compared with predictions for the immediate and 10-min intervals (both $p$s < .05), and no other differences by interval occurred.

**Discussion**

We obtained very similar results in Experiment 2 for the conditions that replicated Experiment 1 (i.e., Figure 2 vs. Figure 3), even though we used two different populations of participants for the two experiments and participants in Experiment 2 did not complete a larger unrelated survey. As such, it seems the data in Experiment 1 is not spurious, nor is it specific to a college population or to questions imbedded in a larger survey.

Much as in Experiment 1, although the mastery frame produced means that seemingly differed across the retention intervals in Experiment 2 (see Figure 3), the significance of any differences was largely restricted to the 1-year retention interval. Importantly, in Experiment 2, the magnitude of the predictions when mastery was stated did not differ for the remember frame and forget frame. Further, compared with when mastery was not stated, remember-framed predictions were higher but forget-framed predictions did not differ. Together, these outcomes support—albeit indirectly—the hypothesis that the forget frame requires the assumption of some initial level of mastery, which causes forget-framed predictions to be higher (after reverse scoring) than remember-framed predictions.

The results of Experiment 2 cast further doubt on the hypothesis that the forget frame activates the notion of forgetting (cf. Koriat et al., 2004). When mastery was not stated, neither the remember frame nor the forget frame produced predictions that differed greatly by retention interval, even when we explicitly reminded participants that forgetting would likely increase over longer retention intervals.

**General Discussion**

The primary purpose of the present experiments was to test our hypothesis that the forget frame might lead participants to assume an initially high level of memory acquisition, from which they could then estimate forgetting (loss) of information. We hypothesized that this assumption of mastery might be the reason why forget-framed memory predictions are more sensitive to expected retention interval than are remember-framed memory predictions and why they are typically of a higher magnitude (after reverse scoring) than are remember-framed predictions. The results, however, only partially supported our expectations. First, stating that the hypothetical participants learned all the to-be-remembered items prior to the onset of the retention interval (mastery manipulation) did not produce sensitivity to the retention interval, regardless of whether we framed the memory prediction in terms of remembering or forgetting. This was the most original prediction for the present experiments, but ultimately this outcome did not occur.

Second, the mastery statement caused participants to make higher remember-framed memory predictions than when it was not present but did not affect the magnitude of forget-framed memory predictions. This outcome supports our general hypothesis that the mastery statement would raise prediction magnitudes and is consistent with past findings that simple information-based manipulations can alter the magnitude of metacognitive judgments (e.g., England et al., 2017; Serra & England, 2012). Although we cannot be certain from this pattern of results that forget-framed predictions naturally involve the assumption of a higher initial level of acquisition than do remember-framed predictions, this pattern is nevertheless consistent with that interpretation. Future research would need to manipulate or measure participants’ judgment strategies in a more direct way in order to make stronger conclusions to this end.

The secondary purpose was to replicate the major findings of Koriat et al. (2004), as to our knowledge there is no published replication of those effects. Unexpectedly, we did not replicate their finding that forget-framed memory predictions would show greater sensitivity to expected retention interval than would remember-framed memory predictions. We also found that participants were generally sensitive to the 1-year retention interval (contrary to the results of Koriat et al., 2004), consistently providing significantly lower memory predictions for that time frame, regardless of the other framing conditions involved. We discuss the failure to replicate these aspects of the original studies in more detail in the next section.

**A Note on Reliability**

Some of the groups in the present experiments represented a fairly straightforward—and somewhat improved—replication of some of Koriat et al.’s (2004) studies. It was clear from the results of both experiments, however, that we were not able to replicate one of that paper’s most striking effects: Our participants’ forget-framed memory predictions did not show greater sensitivity to retention intervals than did their remember-framed predictions. Relatedly, one of the more sensational claims from Koriat et al. (2004) is that participants do not factor a 1-year retention interval into their memory predictions when that is the only interval they are asked about (i.e., their Experiment 4C). The results of the present experiments, however, are discordant with that conclusion: our college and MTurk participants consistently predicted that memory would be lowest for a 1-year retention interval, even when that was the only interval they were asked about, and regardless of the frame of the prediction (as remember or forget). It seems that the notion of a 1-year retention interval might simply be too
powerful not to activate some form of the idea that memory declines over time.

