

Running head: FORGETTING AND INTERPERSONAL IMPORTANCE

On Being Forgotten: Memory and Forgetting Serve as Signals of Interpersonal Importance

Devin G. Ray  
University of Aberdeen

Sara Gomillion  
University of Texas, Austin

Andrei I. Pinte  
University of Aberdeen

Iain Hamlin  
Strathclyde University

Corresponding Author: Devin Ray ([d.ray@abdn.ac.uk](mailto:d.ray@abdn.ac.uk))

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### **Abstract**

Our memories contain a wealth of social information – including details of past interactions, facts about others, and others’ identities. Yet, human memory is imperfect, and we often find ourselves unable to recall such information in social interactions. Conversely, people routinely find themselves on the receiving end of others’ memory failures; that is, people sometimes find themselves forgotten. Despite the apparent pervasiveness of such experiences, modern science possesses no explanatory framework for understanding the psychological impact of being forgotten in part or in whole. Here, we propose that evidence of memory in social interactions is a powerful signal of the subjective importance attached to an object of memory and that interpretation of such signals has important consequences for interpersonal relationships. We further proposed that attributional explanations for forgetting and that the closeness of the relationship between the people involved in forgetting might moderate the impact of being forgotten. We tested this framework in four studies examining the experience of being forgotten in daily life (Study 1), in experimentally controlled firsthand encounters (Study 2), and in third party perceptions of forgetting (Studies 3 and 4). Results converged to support our proposed framework as well as the moderating role of attribution. Surprisingly, we found no evidence supporting the moderating role of initial relationships closeness. These results advance a systematic model of an understudied but important phenomenon and suggest rich and varied avenues of additional exploration.

Keywords: Memory; forgetting; person memory; communication; social relationships

## **On Being Forgotten: Memory and Forgetting Serve as Signals of Interpersonal Importance**

Who and what we remember or forget has been a major theme in psychological research since its beginnings. Strikingly, however, modern science can say very little about the experience of being remembered or forgotten – about the impact of having one’s identity, presence, characteristics, words, or actions accurately recounted as opposed to misremembered or forgotten entirely by another person. The current paper attempts to illuminate the experience of being forgotten or remembered.

First, we provide a basic description of the experience of being forgotten in daily life (i.e., its frequency, content, involved people, and subjective character). Next, we present a relational model of being forgotten or remembered that treats evidence of memory as a powerful relational signal during social interaction. In this model, we propose that indications of memory convey subjective importance in social interactions, which in turn can support or undermine social connections. We also explore two potential moderators of this process: attributional explanations for being forgotten and the type of relationship involved. Finally, we empirically evaluate an alternative non-competing model of the intrapersonal consequences of being forgotten which proposes that being forgotten can be understood through parallels with ostracism.

### **A Relational Model**

Forgetting information about others is a frequent experience (Young, Hay, & Ellis, 1985). People routinely forget others’ names (Cohen & Burke, 1993), faces (Bruce & Young, 1986), and actions (Loftus, 1996). But what about the experience of being forgotten?

Certainly, anecdotal evidence and popular culture provide examples that suggest being forgotten has interpersonal consequences. Drama following a forgotten birthday, for

example, featured in well-known films and books such as *Sixteen Candles* and *Harry Potter and the Chamber of Secrets*.

The available scientific evidence also suggests that forgetting has social ramifications. For example, listeners are more likely to forget information themselves after a speaker has forgotten that information (Stone, Coman, Brown, Koppel, & Hirst, 2012). Such findings imply interpersonal significance through social influences on memory.

More directly, several pieces of evidence suggest that memory is part of the core fabric of social interaction. By providing common ground and subject matter for interaction, social bonding may be a primary function of autobiographical memory (Alea & Bluck, 2007; Bluck, 2003). Having one's name forgotten by other people threatens existential needs for meaning (King & Geise, 2011). Clinical impairments in memory from conditions like Alzheimer's disease and developmental prosopagnosia impose significant social burdens (Pruchno & Resch, 1989; Yardley, McDermott, Pisarski, Duchaine, & Nakayama, 2008). These findings make clear that memory failure is socially relevant and has significant social consequences. They do not, however, provide a systematic description or framework with which to understand the experience of being forgotten.

In the work reported here, we pursue a threefold approach to providing a systematic understanding of the experience of being forgotten. First, we describe the experience in a naturalistic context. We provide a basic understanding of what the phenomenon looks like in everyday life by asking how often people are forgotten, who forgets, what gets forgotten, and how it feels to be forgotten. Second, we propose and test a relational model of the experience of being forgotten or remembered. Third, we explore potential parallels between being forgotten and ostracism.

Our relational model suggests that being remembered or forgotten presents a special theory of mind problem with particularly important relational implications (Flavell, 1999;

Nichols & Stich, 2003). Evidence of memory informs people about how they are regarded by the person who remembers or forgets them and this information, in turn, affects interpersonal relationships. Figure 1 presents our theoretical model of the psychological impact of being remembered or forgotten.

In our model, we conceptualize remembering and forgetting broadly, encompassing memory for any type of social information. This includes a past interaction or event, factual information about a person, or even having met a person at all.

Our model predicts that people interpret evidence of memory as signals of importance in social communication (**path A, Figure 1**). This prediction follows naturally from theory of mind and people's drive to seek causal explanations for others' behaviors (Baron-Cohen, 1997; Kelley, 1973). Specifically, people are aware that they devote greater resources to remembering more important information (Castel et al., 2011) and assume that information they remember is more important than information they forget (Castel, Rhodes, McCabe, Soderstrom, & Loaiza, 2012). We suggest that people apply a similar logic to their interpretations of others' communications of memory.

In turn, we predict that learning one's identity, presence, characteristics, words, or actions are important or unimportant to another person will respectively support or undermine closeness in interpersonal relationships (**path B, Figure 1**). This prediction follows from the integral importance of feeling valued to successful interpersonal relationships (Baumeister & Leary, 1995). Indeed, close relationships in which people feel devalued often experience strife or end altogether (Murray & Holmes, 2011).

Further, although we expect our core model to be broadly applicable across different circumstances and different relationships, we investigate two factors that might alter the impact of being forgotten or remembered. First, attributional explanations for remembering or forgetting have the potential to alter the link between memory and subjective importance

(**path C, Figure 1**). Our earlier hypotheses imply that people attribute being forgotten to relational factors, specifically, to how important or unimportant the object of memory was to the forgetter. However, relational attributions are not the only possible explanation for being forgotten. Forgetting could also be explained by external circumstances (e.g., distraction) or by stable dispositions on the part of the person forgetting (e.g., absentmindedness; Jones & Davis, 1965; Kelly, 1973). If forgetting is attributed to external circumstances or to stable dispositional factors instead of relational factors, then the object of forgetting might appear more important to the forgetter than if such explanations were missing.

The second potential moderator we investigate is initial relationship closeness. People want to feel valued by strangers and friends alike (Hartgerink et al., 2015). At the same time, however, it seems plausible that signals of value from a friend or another close partner might be more impactful than signals of value from a stranger (**path D, Figure 1**). Indeed, people's expectations of emotional intimacy and relational positivity are higher in closer relationships than in less close relationships (Fuhrman, Flannagan, & Matamoros, 2009).

### **The Ostracism Hypothesis**

In addition to its relational effects, the experience of being forgotten might plausibly also impact intrapersonal outcomes in the same way as ostracism and social exclusion. Ostracism and exclusion threaten not only relational needs but also intrapersonal needs like self-esteem, perceived control, and meaning in life (Williams, 2007). Moreover, people are extremely sensitive to cues of exclusion and ostracism (Williams, 2007). Even exclusion by a pre-programmed entity (i.e., a computer) or by hated outgroup members is aversive (Gonsalkorale & Williams, 2007; Zadro, Williams, & Richardson, 2004).

In fact, the only existing work directly examining the experience of being forgotten (that we are aware of) focuses on lack of importance as a threat to existential meaning (King & Geise, 2011). In this work, participants whose name was forgotten reported decreased

feelings of meaning in life. Interestingly, however, having one's name forgotten did not measurably influence state self-esteem. Given the apparent parallels between being forgotten and ostracism, the human sensitivity to exclusion, and King and Geise's (2011) findings after an apparently trivial instance of being forgotten, we predicted that, in addition to its relational effects, being forgotten would also impact the same non-relational outcomes as ostracism, namely self-esteem, perceived control, and felt meaning in life.

### **Overview**

We investigated the experience of being forgotten in four studies. Study 1 used a daily diary methodology to gather (a) descriptive information about the frequency and subjective experience of being forgotten in daily life and (b) quantitative information bearing on all hypotheses. Study 2 examined our core model (paths A and B, Figure 1) experimentally by constructing firsthand experiences of being remembered or forgotten in newly-formed relationships. Studies 3 and 4 examined third-party reactions to depictions of forgetting and memory in order to experimentally examine the proposed moderators of our core model (paths C and D, Figure 1). As a whole, the current studies provide a clear picture of the experience of being forgotten in daily life. Forgetting another person, even in small ways, is a powerful and surprisingly consistent signal of relational value that impacts relational functioning and need satisfaction in interpersonal relationships.

Because of the number, variety, and complexity of the studies reported here, our descriptions of materials and results are somewhat abridged. The omitted elements are available in online supplementary materials (INSERT FINAL URL).

### **Study 1**

Study 1 used a daily diary design to gain insight into people's experiences of being forgotten in their daily social interactions. This study had five goals. First, the study was designed to collect descriptive data about the frequency and subjective nature of people's

experiences of being forgotten. Second, we tested our core relational model, which specifies that being forgotten leads to decreased perceived importance (path A, Figure 1) and relationship closeness (path B, Figure 1). Third, we examined whether the impact of being forgotten on perceived importance differed depending on people's attributions for memory failure (path C, Figure 1). Fourth, we examined whether the impact of being forgotten on interpersonal closeness differed across different relationships (path D, Figure 1). Fifth and finally, we tested whether being forgotten predicted (dis)satisfaction of intrapersonal needs more broadly.

Each day over a two-week period, participants described every experience in which they were forgotten by others. Participants completed open-ended and closed-ended measures of their feelings during these experiences, including their general feelings and their feelings towards the person who forgot them. Participants also rated their satisfaction of interpersonal and intrapersonal needs each day.

## **Method**

### **Participants**

Fifty-six students (14 men, 42 women) from a university in the United Kingdom participated in the study during the first three weeks of the first semester of the academic year. Participants were 21 years old on average ( $SD = 3.72$ ). Most participants (95%) were not originally from the city in which the university was located. Participants were recruited by advertising at a volunteer opportunities fair for incoming students, posting flyers, and advertising the study on social media. Participants who completed all parts of the study received £50 GBP (approximately \$70 USD).

### **Procedure**

Following initial instruction, participants were emailed a weblink to an online daily diary each night for 14 days. This diary asked participants to provide open-ended descriptions

of every incident in which they were forgotten by another person that day. Participants were then provided space to describe each incident, their feelings about each incident, and how the incident ended. Participants next answered several closed-ended questions about the incident. We assessed (a) the category that best represented participants' relationship with the person who forgot them (e.g., friend, family member, etc.), (b) how important participants felt to the person who forgot them, (c) how close participants felt to the person who forgot them, and (d) how close participants perceived the person who forgot them to feel. The final three item types were assessed on seven point scales anchored at 1 - *much less than before* - and 7 - *much more than before*. The scale midpoint of 4 was labeled *no change*. Participants completed these measures for each incident they described.

Regardless of whether participants reported an incident of being forgotten that day or not, participants were asked to rate their general feelings of belonging, importance, self-esteem, personal control, meaningful existence, and positive and negative mood that day. These items were assessed on 7-point scales anchored at 1 - *not at all* and 7 - *especially*. Participants also completed a control measure of the overall quality of their social interactions that day. All of these items were presented in random order each day to limit routine responding.

