Acta Psychologica 144 (2013) 250–257

Contents lists available at ScienceDirect

Acta Psychologica

journal homepage: www.elsevier.com/ locate/actpsy

Induced forgetting and reduced confidence in our personal past? The consequences of selectively retrieving emotional autobiographical memories

Charles B. Stone [a,*], Olivier Luminet [a,b], William Hirst [c]

[a] Psychological Sciences Research Institute, Université catholique de Louvain, Louvain-la-Neuve, Belgium
[b] Fonds National de la Recherche Scientifique (FRS-FNRS), Brussels, Belgium
[c] Psychology Department, New School for Social Research, New York, NY, USA

ARTICLE INFO

Article history:
Received 23 January 2013
Received in revised form 30 May 2013
Accepted 29 June 2013
Available online 7 August 2013

PsycINFO classification:
2340 Cognitive Processes
2343 Learning & Memory

Keywords:
Accessibility
Autobiographical memories
Confidence
Retrieval-induced forgetting
Retrieval fluency

ABSTRACT

People build their sense of self, in part, through their memories of their personal past. What is striking about these personal memories is that, in many instances, they are inaccurate, yet confidently held. Most researchers assume that confidence ratings are based, in large part, on the memory's mnemonic features. That is, the more vivid or detailed the memory, the higher the confidence people have in its accuracy. However, we explore a heretofore underappreciated source on which confidence ratings may be based: the accessibility of memories as a result of selective retrieval. To explore this possibility, we use Anderson, Bjork, and Bjork's retrieval-induced forgetting (RIF) paradigm with emotional (positive and negative) autobiographical memories. We found the standard RIF effect for memory recall across emotional valence. That is, selective retrieval of emotional autobiographical memories induced forgetting of related, but not retrieved emotional autobiographical memories compared to the baseline. More interestingly, we found that the confidence ratings for positive memories mirrored the RIF pattern: decreased confidence for related, unpracticed autobiographical memories relative to the baseline. For negative memories, we found the opposite pattern: increased confidence for both practiced autobiographical memories and related, unpracticed autobiographical memories. We discuss these results in terms of accessibility, the diverging mnemonic consequences of selectively retrieving positive and negative autobiographical memories and personal identity.

1. Introduction

People build their sense of self, in part, through their memories of their personal past. In some instances, these autobiographical memories (AMs) can be accurate, but in a surprisingly number of other instances, they are inaccurate. A substantial body of research has examined when and under which conditions accuracies and inaccuracies occur (see, for reviews, Loftus, 2005; Hirst & Echterhoff, 2012; Skowronski & Walker, 2004).

Less well understood is the confidence people have in the accuracy of their recollections. At times, AMs may be inaccurate, yet still confidently held (Talarico, LaBar, & Rubin, 2004; see also Talarico & Rubin, 2003). In other instances, they may be accurate, but held with much less confidence (Loftus & Pickrell, 1995). We are interested in the conditions governing confidence assignment. Here we define confidence as individuals' belief that their memory is accurate (Rubin, 2006). Critically, confidence is one factor that may guide how AMs shape self-construal (see Loftus & Pickrell, 1995). If people recognized a mnemonic inaccuracy, then they would surely not use the associated memory as a foundation for their self-construal. Alternatively, if they are highly confident in an inaccurate autobiographical memory, they may base their self-construal on a fiction. In other words, the memory representation and confidence in the memory representation represent distinct aspects of remembering (see Brewer, 1996; Fitzgerald & Broadbridge, 2013; Rubin, 2006 for similar distinctions). Moreover, the confidence people have in their memories will affect the degree to which they use their memories when making judgments, for instance, when jurors use their memory of testimony to guide their deliberations (Hirst, Coman, & Stone, 2012).