So, which set of results and conclusions should stand? We argue that our results are more reliable than those of Koriat et al. (2004) for two major reasons. First, our sample sizes were much larger than Koriat et al.’s sample sizes. In the present experiments, our average per-group sample size exceeded the average per-experiment sample size of Koriat et al.’s experiments. Although the greater statistical power associated with our much larger sample size can lead to Type I errors, consider that, overall, we found few significant differences in mean predictions across conditions (including our failure to replicate Koriat et al.’s main finding that the forget frame would produce different predictions for different retention intervals). Our large sample size would only be a concern if we found more significant differences than did Koriat et al. Second, within each experiment, we sampled all of our participants at the same time and randomly assigned them to their conditions (using two different populations of participants), whereas Koriat et al. obtained their participants from different classes and randomly assigned them to some conditions (i.e., most-study–test intervals) but not to others (i.e., remember-frame and forget-frame conditions varied across experiments rather than within experiments). These differences in sample sizes and randomization between our experiments and those of Koriat et al. (2004) raise the possibility that Koriat et al.’s findings are not reliable.

Of course, another possibility is that there was some important factor(s) that differed between the participants or method in Koriat et al.’s experiments and our own experiments that interacted with the forget frame across the two sets of experiments. For example, there was only one word between the word forget and the retention interval information in Koriat et al.’s (2004) Experiment 7, whereas there were 20 words in between these two pieces of information in the present experiments. Further, in Koriat et al.’s Experiment 7, the word forget preceded the retention interval, whereas in our experiments the retention interval information preceded the occurrence of the word remember or forget.

We acknowledge that it is possible that these methodological variations altered the saliency of the forget frame or the retention interval information compared with Koriat et al.’s experiments (and we would need additional data to test the possibilities), but we also point out that there are some aspects of Koriat et al.’s data and the present data that make this possibility unlikely. First, in Koriat et al. (2004), the remember/forget frame was only separated from the retention interval information by one word; if that proximity made the retention interval more salient under the forget frame (compared with our methodology), why didn’t it also make the retention interval comparatively more salient in their remember condition compared with ours? Second, consider that (1) our participants consistently treated the 1-year retention interval differently than the other intervals regardless of the other frames involved and regardless of the fact that 20 words occurred between the remember/forget frame and the retention interval, (2) our participants consistently made more optimistic memory predictions under the forget frame than under the remember frame, and (3) our participants made more optimistic memory predictions when we stated mastery than when we did not. If our manipulations were not salient to participants—and that is why we did not completely replicate Koriat et al.’s pattern of results—then it is difficult to explain why our manipulations had any effects on memory predictions at all. Finally, in Experiment 2, we provided explicit information about forgetting over time, and that did not make remember-framed or forget-framed predictions sensitive to retention interval.

Taken together, until an independent replication can reproduce Koriat et al.’s (2004) finding that the forget frame leads to greater sensitivity to retention interval than does the remember frame, we are left questioning whether those original findings and conclusions are valid and replicable.

Implications for Theories of Metacognition

The present results have implications for some current accounts of how people make metacognitive judgments. We review some of these below, although of course the present results might also have implications for other accounts and issues we did not cover here.

The isomechanism framework. Although multiple theories about metacognitive monitoring have proposed that factors such as the timing of metacognitive monitoring can alter which cues people utilize to make their judgments (e.g., the cue-utilization theory; see Koriat, 1997), to our knowledge, so far only one theory has attempted to specifically explain why framing affects such judgments. Dunlosky and Tauber (2013) proposed a generalized theory of metacognitive monitoring—dubbed the isomechanism framework—that was an attempt to provide one theory to explain how people make all kinds of metacognitive judgments.

Regarding framing effects, this framework suggests that different judgment prompts alter people’s analytical use of cues by activating different beliefs about those cues, even though the same cues and beliefs are available to participants regardless of the judgment frame. For example, participants factor their previous-trial performance into their memory judgments more strongly when they are framed in terms of remembering than when they are framed in terms of forgetting, even though that information is available and highly predictive of future memory performance in both situations (Serra & England, 2012). Presumably, something about the remember frame suggests that past performance is predictive of future remembering but does not suggest that past performance is predictive of future forgetting (perhaps because participants have restudied the materials in between the testing phases), so participants make greater use of this cue under the remember frame than under the forget frame. Kornell and Bjork (2009) found that participants demonstrated the stability bias in memory regardless of whether their memory predictions were framed in terms of remembering or forgetting, but Ariel et al. (2014) found that changing the frame of the judgment from being about learning to being about testing led participants to make higher predictions for later study–test trials (no stability bias). Again, we might assume that the different frames activated or did not activate participants’ belief that learning (or test performance) would improve over repeated study–test trials.