## **Results**

### **Analytic Strategy**

We first present descriptive information about the frequency, character, and subjective nature of participants' experiences of being forgotten during the diary period. The coding schemes involved were generated using a combined deductive and inductive approach. We created categories based on both the hypotheses and on common themes in participants' responses. Four independent coders, who were blind to the study's hypotheses, each coded half of participants' open-ended responses, such that two coders rated each response.

Agreement between coders was adequate across the questions (Cohen's  $\kappa = .72$ ).

Discrepancies between coders were resolved through discussion.

We next present tests of the hypotheses derived from our relational model of being forgotten in sequence. We first assessed whether being forgotten was associated with inferences of importance and changes in relational closeness, as well as with overall daily feelings of importance and belonging (paths A and B, Figure 1). Next, we assessed whether these relationships depended on explanations for forgetting and the relationship between the person forgotten and the forgetter (Paths C and D, Figure 1). Finally, we examined parallels between being forgotten and ostracism by testing the influence of being forgotten on participants' non-relational intrapersonal needs each day.

In both descriptive analysis and hypothesis tests, we often compared participants' responses on days when they were forgotten and on days when they were not forgotten. In these analyses, we regressed participants' daily reports onto a variable reflecting the number of times participants were forgotten each day in multilevel analyses. To model the non-independence of participants' data across days, we specified diary day as a repeated measure and allowed the intercept to randomly vary across participants. These analyses controlled for participants' level of the dependent measure the previous day in order to control for variation across days. We also reasoned that participants may report being forgotten more when they socialized more with others on a given day. We thus isolated the effects of being forgotten from the overall quality of participants' social lives that day by controlling for this latter variable in our models.

### **Broad Description**

The descriptive data suggested that being forgotten by others was a fairly common experience. In total, participants reported 461 incidents of being forgotten by others across the two-week diary period. On average, participants reported 8.23 incidents ( $SD = 3.88$ ,

range: 1-19) of being forgotten during the diary period. Most of the incidents ended with the participant reminding the other person of the forgotten information ( $n = 245$ ) or ended without the person ever remembering the forgotten information ( $n = 180$ ). Only occasionally, the other person remembered the information on their own ( $n = 28$ ). Most of the time (90%), the other person did not apologize for forgetting participants.

**What gets forgotten?** Based on the participants' descriptions of the incidents, we identified six different experiences of being forgotten. Figure 2 presents the percentage of incidents in each category. The most frequent type of incident ( $n = 223$ ) involved the other person forgetting participants' personal details, including their name, subject in university, and year in school (e.g., "The manager of the hotel where I am working forgot my name"). Participants also frequently reported ( $n = 122$ ) that others forgot aspects of a past interaction or conversation with participants (e.g., "A close friend started talking about a party she had gone to a few months ago, and she forgot that I was there as well."). Occasionally, others did not recognize, acknowledge, or remember meeting the participant ( $n = 44$ , e.g., "My student did not recognize me right away, so he passed by me") or forgot a promise they had made to the participant ( $n = 40$ , e.g., "My friend was supposed to meet me at the library today so we could work through course work and then a test together, but they forgot and didn't show up."). Some participants also reported that others had forgotten to include them in an activity or event ( $n = 17$ ; e.g., "My friends organised a night out, and forgot to ask me."). Finally, some participants reported that others confused them for someone else ( $n = 15$ , e.g., "My flatmate called me by our other flatmate's name."). The most common experiences of being forgotten thus involved the forgetting of personal details or past interactions.

**Who forgets?** Figure 3 presents the frequency of being forgotten by different types of relationship partners. Participants were most likely to be forgotten by people they had just met ( $n = 100$ ), followed by classmates or coworkers ( $n = 86$ ), friends ( $n = 85$ ), acquaintances

( $n = 75$ ) and roommates ( $n = 66$ ). Less frequently, participants were forgotten by family members ( $n = 31$ ) and romantic partners ( $n = 15$ ). Forgetting thus occurred across a broad variety of relationships, with forgetting by family members and romantic partners occurring notably less often.

The relationship involved in particular incidents of forgetting also appeared to influence the type of information forgotten (Figure 4). Forgetting of personal details and failures of recognition happened more often in less close relationships whereas forgetting of past interactions and promises happened more often in closer relationships.

### **How does it feel to be forgotten?**

*Open-ended feelings.* We coded participants' open-ended reports on their feelings during the event into four categories – positive reactions, negative reactions, neutral reactions, and surprised reactions. Negative ( $M = 5.05$ ,  $SE = .60$ ) and neutral reactions ( $M = 3.96$ ,  $SE = .34$ ) were more common than surprised ( $M = 1.62$ ,  $SE = .23$ ) or positive reactions ( $M = 0.96$ ,  $SE = .18$ ), all  $ps < .001$ , Cohen's  $d > 1.01$ , but did not differ in frequency from one another,  $t(55) = 1.65$ ,  $p = .625$ , Cohen's  $d = 0.30$ , all comparisons Bonferroni adjusted. Overall, these data characterize the experience of being forgotten as neutral at best but as or more often negative.

*Daily mood.* Being forgotten on a given day significantly predicted daily mood (Figure 5). Participants felt more negative mood,  $b = .20$ ,  $SE = .09$ ,  $t(430.23) = 2.23$ ,  $p = .026$ , and less positive mood,  $b = -.14$ ,  $SE = .07$ ,  $t(403.29) = -2.04$ ,  $p = .042$ , on days they had been forgotten more. Thus, being forgotten was associated with experiencing a more negative subjective state in general.

### **Hypothesis Testing**

**Inferred importance (path A, Figure 1).** We expected that being forgotten by another person would lead to feeling less important to that person. In the present data set, two

outcome variables were relevant to this hypothesis – participants' within-incident ratings of their subjective feelings of importance to the person who forgot them, and participants' daily ratings of felt importance to others in general. We expected that (a) participants would report decreased subjective importance after specific incidents of being forgotten and (b) that participants would feel less important to other people in general on days where they were forgotten than on days when they were not forgotten.

We first tested whether participants' ratings of how important they felt to the person who forgot them differed significantly from the midpoint of the scale (i.e., 4 = *same as before*) using one-sample t-tests. Consistent with our prediction, participants reported a small but reliable decrease in their feelings of importance to the person who forgot them,  $M = 3.73$ ,  $SE = .04$ ,  $t(422) = -6.93$ ,  $p < .001$ , Cohen's  $d = 0.34$ .

We next tested whether being forgotten on a given day also significantly predicted felt importance to other people (Figure 5). As expected, participants who reported being forgotten more on a given day felt less important to other people that day,  $b = -.30$ ,  $SE = .07$ ,  $t(437.95) = -4.48$ ,  $p < .001$ . Our predictions about inferred importance were thus well supported in these data.

**Relationship closeness (path B, Figure 1).** We proposed that the negative relational implications of feeling unimportant after being forgotten would reduce closeness to the forgetter. In the present data, the relevant outcome variables are participants' within-incident ratings of their closeness to the person who forgot them, participants' within-incident ratings of how close they believed the other person felt to them, and participants' daily ratings of felt belonging. We expected (a) that participants would report reduced closeness after specific incidents of being forgotten, (b) that participants would believe that the person who forgot them felt less close to the participant, and (c) that participants would feel less general belonging on days when they were forgotten than on days when they were not forgotten.

Participants' rating of their own closeness conformed to our prediction. Participants reported a small but reliable decrease in their feelings of closeness to the person who forgot them,  $M = 3.76$ ,  $SE = .04$ ,  $t(422) = -6.18$ ,  $p < .001$ , Cohen's  $d = 0.30$ . Participants' day-to-day feelings of belonging also supported our prediction. Participants who reported being forgotten on a given day felt less belonging in general that day,  $b = -.24$ ,  $SE = .06$ ,  $t(432.67) = -4.22$ ,  $p < .001$  (Figure 5). Surprisingly, however, participants' feelings about the other person's closeness to them did not significantly differ from the midpoint,  $M = 3.96$ ,  $SE = .03$ ,  $t(422) = -1.39$ ,  $p = .166$ , Cohen's  $d = 0.06$ .

Our predictions about relationship closeness were thus supported by participants' reports of their own closeness and by participants' feelings of daily belongingness but not by participants' beliefs about how close to participants the person who forgot them felt.

**Moderation by attribution (path C, Figure 1).** We expected that situational or dispositional (as opposed to relational) explanations for forgetting would eliminate the link between being forgotten and felt importance and thus also between being forgotten and felt closeness.

From participants' open-ended descriptions of each incident, we coded participants' attributions for being forgotten into three categories: relational attributions, situational attributions, and dispositional attributions (Figure 6). The results were surprising in light of the previously reported impact of being forgotten on felt importance and relationship closeness. The large majority of attributions (77.42%) provided a non-relational excuse for forgetting. Of those, situational attributions ( $n = 286$ ; e.g., "She already met too many people in the last couple of days") were much more common than dispositional attributions ( $n = 73$ ; e.g., "He generally seems not to listen to what people say and does not remember it later"). When participants made relational attributions ( $n = 91$ ), they either inferred that they or the information were not important to the forgetter ( $n = 55$ ; e.g., "I don't think she found

information about where I am from interesting or worth remembering”) or that the other person was not invested in or committed to the relationship with the participant ( $n = 36$ , e.g., “Maybe because I do not mean so much to this person”). The remaining participants did not know or did not say why they were forgotten ( $n = 11$ ); these participants were not included in further analyses of attribution. Overall, participants thus usually explained being forgotten through non-relational attributions.

We next tested whether participants’ attributions predicted their feelings about their relationships with the person who forgot them. To do this, we created a set of dummy codes contrasting relational attributions to situational attributions and dispositional attributions, and then separately regressed felt importance, felt closeness, and perceived other closeness onto these codes in a multilevel model<sup>1</sup>. These analyses revealed that, as expected, participants felt significantly less important to the forgetter when they made relational attributions for being forgotten ( $M = 3.33$ ,  $SE = .06$ ) than when they made situational attributions ( $M = 3.89$ ,  $SE = .04$ ),  $b = .55$ ,  $SE = .09$ ,  $t(302.85) = 6.47$ ,  $p < .001$ , 95%  $CI$ [.383, .717], or dispositional attributions ( $M = 3.74$ ,  $SE = .04$ ),  $b = .39$ ,  $SE = .11$ ,  $t(289.36) = 3.59$ ,  $p < .001$ , 95%  $CI$ [.176, .604]. Similarly, participants also felt significantly less close to the forgetter when they made relational attributions ( $M = 3.38$ ,  $SE = .06$ ) than when they made either situational attributions ( $M = 3.93$ ,  $SE = .04$ ),  $b = .48$ ,  $SE = .09$ ,  $t(267.12) = 5.45$ ,  $p < .001$ , 95%  $CI$ [.304, .648], or dispositional attributions ( $M = 3.70$ ,  $SE = .04$ ),  $b = .30$ ,  $SE = .11$ ,  $t(266.72) = 2.67$ ,  $p = .008$ , 95%  $CI$ [.079, .523]. Finally, participants also believed that the forgetter felt less close to them when participants made relational attributions ( $M = 3.75$ ,  $SE = .05$ ) than when they made situational attributions ( $M = 4.04$ ,  $SE = .03$ ),  $b = .31$ ,  $SE = .07$ ,  $t(236.38) = 4.41$ ,  $p < .001$ , 95%  $CI$ [.170, .445], or dispositional attributions ( $M = 3.99$ ,  $SE = .03$ ),  $b = .19$ ,  $SE = .09$ ,

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<sup>1</sup> Due to the structure of the diary data, these analyses only included the first incident of being forgotten that participants reported on any given day.

$t(261.37) = 2.10, p = .037, 95\% CI [.046, .389]$ . These results clearly support our prediction that non-relational explanations for being forgotten are associated with reduced feelings of unimportance and mitigated damage to relationship closeness caused by being forgotten.

The finding that the large majority of incidents observed were explained away through non-relational attributions raised a new and important question about our previously reported findings, however. Was the negative impact of being forgotten driven solely by infrequent but impactful relational attributions for being forgotten? Or did being forgotten harm felt importance and closeness even after the mitigating influence of non-relational attributions?