Here we explore the consequences of selectively remembering AMs on confidence, a topic that has heretofore been neglected. Remembering, in particular, conversational remembering, is usually selective (see Marsh, 2007; Rajaram & Pereira-Pasarin, 2010, for reviews.) To use the vocabulary established by Stone, Coman, Brown, Koppel, and Hirst (2012), when remembering the past, people

* Corresponding author at: Psychological Sciences Research Institute, Université catholique de Louvain, Place du Cardinal Mercier, 10 B-1348 Louvain-la-Neuve, Belgium. Tel.: +32 488695940.
E-mail address: charles.stone@uclouvain.be (C.B. Stone).

0001-6918/$ – see front matter © 2013 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.actpsy.2013.06.019

often are intentionally or unintentionally silent, rarely recalling all that they are capable of remembering.

Clearly, one would expect individuals to be confident in the memories they retrieve or listen to another person retrieve (e.g., Kelley & Lindsay, 1993; but see Roediger, Wixted, & Desoto, 2012, for a discussion of the complexities associated with even this straightforward claim). Our interest is in the confidence that people have in AMs that they previously failed to recollect—that they left silent because of their predisposition to remember selectively. We focused on the confidence people have for recollected, but previously silenced memories, inasmuch as these memories can also guide, for instance, juror's judgments or an individual's identity construction.

People derive their confidence in a memory, in part, from the features that specify the content and quality of the memory (Johnson & Raye, 2000; Rubin, 2006; Rubin, Schrauf, & Greenberg, 2003). Generally, people become more confident in a recollection as it becomes more vivid or detailed, contains more spatio-temporal details, seems more plausible and/or is rehearsed more (Fitzgerald & Broadbridge, 2013; Johnson & Raye, 2000; Mazzoni & Kirsch, 2002; Rubin et al., 2003; Talarico et al., 2004). Principles of metamemory may also come into play. For instance, Scoboria, Lynn, Hessen, and Fisico (2007) informed participants about what might be viewed as a metamemory principle – that childhood memories are often forgotten – as well as the plausibility of various childhood events, such as receiving a bone density screening. They found that both types of information, when combined, affected participants' belief in the occurrence of various childhood events.

Our interest here is in the role of retrieval fluency, i.e., the ease by which a memory is retrieved, as experienced subjectively. Such subjective judgments are powerful indices of confidence (Benjamin & Bjork, 1996; Benjamin, Bjork, & Schwartz, 1998; Schwartz, Benjamin, & Bjork, 1997; Winkielman, Schwarz, & Belli, 1998). Generally speaking, the more easily a memory is accessed, the greater the confidence assigned to the memory. For instance, Costermans, Lories, and Ansay (1992) found a negative relation between response latency and confidence, independent of the accuracy of the response. And Kelley and Lindsay (1993) found that when providing participants with prior exposure to correct and even incorrect answers to general knowledge questions, participants were more likely to be confident in their final answers. Even simply thinking about possible answers may make correct and incorrect answers more accessible and thus lead to higher levels of confidence in recall (Shaw, 1996).

As to confidence ratings assigned to previously unmentioned material, as a burgeoning literature has established, not all unmentioned memories have the same mnemonic trajectories. Work on retrieval-induced forgetting (see Anderson, Bjork, & Bjork, 1994) indicates that people should have more difficulty remembering unmentioned memories when they are related to what is remembered than when they are unrelated. In the original RIF paradigm developed by Anderson et al. (1994), participants studied category–exemplar pairs (e.g., *fruit—apple*, *fruit—orange*, *vegetable—broccoli*, *vegetable—pea*) and then received retrieval practice for half of the items from half of the categories. On a final recall test, participants attempted to recall all of the originally studied exemplars. The experimental design created three types of items: Rp+, practiced items from a practiced category (e.g., *fruit—apple*); Rp−, non-practiced items from a practiced category (e.g., *fruit—orange*); and Nrp, non-practiced items from a non-practiced category (e.g., *all of the vegetables*). RIF occurs when the selective retrieval of items (Rp+) induces forgetting of unpracticed, related items (Rp−) relative to unpracticed, unrelated items (Nrp).