The notion of forgetting explanation offered by Koriat et al. (2004) is compatible with the later isomechanism framework: whereas the forget frame seemingly activated people’s beliefs about forgetting over time in their studies, the remember frame apparently did not. Unfortunately, the isomechanism framework is agnostic as to a mechanism(s) by which framing manipulations
alter cue usage and belief activation, so future theorizing and research is certainly needed to elaborate on this idea.

The notion of forgetting. The present results cast further doubt on the hypothesis that the forget frame activates the notion of forgetting (cf. Koriat et al., 2004). When mastery was not stated, neither the remember frame nor the forget frame produced predictions that differed greatly by retention interval, even in Experiment 2 when we explicitly reminded participants that forgetting would likely increase over longer retention intervals. Although our results and methodology do not allow us to make claims about what information was activated for participants under any of the present frames, the results do allow us to claim that participants were not using that information, even if it was activated (cf. Ariel et al., 2014).

At this point, if other researchers want to claim that the forget frame activates the notion of forgetting (and the remember frame does not), they will need to also account for the fact that neither forget-framed memory predictions nor remember-framed memory predictions in the present experiments showed strong sensitivity to retention interval, even when we provided an explicit reminder that memory might decline over longer retention intervals. Such claims would require a mechanism that activates and utilizes the notion of forgetting under Koriat et al.’s (2004) methodology but not under our present methodology. Such a mechanism might be consistent with the general approach that the isomechanism framework uses to account for framing effects. Different frames for memory judgments might not only activate different beliefs about how memory operates or what cues affect memory, but they might also activate different application rules that indicate whether that belief should be applied, or how. For example, Briñol et al. (2006) were able to alter participants’ use of experienced retrieval fluency as a cue for memory judgments by providing different cover stories which suggested that either ease of retrieval or difficulty of retrieval was associated with higher intelligence. Mueller and Dunlosky (2017) altered participants’ use of font color as a cue for memory judgments by providing different cover stories which suggested that one color was more perceptually fluent than the other, or that one color was more calming than the other and that calmness was associated with better memory. Of course, the aforementioned possibilities require empirical scrutiny.

Learned validity of cues. As we have previously noted before (i.e., England et al., 2017; Serra & England, 2012), there are some accounts of cue utilization for metacognitive judgments which assume that participants select and utilize cues based on their learned validity of those cues in the environment (e.g., Koriat, 2008; Koriat & Ma’ayan, 2005; see also Gigerenzer & Goldstein, 1996). Although evidence exists that supports those ideas, to our knowledge none of those theories have been revised to account for more recent examinations of framing effects on metacognitive judgments. If participants select and utilize cues based on the learned validity of those cues in the environment, then framing should not alter their utilization of cues that are equally valid and available, regardless of how the metacognitive judgment is framed. Empirical data to this end has been mixed, as framing manipulations alter participants’ use of some memory cues but not others. For example, participants show worse relative (discriminative) accuracy for forget-framed memory judgments than for remember-framed judgments, especially across repeated study–test trials (Serra & England, 2012). Part of this latter difference stems from the fact that participants make less use of predictive cues such as prior-trial performance under the forget frame than under the remember frame, despite their high predictability. And, as we have noted repeatedly, Koriat et al. (2004) found that participants factored the expected retention interval into their forget-framed memory predictions but not their remember-famed predictions. In contrast, however, some studies have demonstrated equivalent use of cues across frames, including font-size manipulations (Rhodes & Castel, 2008), mental-image generation (Serra & England, 2012), and when making memory judgments at a delay (Finn, 2008; Serra & England, 2012). We argue that current theories of metacognitive monitoring which assume that participants utilize cues based on the validity of those cues in the environment need to be modified to explain how framing can alter the utilization of some very valid cues.

Forgetting as a negative valence. In terms of how the forget frame might differ from the remember frame (or how other combinations of frame might differ from each other), it is possible that the remember frame reflects a positive valence, whereas the forget frame reflects a negative valence. Put differently, the frames might affect judgments differently because they ask about qualitatively different things (remembering vs. forgetting), but they could also affect judgments because one has a positive connotation and the other has a negative connotation. This notion is in line with research on framing effects in judgment and decision making (e.g., prospect theory; see Kahneman & Tversky, 1984) and can be used to suggest that the remember frame might be a form of “gain frame,” whereas the forget frame might be a form of “loss frame.” This latter possibility lends itself to a variety of testable predictions derived from prospect theory that could be examined in future research. If the remember and forget frames are essentially gain and loss frames (respectively), then the remember frame should trigger “safe” behavior and the forget frame should trigger “risky” behavior. If participants were in a situation where they could bet on their memory performance to earn points or some other reward (e.g., McGillivray & Castel, 2011), the remember frame should lead to a conservative or risk-averse betting style (i.e., placing smaller bets when less certain and larger bets when more certain), and the forget frame should lead to a liberal or risky betting style (i.e., placing large bets even when less certain), even if the frame did not affect the baseline level of memory performance. Whether the remember and forget frames act like gain and loss frames, however, has not yet been explicitly tested.