In order to evaluate these possibilities, we repeated our analysis of felt importance and felt closeness excluding all incidents of being forgotten that were explained through relational attributions. These analyses indicated that even when being forgotten was explained away through alternative situational or dispositional explanations, being forgotten still reduced felt importance ( $M = 3.84, SE = .04, t(333) = -4.38, p < .001, \text{Cohen's } d = 0.24$ ), and closeness ( $M = 3.86, SE = .04, t(334) = -3.54, p < .001, \text{Cohen's } d = 0.19$ ). Frequent non-relational attribution thus reduced the impact of being forgotten on felt importance and closeness but that reduction was not complete.

**Moderation by initial closeness (path D, Figure 1).** We expected initial relationship closeness to moderate the impact of being forgotten on relationship closeness but not on felt importance. Specifically, we expected that the impact of memory on closeness would be larger in closer types of relationships. In order to assess this possibility, we tested whether the impact of being forgotten on felt importance, felt closeness, and perceived other closeness varied depending on the type of relationship participants had with the person who forgot them. Surprisingly, multilevel tests predicting each relational inference from the dummy code reflecting relationship type showed that relationship type did not significantly predict any of

these inferences (all  $ps > .22$ , 95% CI lower bounds ranged from  $-.23$  to  $-.17$ , upper bounds ranged from  $.09$  to  $.24$ ). These results suggest that the type of relationship involved in an incident of being forgotten did not have drastic consequences for the impact of being forgotten.

**Parallels with ostracism.** If the experience of being forgotten is qualitatively similar to the experience of being ostracized, then being forgotten would be expected to also threaten individuals' intrapersonal needs, including the need for meaning in life, self-esteem, and control. To test this account, we regressed participants' daily reports of each of these intrapersonal needs onto participants' daily frequency of being forgotten, the previous day's value of the dependent variable, and the overall quality of participants' social interactions that day (Figure 5). Although, the magnitude of the effect of being forgotten on individual intrapersonal needs was quite consistent, the statistical significance of the individual measures varied ( $bs$  from  $.12$  to  $.13$ ,  $SEs$  from  $.06$  to  $.08$ ,  $ps$  from  $.026$  to  $.147$ ). Tellingly, an aggregate summary of all three intrapersonal needs was significantly affected by being forgotten ( $b = -.12$ ,  $SE = .06$ ,  $t(441.93) = -2.17$ ,  $p = .030$ ). In keeping with conceptual parallels to ostracism, being forgotten thus appears to have a relatively small but detectable effect on intrapersonal outcomes.

The descriptive magnitude of the intrapersonal impact of being forgotten was a little less than half the size of the relational impact of being forgotten. In order to formally compare the magnitude of the relational and intrapersonal effects of being forgotten, we treated the aggregated intrapersonal effects of being forgotten and the aggregated relational effects of being forgotten as repeated measures representing different factor levels. We then adopted the recommendations of Judd, Kenny, and McClelland (2001) for assessing moderation in a repeated measures design using a regression framework. Specifically, we predicted the difference between the intrapersonal and relational effects of being forgotten

from the same multilevel model that we used to assess the impact of being forgotten on the individual outcomes. If being forgotten systematically predicted the difference between intrapersonal and relational outcomes, that would indicate that the difference in magnitude between relational and intrapersonal effects was statistically reliable (i.e., an interaction between being forgotten and the type of outcome measure). This analysis indicated that the descriptive difference between the relational and intrapersonal effects of being forgotten was statistically significant,  $b = -.16$ ,  $SE = .06$ ,  $t(386.82) = -2.73$ ,  $p = .007$ . Thus, although being forgotten predicted both relational and intrapersonal outcomes, its impact was significantly larger on relational outcomes.

## **Discussion**

Study 1 provides extremely rich information about the experience of being forgotten. Descriptively, our findings suggest that being forgotten is a broadly relevant experience. The experience was quite common, occurred across a variety of relationships, and most frequently involved the forgetting of personal details or past interactions. The subjective tone of being forgotten appears to be neutral at best but was equally or more often negative.

Our core relational model was well supported (paths A and B, Figure 1). Being forgotten led to feeling less important to and less close to the forgetter. Additionally, people felt less important and like they belonged less in general on days when they were forgotten than on days when they were not forgotten.

We also found clear evidence that the impact of being forgotten on felt importance and closeness is moderated by attributions for forgetting (path C, Figure 1). Situational and dispositional attributions reduced the negative impact of being forgotten relative to relational attributions. Importantly, however, this reduction was incomplete. Even after situational or dispositional attributions, being forgotten still negatively impacted felt importance and closeness. This latter finding is especially important as situational attributions for forgetting

were by far the most common explanation for being forgotten. It thus appears that people usually try to explain away being forgotten in apparently pro-social ways but are not fully successful in doing so.

Contrary to expectations, we found no support for the hypothesis that being forgotten had a larger impact on felt closeness when the forgetter was initially closer to the participant (path D, Figure 1). Given the small magnitude of the base effects of being forgotten, however, conclusions about support (or lack thereof) for this hypothesis should be drawn with caution. Although large-scale qualification of our core model appears unlikely, relatively moderate attenuation or amplification might have gone undetected. Conclusions about this hypothesis are thus best reserved until it can be assessed in the context of a larger base effect of being forgotten (e.g., Study 4).

We observed support for parallels between being forgotten and ostracism. Being forgotten had a significant negative impact on an aggregate measure of intrapersonal needs. This effect was about half the size of the impact of being forgotten on relational outcomes, however. This result suggests that the experience of being forgotten is multifaceted. Being forgotten most powerfully impacted relational outcomes but more subtly paralleled the intrapersonal impact of ostracism and rejection.

Study 1 did have two meaningful shortcomings, however. First, Study 1 was ultimately correlational. Directional causal inferences must thus be interpreted with caution. Additionally, the design of Study 1 necessarily involved directing participants to be vigilant for experiences of being forgotten. Such vigilance might plausibly color otherwise innocuous encounters. That is, classifying particular experiences as instances of being forgotten might have encouraged participants to report increased negative outcomes after those experiences. Although Study 1 provided substantial ecologically valid insight into the experience of being forgotten and into the efficacy of our model in explaining that experience, we thus sought to

confirm our findings in experimental paradigms that made no explicit reference to remembering or forgetting.

## **Study 2**

Study 2 sought to confirm the core elements of our relational model in experimentally controlled, real, non-trivial interpersonal interactions. In this experiment, participants completed a relationship closeness induction with a confederate who subsequently either forgot or remembered information about the participant. We predicted that this manipulation would affect participants' relational inferences towards the confederate, such that participants who were forgotten by their interaction partner would feel less important to their partner (path A, Figure 1) and would like their partner less (path B, Figure 1). As a second evaluation of parallels between being forgotten and ostracism, we also tested whether the memory manipulation affected participants' meaning in life and state self-esteem.

## **Method**

### **Participants**

Forty-eight undergraduates and recent graduates from a university in the United Kingdom participated in Study 2. Four participants were removed from analyses because they expressed suspicion that the confederate was not another participant, leaving a sample of 44 (33 women, 11 men). Participants were 21.48 years old on average ( $SD = 2.19$ ). Participants who were enrolled in first or second year psychology courses received partial course credit in exchange for their participation. The remainder of participants volunteered without compensation.

### **Procedure**

The procedure involved several distinct parts. First, participants completed an interaction task with a confederate designed to induce closeness between new acquaintances. This task consisted of a series of increasingly intimate question-and-answer exchanges taken

from the Closeness-Generating Inventory (Aron, Melinat, Aron, Vallone, & Bator, 1997) and the Relationship Closeness Induction Task (Sedikides, Campbell, Reeder, & Elliot, 1999). Participants then completed a first set of dependent measures that included open-ended recall of their interaction with the confederate and ratings of how much the participant liked the confederate and the interaction. Participants were then, to their surprise, asked to swap the questionnaire page containing their open-ended recall and their liking ratings with the confederate. In return, participants received copies of typical and moderately positive ratings from the confederate along with the open-ended memory item. Depending on condition, the memory item indicated that the confederate had either remembered the interaction with the participant well or that the confederate had forgotten most of what the participant had said. Participants were then asked to complete the second set of dependent measures and were reassured that none of their new answers would be shared with the confederate. A wall-mounted camera allowed the experimenter to track participants' progress through the study and to deliver the measures and manipulations at appropriate times.

In order to examine participants' inferences of importance from evidence of memory (path A, Figure 1), we measured how important the participant thought their conversation had been to the confederate. In order to examine the relational impact of memory and forgetting (path B, Figure 1), we assessed how much the participant liked the confederate and how much overlap the confederate perceived between himself or herself and the confederate.

Additionally, in order to test parallels between being forgotten and ostracism a second time, we assessed participants' self-esteem and sense of meaning in life. We focused on these two variables at the expense of perceived control for two reasons. First, self-esteem can be measured with a state-based (as opposed to trait-based) scale (Heatherton & Polivy, 1991). A state-based scale seemed most appropriate to the repeated measures design of Study 2. We are not aware of such a measure for perceived control. Second, although we are similarly not

aware of a state-based assessment for meaningfulness in life, previous research found that having one's name forgotten impacted meaning in life specifically (King & Geise, 2011) and Study 1 revealed a small effect of being forgotten on meaning in life. We thus opted to measure meaning in life at a single time point.

### Results

Changes caused by evidence of memory in participants' perceived importance to, liking of, and self-other overlap with the confederate are graphed in Figure 7.

**Inferred importance (path A, Figure 1).** We expected that participants would feel that their conversation was less important to the confederate after the confederate forgot that conversation than after the confederate remembered that conversation. A mixed-model factorial ANOVA with time (Time 1 or Time 2) as a within-subjects factor and memory condition (forgotten or remembered) as a between-subjects factor revealed the predicted interaction between time and memory condition,  $F(1, 42) = 18.90, p < .001, \eta_p^2 = 0.31, 95\% CI[.12, .46]$ . Participants' feelings of importance decreased after the manipulation when they had been forgotten by the confederate,  $F(1, 42) = 29.63, p < .001, \eta_p^2 = 0.41, 95\% CI[.22, .55]$ . However, there was no change in participants' feelings of importance when they had been remembered by the confederate,  $F(1, 42) = 0.84, p = .364, \eta_p^2 = 0.02, 95\% CI[< -.001, .13]$ .

**Felt closeness (path B, Figure 1).** We expected that participants would like the confederate less and would include the confederate less in their sense of self after being forgotten than after being remembered. We assessed this hypothesis with a mixed factorial MANOVA on liking and inclusion of the confederate in the self with time as a within-subjects factor and memory condition as a between-subjects factor. This MANOVA yielded the predicted condition by time interaction,  $F(1, 41) = 5.01, p = .030, \eta_p^2 = 0.10, 95\% CI[.01, .26]$ .

Univariate examination of liking also revealed the predicted time by memory condition interaction,  $F(1, 42) = 6.45, p = .015, \eta_p^2 = 0.13, 95\% CI[.01, .29]$ . Participants liked the confederate significantly less after the confederate had forgotten information about them,  $F(1, 42) = 31.33, p < .001, \eta_p^2 = 0.43, 95\% CI[.23, .56]$  but did not change their liking of the confederate after being remembered,  $F(1, 42) = 2.80, p = .102, \eta_p^2 = 0.06, 95\% CI[< -.001, .20]$ .

Inclusion of the confederate in the self showed the same pattern as that present in liking, but the condition by time interaction did not reach statistical significance,  $F(1, 41) = 1.67, p = .20, \eta_p^2 = .04, 95\% CI[< -.001, .17]$ . Direct analysis of changes over time by condition indicated that being forgotten reduced inclusion of the confederate in the self,  $F(1, 41) = 11.11, p = .002, \eta_p^2 = 0.21, 95\% CI[.05, .37]$ , but being remembered did not change inclusion of the confederate in the self,  $F(1, 41) = 1.78, p = .187, \eta_p^2 = 0.04, 95\% CI[< -.001, .17]$ .