The two most prevalent models of RIF – a strength-dependent competition model (see, for example, Mensink & Raaijmakers, 1988) and an inhibition model (see, for example, Anderson, Bjork, & Bjork, 2000) – both predict that Rp− should not only be more likely to be forgotten, but, also, if not forgotten, less easily retrieved. Consider the widely accepted inhibition model (see Anderson, 2003; Veling & Van Knippenberg, 2004; Wimber et al., 2008). According to this model, practicing Rp+ items produces response competition for related, unretrieved items, the Rp− items. In order to facilitate recall of the Rp+ items, the rememberer suppresses or inhibits the competing responses. Inasmuch as the inhibition lingers, Rp− items are harder to recollect later. This difficulty could lead to a recall failure, but, even in those instances in which recall is still successful, the act of retrieval should still be difficult, in that the inhibition limits the accessibility of the memory (e.g., Anderson, 2003; Anderson & Spellman, 1995; Bajo, Gómez-Ariza, Fernandez, & Marful, 2006; Barnier, Hung, & Conway, 2004; Levy & Anderson, 2002; Stone, 2011).

To the extent, then, that confidence ratings are based on subjective judgments of retrieval fluency, one would expect that, when the items are remembered in the final test, Rp− items should be remembered less confidently than Nrp items. This prediction is particularly relevant to our concerns about confidence ratings and autobiographical memory, inasmuch as RIF has consistently been found for AMs (Barnier et al., 2004; Stone, Barnier, Sutton, & Hirst, in press; Wessel & Hauer, 2006).

The extant literature, however, suggests that the relation between memory accessibility and latter judgments is complex. For instance, Storm, Bjork, and Bjork (2005), while finding an overall RIF effect, failed to find an effect of memory accessibility on likability scores. On the other hand, memory accessibility, as a function of selective retrieval, appears to bias future decisions (Iglesias-Parro & Gómez-Ariza, 2006; see also Coman, Coman, & Hirst, in press) and stereotypic beliefs (Dunn & Spellman, 2003). The only RIF study investigating confidence rating did not show the predicted findings. Odinot, Wolters, and Lavender (2009) examined whether, after watching a mock crime scene, selective retrieval over the course of five weeks would lead to induced forgetting and moderate the extent to which individuals were confident in their recall. They found no RIF effect and only high confidence for the selectively retrieved material. Their failure to find RIF could be traced to the integrative nature of their stimulus material (Garcia-Bajos, Migueles, & Anderson, 2009), the length of time from initial encoding and final recall, and/or the unemotional and personally meaningless of the "to-be-remembered" material. For example, research has shown that RIF occurs as a result of response competition (see, e.g., Anderson et al., 1994). Thus, when the material is a coherent action and/or an integrated text (Carroll, Campbell-Ratcliffe, Murnane, & Perfect, 2007; Garcia-Bajos et al., 2009), the different aspects of the action or story no longer compete for retrieval, but rather, are linked to each other. As a result, retrieval-induced facilitation becomes more likely, retrieval-induced forgetting less likely.

Autobiographical memories are, of course, often emotionally laden. Consequently, in addition to addressing our general claim about the relation between RIF and confidence rating, we explored whether the emotional content of the material would moderate any effect we observed. Although there is still some debate, under the right conditions, RIF is found for both negatively and positively valenced memories (see Barber & Mather, 2012), including AMs (Barnier et al., 2004; Stone et al., in press; Wessel & Hauer, 2006). One might expect, then, an effect of RIF on confidence for emotionally laden memories, regardless of their valence.

However, there is emerging evidence that confidence ratings may be derived differently for positive, neutral and negative stimuli. For instance, although context details are usually thought to guide confidence judgments (Kensinger, Garoff-Eaton, & Schacter, 2007; Bless & Schwarz, 1999; Ochsner, 2000), Rimmele, Davachi, Petrov, Dougal, and Phelps (2011) (see also Rimmele, Davachi, & Phelps, 2012) have argued that people do not appear to use them when making confidence judgments about negative memories. They found that participants were more confident in their negative than their neutral memories, though their memory for contextual detail was worse for their negative than their neutral memories. Retrieval fluency may