Also, to our knowledge, there is not (yet?) strong or consistent evidence that the forget frame engenders a negative state or pessimism. In one key set of experiments, Finn (2008) found that the forget frame led participants to be less optimistic about their memory performance than did the remember frame. Concordantly, they chose more items for restudy under the forget frame than under the remember frame. These findings might provide some evidence that the forget frame induces pessimism (although this data might more strongly suggest that the forget frame induces conservative or safe behavior, not risky behavior per se). However, in our three sets of forget frame experiments (England et al., 2017; Serra & England, 2012; and the present data) and in other researchers’ data on the forget frame (for reviews, see England et al., 2017; Serra & England, 2012), this idea has not been supported. We have consistently found that the forget frame seems to lead to greater optimism in memory than does the remember frame (or, at least,
higher memory predictions after reverse scoring). Similarly, in both present experiments, memory predictions were more optimistic when mastery was stated than when it was not. If either the forget or mastery frames involve a negative valence, it is hard to explain why these two frames led to more optimistic memory predictions. Kornell and Bjork (2009; see their Experiment 7) came to a similar impasse when their own forgetting frame manipulation both failed to make participants sensitive to repeated study trials and produced more optimistic learning predictions compared with a remember frame, noting, “It is unclear why making predictions in terms of forgetting rather than learning increased [prediction magnitude]; based on previous research, one might expect a question framed in terms of forgetting to make people more conservative, not more confident” (p. 459).

In our more recent paper on such framing effects (England et al., 2017), we tested the idea that the forget frame leads to more optimistic judgments—and therefore might be positively va-
lanced—but this conclusion was not supported by the data. Rather, we found strong evidence that the forget frame causes people to scale their confidence in their memory to the response scale differently than does the remember frame, which leads to different means, but not different levels of confidence in memory.

Implications for Future Research

Although our major hypothesis was not supported, the present results are still informative for some issues related to the further investigation of questions about metacognition. First, the present experiments provide an additional example of using theory-based judgments to inform our understanding of how people make belief-based metacognitive judgments. This methodology has not been widely used but can easily provide a direct estimate of people’s beliefs. That said, the methodology is not without its limits: the beliefs assessed with theory-based judgments might not always correlate perfectly to judgments made for actual memory items. For example, Rawson et al. (2002) demonstrated that participants would factor the expected retention interval (i.e., 15 min vs. two weeks) into performance predictions made for materials they studied. Clearly, other factors might alter whether participants will factor such beliefs into both theory-based and experience-based judgments. More research is needed to understand how people utilize their beliefs to inform metacognitive judgments.

Second, although the present results further suggest that the forgetting-notion hypothesis should be abandoned as a theory of how framing affects people’s memory predictions (cf. Serra & England, 2012), we continue to endorse the examination of framing effects on metacognitive judgments (remember vs. forget judgments; other frames) as a way to test theories about how people make such judgments (see also England et al., 2017; Serra & England, 2012). Such effects provide a unique situation where it is possible to alter people’s metacognitive processes without also affecting their cognitive performance. And, as we noted in the preceding text, the one theory that has so far attempted to explain such effects—the isomachanism framework—is currently underspecified in how this difference occurs. Testing mechanistic explanations for this difference could prove to be a fruitful avenue of research.

Summary

The present results cast doubt on both the idea that forget-framed memory predictions show greater sensitivity to expected retention interval than do remember-framed memory predictions and the idea that the forget frame activates the “notion of forgetting” (but see Koriat et al., 2004). These results therefore indicate that the primary findings of Koriat et al. (2004) which led to those initial conclusions need to be successfully replicated to demonstrate their validity. More relevant to the present purposes, our mastery manipulation (stating that the hypothetical participants learned all the to-be-recalled items prior to the onset of the retention interval) did not produce sensitivity to the retention interval, but it did cause our participants to make higher remember-framed memory predictions. As the mastery information did not affect the magnitude of forget-framed predictions, these results indirectly support our hypothesis that forget-framed predictions involve the assumption of a higher initial level of acquisition than do remember-framed predictions (cf. England et al., 2017; Serra & England, 2012).

References

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