We evaluated the proposition that changes in importance after being forgotten led to changes in liking after being forgotten by examining the indirect effects of memory condition on liking through inferred importance (Baron & Kenny, 1986; Preacher & Hayes, 2008). In order to include a repeated measures factor in the mediational analysis, comparisons across time were represented as difference scores (Judd, Kenny, & McClelland, 2001). Consistent with the assumption that changes in subjective importance led to changes in liking, predicting liking from both memory condition and importance at the same time eliminated the relationship between memory condition and liking,  $b = 0.06, p = .795$ , while the relationship between importance and liking remained strong and significant,  $b = 0.53, p < .001$ . Formal assessment of the indirect effects estimated a coefficient of  $b = -0.69$ , with a 95%  $CI[-1.41, -0.27]$  that did not contain zero.

**Parallels with ostracism.** Parallels between being forgotten and ostracism would predict that being forgotten would reduce state self-esteem and meaning in life. There were, however, no effects of memory condition on state self-esteem,  $F(1, 42) = 1.41, p = .242, \eta_p^2 = .03, 95\% CI[-.001, .16]$  or on the search for meaning subscale of meaning in life,  $t(41) = -0.82, p = .42$ . There was, however, a marginal effect of condition on sense of meaning in life. Consistent with King and Geise (2011), participants whose responses were remembered by the confederate ( $M = 5.31, SE = 0.17$ ) tended to feel that their lives had more meaning than participants whose responses were forgotten by the confederate ( $M = 4.62, SE = 0.17$ ),  $t(41) = 1.93, p = .06, \text{Cohen's } d = .60, 95\% CI[-.03, 1.19]$ .

## **Discussion**

Consistent with our model, being forgotten decreased participants' sense of importance and this experience in turn damaged the relevant interpersonal relationship. These effects are especially noteworthy given that the tone of the interactions was generally positive and that the confederate did not show any explicitly rejecting or negative behavior towards participants. Moreover, the memory manipulation was included among other more explicit evaluations of the participant. Despite this more explicit reference point, information about the confederate's memory for the participant powerfully informed participants' feelings towards the confederate. These findings thus support our core model (paths A and B, Figure 1) by suggesting that others' communications of memory can provide important information about one's relational value that can, in turn, affect the character of social relationships. In contrast, being forgotten had very limited effects on intrapersonal outcomes. Being forgotten had no effect on state self-esteem and only a marginal effect on felt meaning in life. Consistent with the findings from Study 1, being forgotten seems to impact relational dynamics more powerfully than intrapersonal needs.

Critically, these results were obtained in an experimental design with no explicit references to forgetting. Concerns about causal order and about the influence of explicit attention to being forgotten from Study 1 thus do not apply to Study 2.

### **Study 3**

Study 3 returned to the role of attribution in the experience of being forgotten. We focused on confirming three key findings from Study 1: (a) that non-relational explanations for forgetting reduce the relational damage of forgetting, relative to relational explanations (path C, Figure 1), (b) that the majority of attributions for forgetting tend to be non-relational, and (c) that relational damage still occurs despite non-relational attributions.

To these ends, we constructed a written scenario representative of the incidents observed in Study 1. Variations of this scenario compared forgetting paired with a relational explanation, forgetting paired with non-relational explanations, forgetting with no explanation, and remembering. We then assessed people's attributions for memory or forgetting and their inferences about importance and relationship closeness after reading one of these variations.

### **Method**

#### **Participants and Design**

We recruited 388 participants from Prolific Academic, a crowd-sourcing website for conducting online research. Of these, 63 participants were dropped for the following reasons: not completing any measures ( $n = 8$ ), duplicate submissions ( $n = 5$ ), displaying unusually fast completion times (less than 2 minutes;  $n = 14$ ) or unusually slow completion times (longer than 30 minutes,  $n = 6$ , and more than 3 SDs from the mean duration;  $n = 4$ ), or failing an attention check ( $n = 26$ ). The final sample consisted of 325 participants (174 men, 150 women, 1 undisclosed). Participants were 30.43 years old on average ( $SD = 10.01$ ). Participants were compensated with £0.5 GBP (approximately \$0.6 USD).

This study used a one-way between-subjects design with five levels: dispositional attribution, situational attribution, relational attribution, no attribution information, and remembering.

### **Materials and Procedure**

We constructed a written scenario depicting an interaction between two friends in which one friend (the communicator) remembered or forgot a past interaction with another friend (the target). A backstory briefly described the friendship and the remembered or forgotten information. This backstory was further manipulated to create four different versions of the forgetting scenario. In the backstory for the forgetting scenarios, participants were sometimes presented with a dispositional explanation for forgetting (communicator is forgetful), a situational explanation for forgetting (communicator is busy), a relational explanation for forgetting (communicator is routinely inattentive to conversations with the target of memory but not with other people), or with no additional explanatory information. Chronic forgetfulness, being busy, and lack of attention to the target were selected as manipulations because they were respectively the most common dispositional, situational, and relational explanations for forgetting reported in Study 1, respectively.

After reading the vignette, participants rated the importance of the remembered or forgotten past interaction to the communicator, rated how close the target of memory was to the communicator, and then indicated whether they thought the past interaction was remembered or forgotten because of situational, dispositional, or relational reasons.

## **Results**

### **Attributions**

In conditions where we manipulated attribution, we expected that participants' attributions would predominately correspond to the attribution intended in the explanation for forgetting provided. In the remembering condition and in the forgetting condition with no

explanation, we expected attributions to mirror Study 1. That is, we expected remembering to be explained through relational attributions and we expected forgetting without an explicit explanation to be explained through situational or dispositional attributions. Participants' attributions are graphed in Figure 8.

As expected, the manipulation affected the kind of attributions participants made,  $\chi^2(8) = 87.14, p < .001, N = 325$ . The majority of participants presented with a dispositional explanation for forgetting made dispositional attributions (66%), with the remainder making situational (28%) or relational (6%) attributions. Similarly, the majority of participants presented with a situational explanation made situational attributions (68%), with the remainder making dispositional (21%) or relational (11%) attributions. Surprisingly, participants presented with a relational explanation most often made dispositional attributions (49%). However, participants in this condition did endorse substantially more relational attributions (32%) than did participants in the situational, dispositional, or no explanation conditions (11%, 6%, and 16%, respectively).

As expected, in the no explanation condition, the majority of attributions observed were mitigating ones (84%), although dispositional attributions (50%) were more frequent than situational ones (34%). Surprisingly, relational attributions were even less frequent in this condition (16%) than in Study 1. In fact, the condition in which relational attributions were most common was the remembering condition. When the communicator remembered the past interaction, half of attributions were relational (49%), with the remaining half being evenly split between dispositional (26%) and situational (25%) attributions.

There are three important elements of this result. First, the manipulation was effective in increasing the relative frequency of the intended attributions. Second, and consistent with Study 1, participants preferred mitigating attributions for forgetting when no explanation was provided but used relational and mitigating attributions equally for remembering. Third, and

most striking, participants were extremely hesitant to make relational attributions for forgetting. In the relational attribution condition participants were explicitly told that the forgetter did not pay attention to the target of memory but did pay attention to other people. Although this information prompted participants to make more relational attributions than in the other forgetting conditions, participants still more often attributed the memory failure to the forgetter's disposition than to the relationship between the forgetter and the target. This pattern reinforces the dominance of non-relational explanations for forgetting observed in Study 1.

### **Importance**

Based on our theoretical model (path C, Figure 1) and our findings from Study 1, we expected mitigating attributions to reduce the impact of being forgotten on inferred importance relative to relational attributions. Based on Study 1, we also expected that reduction to be incomplete. That is, we expected that forgetting would have a measurable but reduced impact on inferred importance after non-relational attributions. Because mitigating attributions were equally present in the three non-relational forgetting conditions, we did not expect to observe any differences between those conditions in inferred importance.

Importance ratings for each condition are graphed in Figure 9.

A one-way ANOVA with five levels revealed the expected effect of condition,  $F(4, 320) = 28.51, p < .001, \eta_p^2 = .26, 95\% CI[.19, .32]$ . As expected and consistent with moderation by attribution (path C, Figure 1), relational explanations for forgetting led to significantly less inferred importance than did the non-relational explanations for forgetting,  $F(1, 320) = 11.19, p = .001, \eta_p^2 = .04, 95\% CI[.01, .07]$ . Also as expected and consistent with Study 1, participants inferred significantly more importance in the remembering condition than in the three non-relational forgetting conditions,  $F(1, 320) = 76.83, p < .001, \eta_p^2 = .19, 95\% CI[.13, .25]$ .

These results support the role of attribution in our theoretical model (path C, Figure 1) and replicate Study 1 in an experimental context. Mitigating explanations for forgetting reduced the impact of forgetting on inferred importance relative to relational explanations. As in Study 1, however, this reduction was incomplete. Forgetting a past interaction reduced the importance that participants believed the communicator attached to that interaction despite relationship-protecting attributions.

### **Closeness**

We expected a pattern of relationship closeness parallel to that observed for importance. Closeness ratings for each condition are graphed in Figure 9. A one-way ANOVA again revealed an effect of condition,  $F(4, 320) = 8.70, p < .001, \eta_p^2 = .10, 95\% CI [.04, .14]$ . Post-hoc tests (SNK) indicated that inferred closeness in the remembering condition was significantly higher than in all other conditions. Additionally, although the relational attribution condition was descriptively lower than the non-relational attribution conditions, it did not differ from them significantly. This overall pattern was thus consistent with the results observed across importance and closeness in Study 1 and observed for importance in the present study, but the difference between the relational attribution and the non-relational attribution conditions did not reach conventional levels of significance.

### **Discussion**

On balance, the results of Study 3 supported the role of attribution in our theoretical model (path C, Figure 1). Relational attributions for forgetting undermined importance and tended to undermine closeness. The weaker pattern in closeness was, perhaps, not surprising in light of two factors. First, closeness is causally downstream from importance. Downstream variables in causal chains are less strongly affected by the original antecedent than are more proximal variables. The effect of forgetting on closeness would thus be expected to be somewhat weaker than the effect of forgetting on importance (Kline, 2015). Second, although

the relational attribution condition contained more relational attributions than the other forgetting conditions, relational attributions were still not the most common response in that condition. The manipulation was thus effective but was probably not as strong as it would have been with a majority of relational attributions.

This outcome does raise the question of whether a stronger manipulation of relational attributions might have been more appropriate. We chose to manipulate relational attributions indirectly through the amount of attention that the forgetter routinely paid to the target. A more direct approach could have instead explicitly characterized the forgetter's investment in the target. In fact, we expect that such a manipulation would indeed yield more relational attributions. In our view, however, this approach would be tantamount to instructing participants on how to complete the dependent measures. We thus suggest that the manipulation we selected was the more appropriate option.

The results of Study 3 were also informative in two additional ways. First the results converged with Study 1 to suggest that people's strong default reaction to others' memory failure is to provide a relationship-constructive explanation for the failure (i.e. non-relational attributions). Intriguingly, this pattern of explanation occurred even though participants had no motivation to preserve the relationships involved. Second, and again consistent with Study 1, an apparently relationship-constructive pattern of attribution did not fully mitigate the impact of memory failure. Although people explained away forgetting in relationship-constructive ways, forgetting still reduced perceived relationship closeness through inferences of importance.

#### **Study 4**

Study 4 focused on the impact of initial relationship closeness on inferences drawn from observing memory or forgetting. In Study 1, we saw no evidence that initial relationship closeness moderated the relational impact of being forgotten (path D, Figure 1). Because the

base effects of being forgotten in Study 1 were quite small, however, moderate attenuation or amplification might plausibly have gone undetected. Study 4 thus re-examined the moderating role of initial closeness in a paradigm that was, because of carefully controlled stimuli and explicit comparison with remembering, expected to yield larger base differences between remembering and forgetting. Such a paradigm was better equipped to detect moderate attenuation or amplification of the base effects of being forgotten or, alternatively, to place useful upper limits on the size of plausibly undetected effects.

In Study 4, we described a relationship between two people with a high, medium, or low degree of closeness. Participants then read a scenario in which one person forgot or remembered a personal detail about the other. We then assessed participants' inferences about importance and relationship closeness.

## Method

### Participants and Design

We recruited 303 participants from Prolific Academic. Of these, 17 participants were dropped for the following reasons: not completing some or any of the measures ( $n = 5$ ), duplicate submissions ( $n = 4$ ), and failing an attention check ( $n = 8$ ). The final sample consisted of 286 participants (134 men, 151 women, 1 other). Participants were 34.39 years old on average ( $SD = 11.20$ ). Participants were compensated with £0.5 GBP (approximately \$0.6 USD).

This study used a 2 (Memory for personal details: forgotten or remembered) X 3 (Relationship closeness: low, medium, or high closeness) fully between-subjects design.

### Procedure

Each participant read one scenario depicting a conversation between two friends. Backstory varied the degree of relationship closeness to depict a casual, moderately close, or very close relationship. The relevant backstory was constructed based on the characteristics

identified by Dibble, Levine, and Park (2012) in their Relationship Closeness Unidimensional Scale (i.e., cognitive, affective, and behavioral interdependence). These characteristics increased in either frequency or strength with each degree of relationship closeness. We manipulated closeness within a single example relationship to isolate closeness from other differences between different types of relationships.

Next, participants read a conversation in which one person (the communicator) either forgot or remembered personal information (a food preference) about the other person (the target). We selected personal information as the content of memory because that was the most common type of forgotten information in Study 1. After reading the vignette, participants rated the importance of the remembered or forgotten information to the communicator and how close the communicator was to the target of memory.

## **Results**

Our original hypotheses predicted that initial closeness would moderate the impact of inferred importance after forgetting on felt closeness (path D, Figure 1). That is, our original hypothesis predicted that initial closeness would moderate the relationship between forgetting and felt closeness but not the relationship between forgetting and inferred importance.

### **Importance**

Figure 10 presents the mean importance ratings for each memory condition across the three levels of relationship closeness. A 2 (memory condition: remembering or forgetting) X 3 (closeness level: high, medium, or low) between-subjects ANOVA revealed two significant effects. A large main effect of memory condition,  $F(1, 285) = 79.45, p < .001, \eta_p^2 = .22, 95\% CI [.15, .28]$ , indicated that, as expected, participants rated the target information in the vignettes as less important to the communicator when he or she forgot the information ( $M = 2.96, SE = .12$ ) than when he or she remembered the information ( $M = 4.58, SE = .14$ ).

A smaller, but still significant, main effect of relationship closeness,  $F(1, 285) = 4.61$ ,  $p = .011$ ,  $\eta_p^2 = .03$ , 95%  $CI[.00, .05]$ , indicated that target information was perceived as more important to the communicator, regardless of memory, in the high closeness condition ( $M = 4.14$ ,  $SE = .16$ ) than in the medium ( $M = 3.66$ ,  $SE = .17$ ) or low closeness conditions ( $M = 3.51$ ,  $SE = .14$ ), all  $ps < .043$ . The medium and low closeness conditions did not differ from one another ( $p = .482$ ).

The interaction between memory and initial closeness was not significant,  $F(1, 285) = 0.53$ ,  $p = .589$ ,  $\eta_p^2 = .00$ , 95%  $CI[<-.001, .02]$ . Moreover, the narrow confidence interval on effect size of the interaction between initial closeness and memory indicates that any undetected effects would be small.

### **Closeness**

Figure 10 presents mean closeness ratings across the three levels of relationship closeness. A between-subjects ANOVA revealed two significant effects. A medium-sized main effect of memory condition,  $F(1, 285) = 15.04$ ,  $p < .001$ ,  $\eta_p^2 = .05$ , 95%  $CI[.02, .10]$ , indicated that, as expected, participants rated the communicator as less close to the target when he or she forgot the interaction ( $M = 4.43$ ,  $SE = .09$ ) than when he or she remembered the interaction ( $M = 4.95$ ,  $SE = .10$ ). Importantly, this effect was substantially larger than that observed in Study 1.

A large main effect of the closeness manipulation,  $F(1, 285) = 58.04$ ,  $p < .001$ ,  $\eta_p^2 = .29$ , 95%  $CI[.11, .23]$ , indicated that high closeness relationships ( $M = 5.45$ ,  $SE = .12$ ) were perceived as closer than medium closeness relationships ( $M = 4.82$ ,  $SE = .13$ ) and that medium closeness relationships were perceived as closer than low closeness relationships ( $M = 3.80$ ,  $SE = .10$ ), all  $ps < .001$ .

Finally, as in Study 1, the interaction between memory and initial closeness was not significant,  $F(1, 285) = .264$ ,  $p = .768$ ,  $\eta_p^2 = .00$ , 95%  $CI[<-.001, .02]$ . Moreover, the narrow

confidence interval on effect size of the interaction between initial closeness and memory indicates that any undetected effects of being forgotten would be small.

These results replicated the consistent effects of memory on closeness across relationships of different initial closeness observed in Study 1. Moreover, the more powerful design of Study 4 provided narrow confidence intervals on the relevant interaction terms. Study 4 thus indicates that any undetected moderating role of initial relationship closeness would be small in size.

## **Discussion**

These results converge with and expand on Study 1 in two ways. First, they indicate that our core model generalizes across a variety of different relationships. Second, they indicate that any moderating role of initial relationship closeness is small. Surprisingly, the relational impact of being forgotten thus appears best characterized as consistent across relationships of different initial closeness.

### **General Discussion**

Taken together, the studies reported here provide substantive insight into the experience and impact of being forgotten. We have not only described the content, frequency, and subjective nature of the experience, we have also tested two systematic accounts of being forgotten – our relational model and an ostracism account.

## **Description**

Our diary data (Study 1) make clear that the experience of being forgotten is broadly relevant in daily life. Being forgotten occurred with great frequency. The context of this study (the beginning of a university term) probably contributed to this high frequency, but being forgotten was not a rare experience limited to casual and newly formed relationships. Rather, participants were forgotten on just as many days as they were not forgotten and this forgetting occurred across both casual relationships (e.g., classmates and acquaintances) and

close relationships (e.g., friends and family members). Similarly, it was not the case that being forgotten primarily involved failing to recognize another person. Rather, most experiences of being forgotten involved failures to recall a personal detail or a past interaction. Overall, these data provide a first picture of what the experience of being forgotten looks like in daily life and suggest that the experience of being forgotten is an integral part of human relationships rather than a rare curiosity.

### **The Relational Model**

The core of our model is the proposition that being forgotten elicits inferences of importance (path A, Figure 1) and, in turn, affects relationship closeness (path B, Figure 1). Both elements of this proposition received unambiguous support across studies. In diary data (Study 1), participants who had been forgotten reported feeling less important to the person who forgot them and to others in general, as well as less close to the person who forgot them and to others in general. Parallel outcomes emerged in a constructed firsthand experience of being forgotten (Study 2) and in observers' inferences after witnessing someone else being forgotten (Studies 3 and 4). The core pathway between being forgotten, inferring reduced importance, and reducing relationship closeness thus appears well supported.

**Attribution (path C, Figure 1).** Attributional explanations for forgetting appear to be a key moderator of the link between being forgotten and inferred importance. In our diary data (Study 1), participants who explained being forgotten through situational (e.g., she was busy) or dispositional (e.g. he just has a poor memory) factors inferred more importance and felt closer to the person who forgot them than did participants who explained being forgotten through relational factors (e.g., she isn't invested). A similar pattern emerged in our scenario data (Study 3) for both importance and closeness, although the key comparisons reached significance only for importance.

Just as importantly, our exploration of attribution revealed two unexpected pieces of information. First, people appear to have a strong pro-relationship default when explaining memory errors. In both the diary data (Study 1) and in reaction to observed incidents of forgetting (Study 3), participants' strong tendency was to explain forgetting through situational or dispositional factors rather than through relational factors. Second, in both of these studies, non-relational attributions were not sufficient to eliminate the relational damage caused by forgetting. Despite explaining away forgetting in non-relational ways, participants still inferred less importance and felt less close. It thus appears that people usually minimize the negative implications of the experience of being forgotten through mitigating attributions, but this effort is usually only partially successful.

This pattern of explanation might suggest that people view forgetting as accidental by default. That is, in most circumstances people assume that others will remember information if they are capable of it. Explanation of memory errors through dispositional and situational factors might thus reflect what Malle dubbed enabling factors explanations (Malle, 2004; see also supporting factors explanations in Heider, 1958). Enabling factors explanations assume that successful action reflects specific intentions and focus on supporting elements for that action to explain failure. In our findings, a lack of situational distractions and a generally capable memory would thus be enabling factors for successful memory. In the case of remembering, these factors would not receive attention and the action would be attributed to the driving motive of relational investment. In the case of forgetting, attention would be directed to the factors required to enable successful remembering before revisiting the assumed relational investment. That is, if either of situational distraction or chronically poor memory could adequately explain memory failure, the underlying intention to remember would not be questioned.

The persistent relational damage that we observed despite mitigating attributions would in turn be consistent with the so-called fundamental attribution error (Jones & Davis, 1965; Kelley, 1973). In the fundamental attribution error, obvious situational explanations for behavior are not given sufficient weight in the explanation of that behavior. Treatments of this error suggest that intentions are initially inferred from actions quickly and automatically, but are then revised in light of mitigating factors (Blakemore & Decety, 2001; Gilbert & Osborne, 1989). In our data, an enabling factors orientation would lead people to prefer mitigating explanations over relational explanations, but those mitigating explanations would not fully overrule automatic inferences about the forgetting agent's investment in the relationship.

One question that remains unanswered in these explanations is why people would assume that forgetting is accidental. The most obvious explanation to us is that forgetting carries a relational cost for the forgetter. That is, people assume that forgetting is accidental because there is no advantage to forgetting others. An additional possibility is that assuming that forgetting is accidental might be self-protective. That is, assuming that people intended to remember you supports a generally positive view of the self and one's social integration. Finally, forgetting might be so embedded in routine social interaction that explanations for it are dictated by normative scripts. That is, ready-made explanations for other people's memory failures might be stored in memory rather than generated online. Critically, these different explanations are testable through manipulation of relevant motives or expectations respectively.

**Initial closeness (path D, Figure 1).** Our core relational model appears to apply well across relationship types. Both the diary data (Study 1) and our scenarios depicting forgetting (Study 4) examined the interpersonal implications of forgetting another person across a variety of relationships. The core links between forgetting, inferred importance, and closeness

applied across relationships of different initial closeness. The links described in our core model also appeared consistent in their magnitude. Although we had expected that the link between forgetting and closeness would be exaggerated in closer relationships (Path D, Figure 1), we observed no evidence of such moderation in diary data (Study 1) or in third party observations of forgetting (Study 3).

This finding is surprising in light of the greater importance of closer relationships to human belongingness needs (Fuhrman et al., 2009) and also runs contrary to the intuition of most researchers with whom we have discussed this work. One possible explanation for this finding is that initial relationship closeness might become relevant when considering outcome variables not yet included in our model of being forgotten or remembered. For example, coping strategies and behavioral reactions would plausibly differ after similar memory failures on the part of a close friend and on the part of a casual acquaintance.

Overall, our original relational model of being forgotten (Figure 1) was quite successful in explaining the experience of being forgotten. The core of the model (Paths A and B) was unambiguously supported and our first specified moderator, attribution, affected the predicted link between forgetting and inferred importance (path C). Our second predicted moderator, initial relationship closeness (path D), did not appear to moderate the link between importance and closeness, however.

### **The Ostracism Hypothesis**

We also tested an alternative, although not mutually exclusive, account of being forgotten – parallels with ostracism. This account posits that being forgotten might be similar to the experience of being ostracized in its effects on intrapersonal needs (i.e., self-esteem, control, and meaningfulness). We observed moderate support for this account. In our diary data (Study 1), being forgotten negatively affected an aggregate measure of intrapersonal needs, although inferential tests of the individual components (self-esteem, felt control, and

meaningfulness) were mixed in statistical significance. In a controlled firsthand experience (Study 2), being forgotten marginally affected participants felt meaning in life but did not impact search for meaning or self-esteem. Overall, these results suggest that parallels between being forgotten and ostracism hold.

In the experiences we studied relational outcomes were more obviously and dramatically impacted than were strictly intrapersonal outcomes. Why might this be? One possible explanation is the normative nature of the events under study here. The experiences we examined were generally unremarkable minor events that occurred as part of an ongoing and generally positive interaction. In contrast, ostracism (and exclusion more broadly) usually involves non-normative signals that terminate an interaction (Williams, 2007). Critically, normative experiences of exclusion do not threaten intrapersonal needs as severely as non-normative experiences of exclusion (Rudert & Greifeneder, 2016). More comparable relational and intrapersonal effects might thus emerge in non-normative experiences of being forgotten.

Alternatively, the impact of being forgotten on intrapersonal needs might depend on the extent of forgetting. Completely forgetting a person, even after prompting, would be hard to distinguish from oblivious ostracism (i.e., failing to recognize, acknowledge, or think about a person at all). Oblivious ostracism does indeed create reliable threats to intrapersonal needs (Nezlek, Wesselmann, Wheeler, & Williams, 2012; Sommer, Williams, Ciarocco, & Baumeister, 2001; Williams, 1997).

Finally, differences in the perceived intentionality of forgetting and ostracism could also lead to discrepant effects on intrapersonal needs. Ostracism and social exclusion generally entail intentional deprivation of social connection. In contrast, being forgotten represents a more ambiguous social event. For instance, forgetting could plausibly be perceived as the unintended outcome of an attempt to remember. Indeed, as discussed

previously, such interpretation would be consistent with the high frequency of mitigating attributional explanations that we observed in Studies 1 and 3. Moreover, in the ostracism literature, an understanding of the reasons for being ostracized reduces threat to belongingness and self-esteem (Sommer et al., 2001). In this sense, being forgotten might not imply loss of or failure to attain social connection to the same degree as ostracism and rejection.

### **Limitations and Future Directions**

Both a strength and a limitation of the present work is that it raises more questions than we could possibly hope to answer in a single report of research. Even the rich data from Study 1 can speak to more questions than we address here. We have, however, limited our focus to questions for which we can provide convergent evidence across multiple studies. In the numerous cases where we cannot yet provide such convergent evidence, the present work lays a foundation for future lines of enquiry.

One such question concerns the role of information type in reactions to being forgotten. Some information may be viewed as more acceptable (or even desirable) to forget than other information. For example, people may be unbothered if others forget an inconsequential detail they mentioned in passing or may even prefer that others forget their embarrassing faux pas at the office holiday party. In these instances, forgetting may have a less negative, or even positive, impact on social relationships. Systematically exploring the importance of information type in the experience of being forgotten thus presents an important avenue for future research.

Our findings cast new light on people's tendency to confuse or forget members of other races and social groups (Hugenberg, Young, Bernstein, & Sacco, 2010; Meissner & Brigham, 2001; Ray & Matschke, 2012; Sporer, 2001; Taylor, Fiske, & Etcoff, 1978). Although memory bias against people of other races and social groups is well-documented,

the direct interpersonal consequences of such bias have not been well defined. Our findings suggest that these memory errors may disrupt the development of friendships between members of different ethnic and social groups, which may in turn perpetuate misunderstandings, stereotyping, and prejudice (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). This source of intergroup strife is especially important to recognize as memory bias is often orthogonal to prejudiced attitudes (Meissner & Brigham, 2001). Interventions designed to reduce prejudice will thus not be effective in addressing antagonism arising from the involuntary signals sent through memory errors.

The consequences of forgetting over time present an additional important question. On one hand, the impact of a single small incident of forgetting might fade quite quickly. On the other hand, a pattern of forgetting might create a downward spiral in which forgetting undermines investment in a relationship and decreased investment leads to reciprocal forgetting. The study of forgetting and remembering in long-term ongoing relationships would provide invaluable insight into the long-term consequences of relational memory and forgetting.

### **Summary and Conclusion**

Being forgotten is a relatively common experience that occurs within a variety of different relationship types and most commonly involves personal details or past interactions. Being forgotten affects interpersonal relationships because it leads to inferences of subjective importance to the forgetter that in turn impact relationship closeness. This process appears to apply with surprising uniformity across relationships of different initial closeness. Non-relational explanations for forgetting (e.g., she was distracted) are strongly preferred to relational explanations for being forgotten (e.g., she isn't interested) and reduce the impact of forgetting. This reduction is incomplete, however; being forgotten has relational implications even when explained in non-relational ways. Being forgotten also appears to have a parallel,

although less extreme, impact on intrapersonal needs. In the same way as ostracisms and rejection, being forgotten appears to affect felt meaning in life and probably also affects felt control and self-esteem.

These insights provide scientific description of a human universal – the experience of being forgotten. These findings are especially important because memory is a favorite outcome of study in psychological science. The present work thus illuminates the interpersonal implications of any research that examines memory for humans or human activity as an outcome variable.

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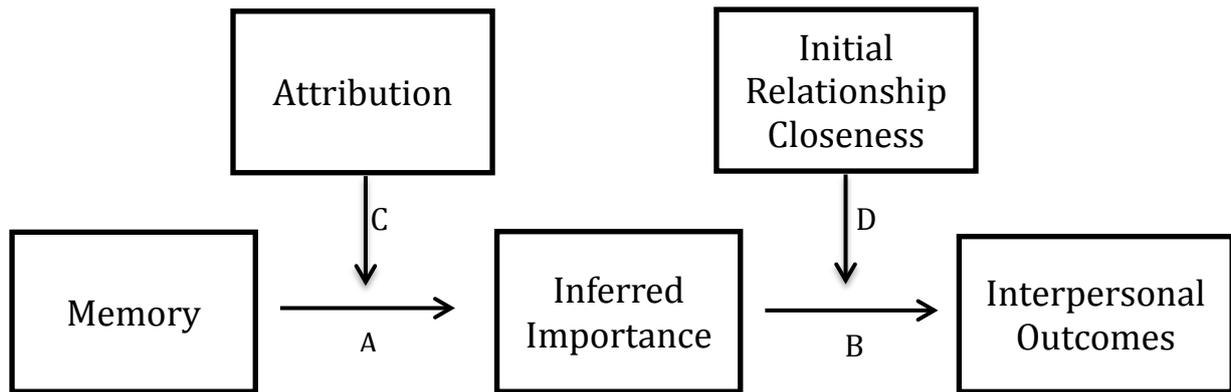
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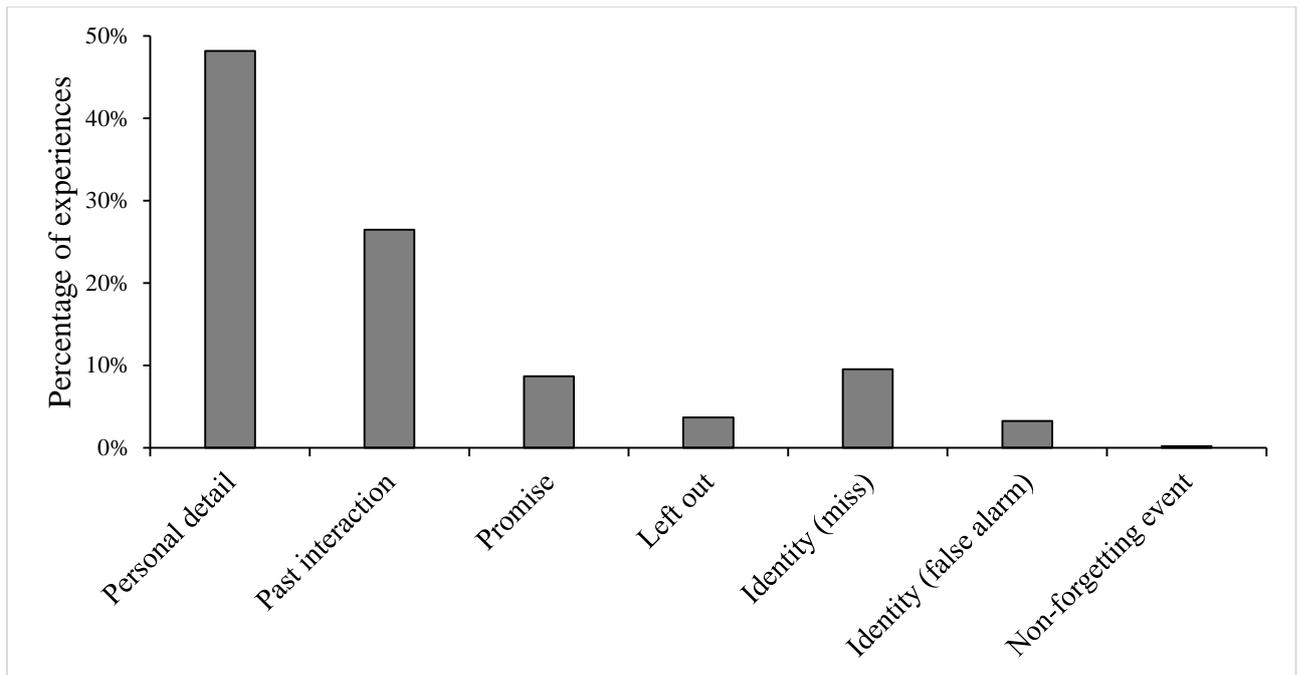
and meaningful existence. *Journal of Experimental Social Psychology*, 40(4), 560-567.

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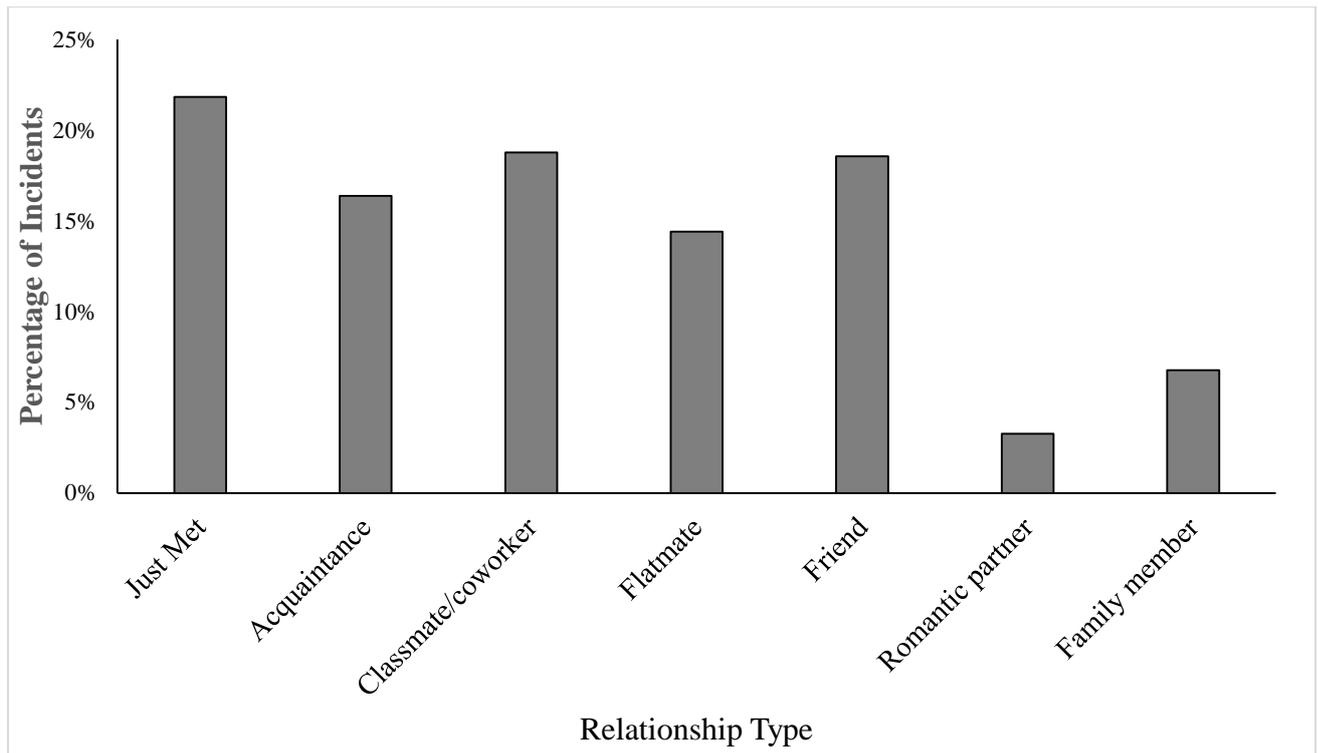
*Figure 1.* Theoretical model of the psychological impact of being remembered or forgotten.

Evidence of memory supports inferences about subjective importance (Path A) that in turn have relational implications (Path B), including changes in relationship closeness and commitment. Inferences of importance depend on attributional explanations for forgetting (Path C) and the implications of inferred importance depend on the initial closeness of the relationship involved (Path D). All paths in the model were well supported except Path D.

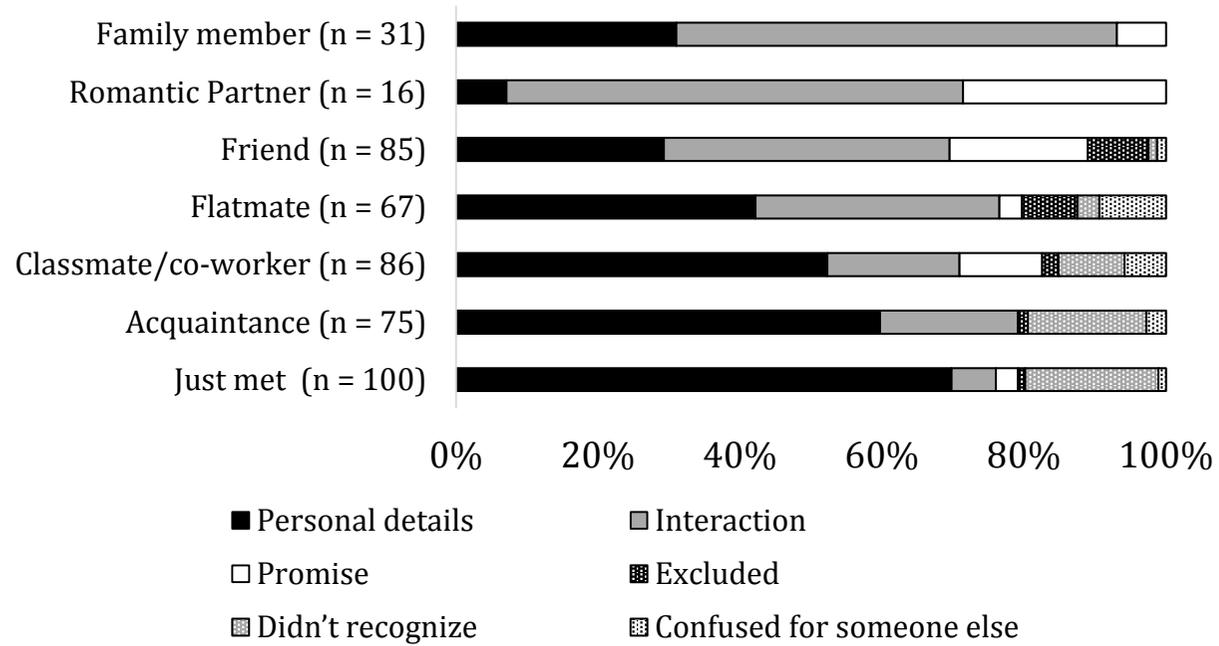


*Figure 2.* Results of Study 1. Percentage of incidents by type of information forgotten.

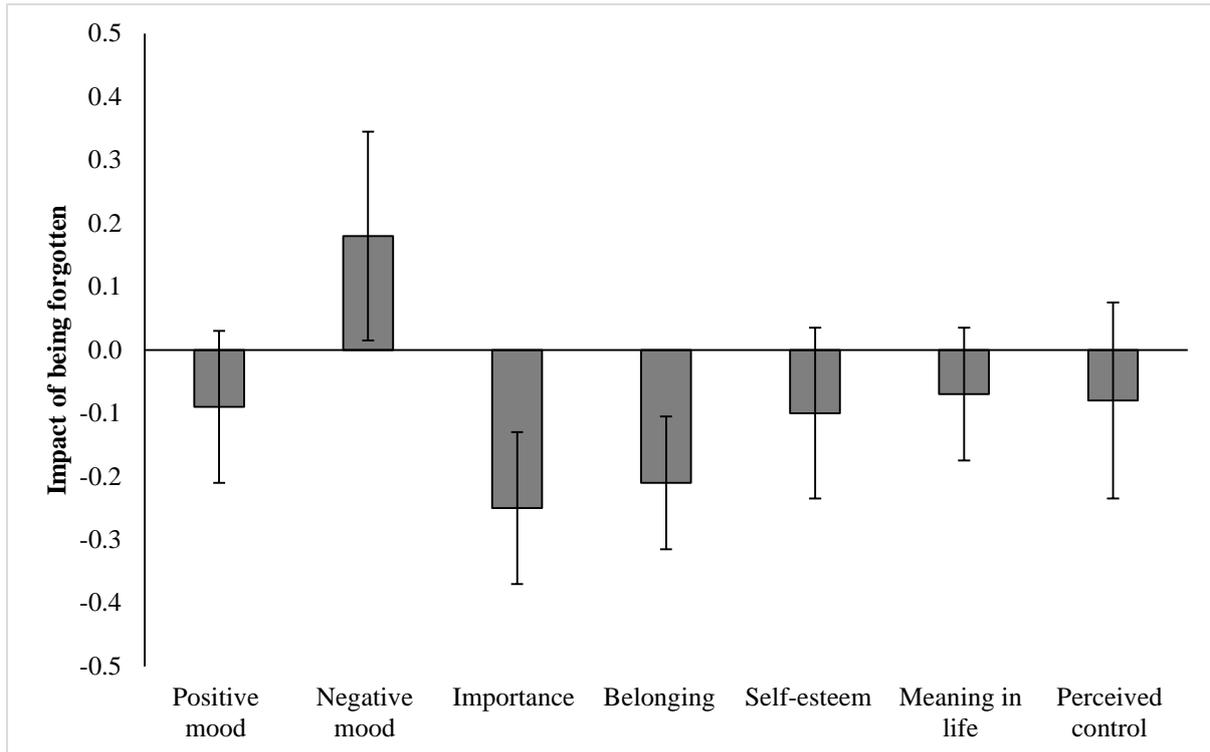
Personal details and past interactions were by far the most commonly forgotten type of information.



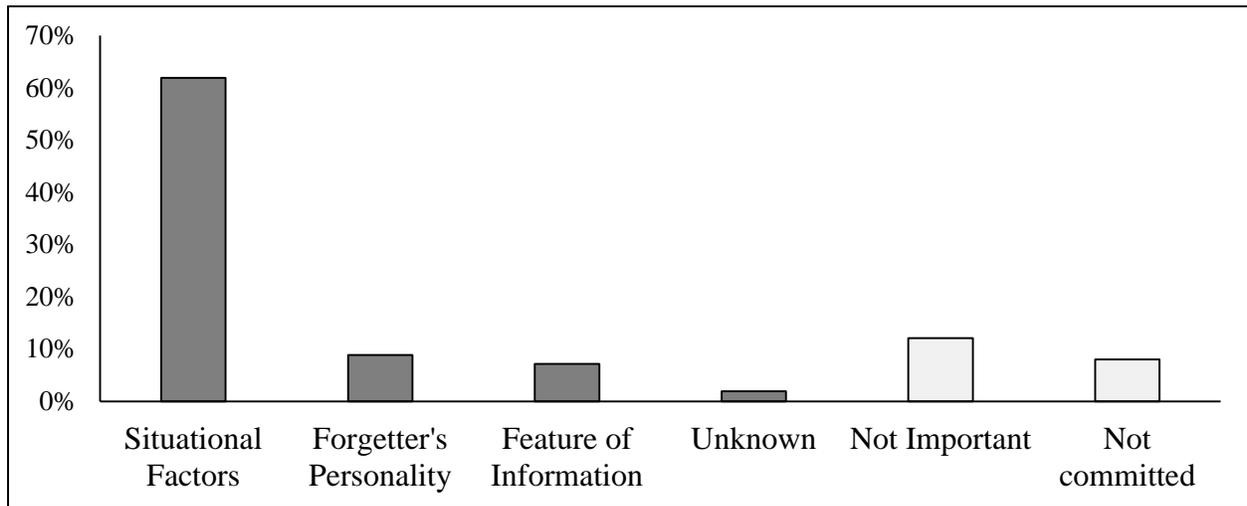
*Figure 3.* Results of Study 1. Percentage of incidents forgotten by different relationship partners. Forgetting occurred fairly uniformly across different relationships, but with reduced frequency among romantic partners and family members.



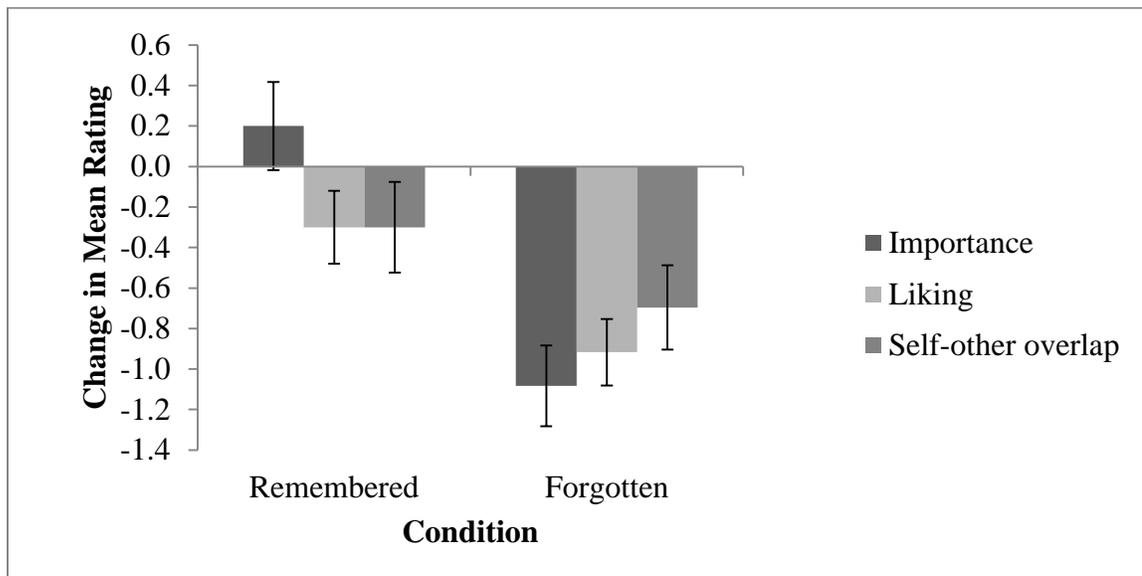
*Figure 4.* Type of information forgotten broken down by type of relationship involved. Forgetting of personal details and failures of recognition appeared more often in less close relationships whereas forgetting of past interactions and promises appeared more often in closer relationships.



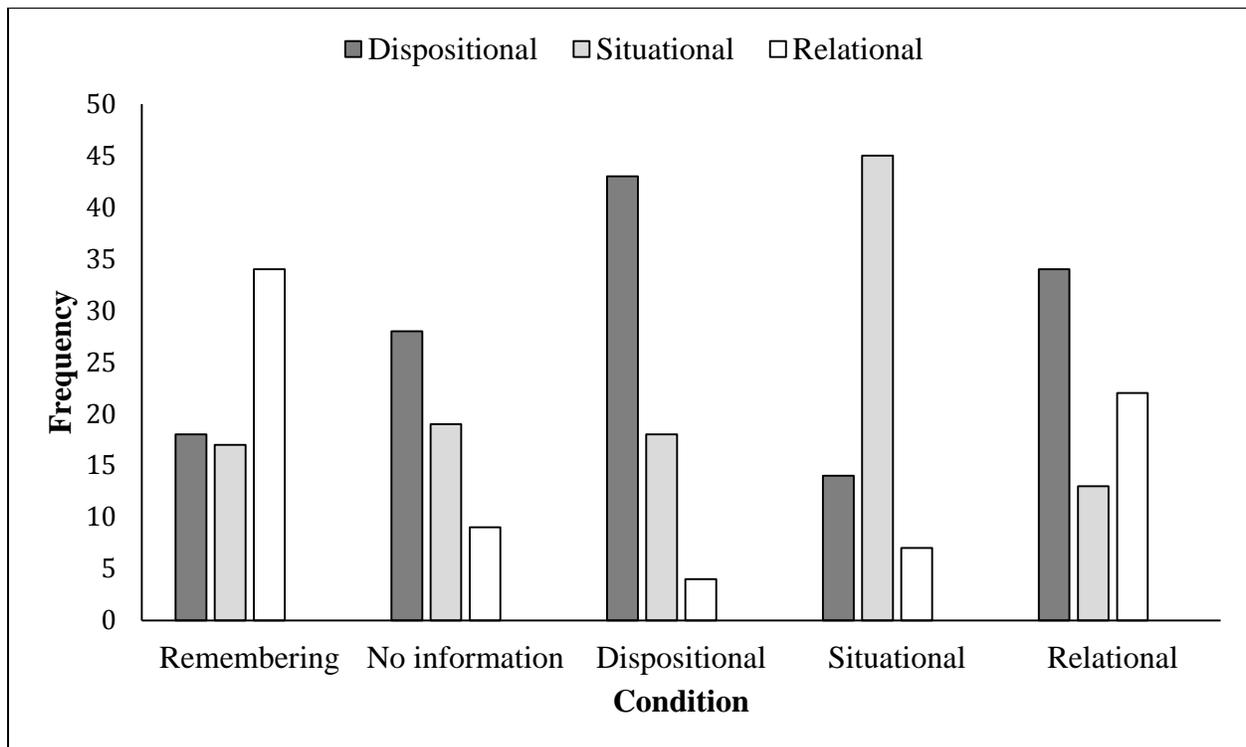
*Figure 5.* Mean difference between days when participants were not forgotten and days when participants were forgotten for daily mood (positive and negative), relational outcomes (importance and belonging) and intrapersonal outcomes (self-esteem, meaning in life, perceived control). Error bars represent 95% confidence intervals (note that error bars in later figures present standard errors). Being forgotten more strongly impacted relational outcomes than intrapersonal outcomes.



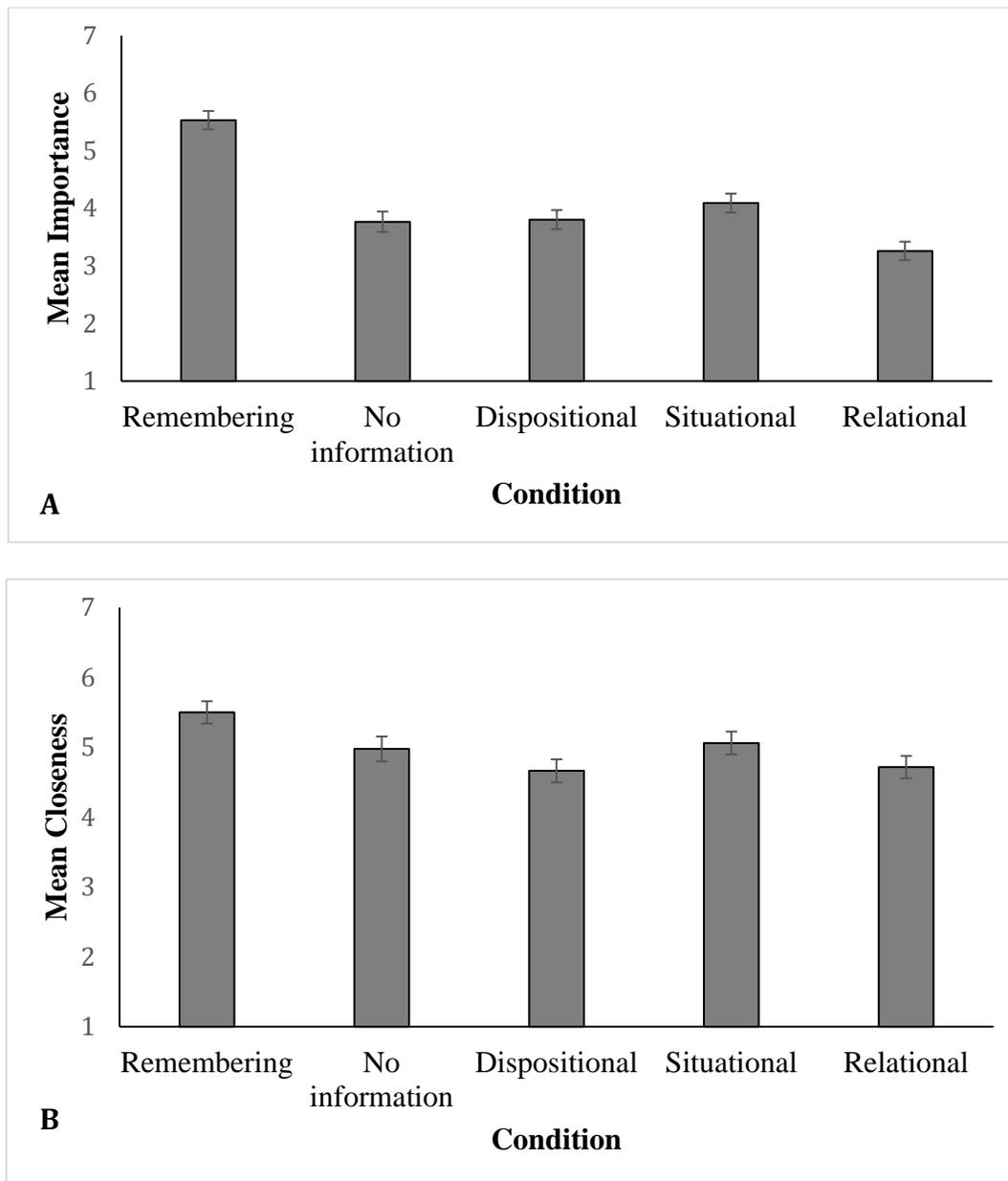
*Figure 6.* Results of Study 1. Percentage of attributions endorsed as explanations for incidents of being forgotten in Study 1. Being forgotten was more often explained through non-relational (dark grey bars) than relational (light grey bars) attributions.



*Figure 7.* Results of Study 2. Changes in participants' mean rating of importance to the confederate, liking of the confederate, and self-other overlap with the confederate after being remembered or forgotten by the confederate. Error bars represent standard errors of the mean. Being forgotten reduced importance, liking, and self-other overlap whereas being remembered had little to no effect.



*Figure 8.* Results of Study 3. Frequency of attributions made after reading a scenario that depicted remembering or forgetting paired with different attributional information. The manipulations generally determined the attributional explanation participants endorsed. Forgetting was by default attributed to mitigating (dispositional or situational) factors, even when no attribution information was presented and, surprisingly, even when participants were encouraged to endorse relational explanations.



*Figure 9.* Results of Study 3. Inferred importance of past interaction to communicator (panel A) and target's inferred closeness to communicator (panel B) after reading a scenario that depicted remembering or forgetting paired with different attributional information. Error bars represent cell standard errors. Non-relational attributions did not fully mitigate the impact of forgetting on

either outcome, but did reduce the damage caused by relational explanations of forgetting to importance and, more ambiguously, to closeness.

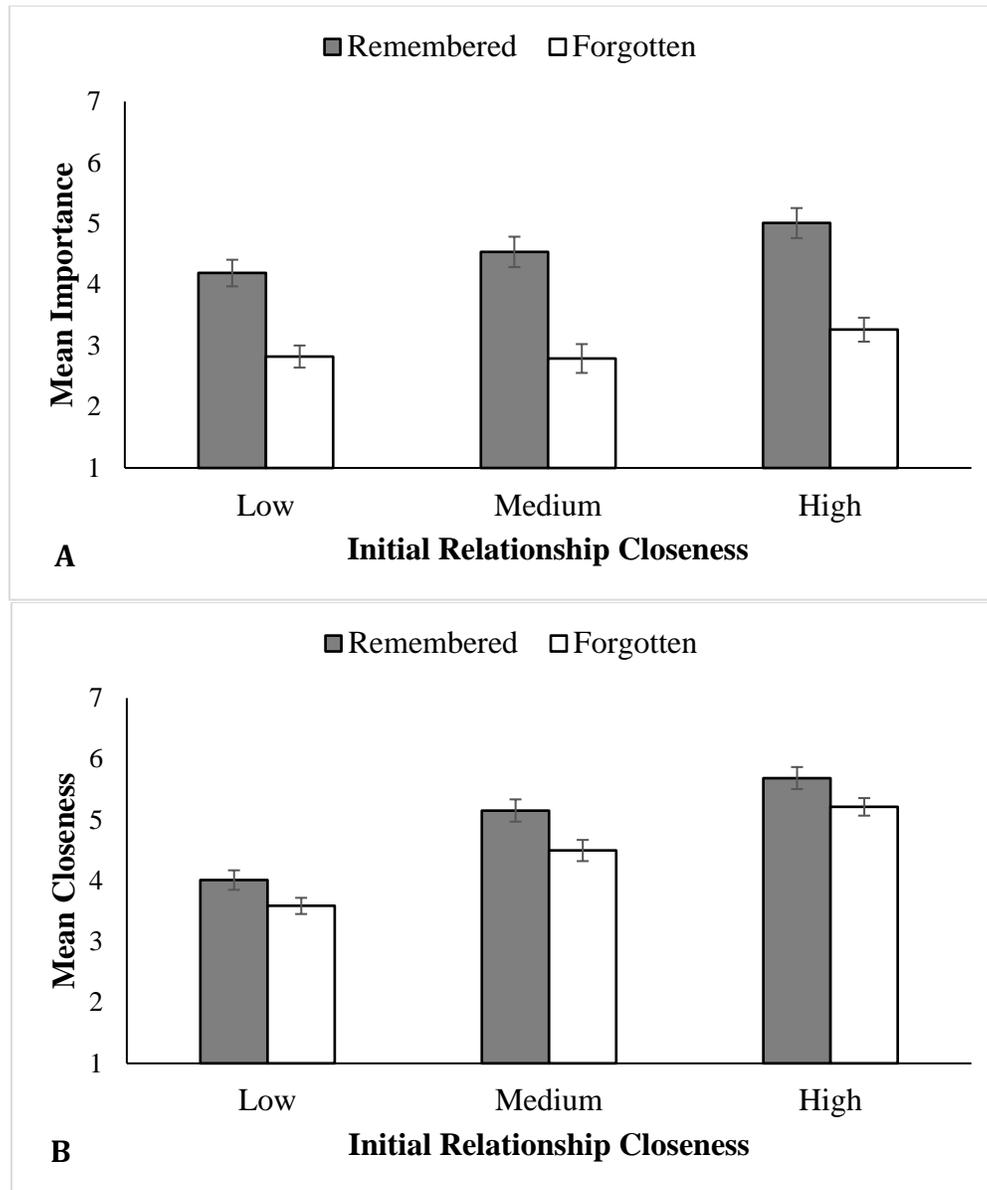


Figure 10. Results of Study 4. Inferred importance of past interaction to communicator (panel A) and communicator’s inferred closeness to target (panel B) after reading a scenario that depicted remembering or forgetting across three levels of relationship closeness. Error bars represent cell standard errors. Evidence of memory led to more inferred importance and closeness than did

evidence of forgetting across different levels of initial relationship closeness. Initial relationship closeness did not moderate outcomes.