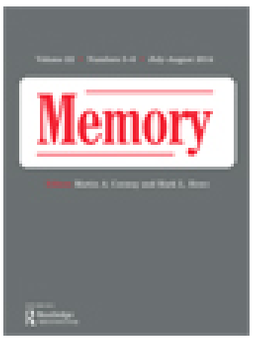

Memory

ISSN: 0965-8211 (Print) 1464-0686 (Online) Journal homepage: http://www.tandfonline.com/loi/pmem20

On the power of autobiographical memories: from threat and challenge appraisals to actual behaviour

Leila Selimbegović, Isabelle Régner, Pascal Huguet & Armand Chatard

To cite this article: Leila Selimbegović, Isabelle Régner, Pascal Huguet & Armand Chatard (2015): On the power of autobiographical memories: from threat and challenge appraisals to actual behaviour, Memory, DOI: 10.1080/09658211.2015.1111908

To link to this article: http://dx.doi.org/10.1080/09658211.2015.1111908

Published online: 12 Nov 2015.

MEMORY, 2015
http://dx.doi.org/10.1080/09658211.2015.1111908

Routledge
Taylor & Francis Group

On the power of autobiographical memories: from threat and challenge appraisals to actual behaviour

Leila Selimbegović[a], Isabelle Régner[b], Pascal Huguet[b] and Armand Chatard[a]

[a]Center for Research on Cognition and Learning (CeRCA), UMR CNRS 7295, University of Poitiers and National Center for Scientific Research (CNRS), Poitiers, France; [b]Laboratory for Cognitive Psychology, UMR CNRS 7290, University of Aix-Marseille and National Center for Scientific Research (CNRS), Marseille, France

ABSTRACT

Autobiographical memories are a major feature of mental life in humans. However, research on the influence of autobiographical recall on actual behaviour is scarce. We predicted and found that general memories of failure and specific memories of success resulted in worse performance than general memories of success and specific memories of failure. This performance pattern was mediated by task appraisal, suggesting that autobiographical memories (of failure and success) impact performance by shaping the perception of the upcoming task. Combined with the fact that these effects occurred even when the content of autobiographical memories was unrelated to the upcoming task, the present research represents an important step forward in understanding how autobiographical recall influences actual behaviour.

ARTICLE HISTORY
Received 27 May 2015
Accepted 20 October 2015

KEYWORDS
Memory; autobiographical recall; threat and challenge appraisal; cognitive performance; mediation

Autobiographical memory is essential to human adaptation: without keeping track of what happened in the past, we would be unable to usefully adjust our behaviour to current circumstances and engage in coherent activity (Conway, Singer, & Tagini, 2004). As an illustration, individuals suffering from amnesia, having no memory of performing an action, often repeatedly engage in the same behaviours. Yet other pathological conditions, such as post-traumatic stress disorder, show how (often involuntary) recall of past experiences can influence the interpretation of the current situation by instigating a sense of threat, which in turn may have a decisive impact on behaviour. Beyond its impact on the present moment, it has been advanced that remembering past events serves the purpose of imagining the future (Schacter, Addis, & Buckner, 2007). Indeed, research corroborates the link between remembering the past and imagining the future (e.g., Schacter & Addis, 2007; Szpunar & McDermott, 2008). In summary, autobiographical memories shape our understanding of the present and expectancies of the future, which is likely to influence the way we behave.

There is a large consensus in the literature on the three main functions of autobiographical memory: identity, directive, and social function (Bluck, 2003; Bluck & Alea, 2002; but see Harris, Rasmussen, & Berntsen, 2014). The *identity function* refers to the role of autobiographical remembering in construing personal identity and the sense of self (Wilson & Ross, 2003). The *directive function* is related to the way we calibrate our behaviour on the basis of previous experience (Pillemer, 2003). Finally, the *social function* is associated with developing and maintaining interpersonal relations (Alea & Bluck, 2003). In the present research, we study the influence of autobiographical recall on behaviour, integrating in our reasoning the directive and the identity functions of autobiographical memory.

Despite the obvious importance of the impact of autobiographical memories on behaviour, only little research has examined this phenomenon. Some findings suggest an influence of autobiographical memories, without directly assessing them. Huguet, Brunot, and Monteil (2001), for instance, have shown that students with a history of failure in math/geometry performed worse than students with a history of success in math/geometry only when the upcoming task was presented as a geometry test. When the same task was presented as a drawing test, the difference disappeared (see also Monteil, Brunot, & Huguet, 1996; Monteil & Huguet, 1993, 1999). Another study relied on an experimental manipulation of autobiographical memory content, and assessed memories' impact on decision-making and actual behavioural choices (Kuwabara & Pillemer, 2010). This study demonstrated that individuals who recalled a positive or a negative memory about their university experience chose to donate money to their university at a higher rate than those who did not recall a memory (this choice was reflected in actual cheques issued to a university-affiliated charity by participants). While the impact of a positive memory seems intuitive, the authors argue that the effect of a negative memory may be due to the recalled

CONTACT Leila Selimbegović leila.selimbegovic@univ-poitiers.fr

negative event standing in contrast with an overall positive experience. Consistent with this interpretation, only specific (but not general) negative memories had a positive effect on donation intention. This distinction between general and specific memories is crucial to our reasoning and will be developed below.

First attempts to test the direct influence of memories on performance can be found in Pezdek and Salim (2011), who showed that recalling a public speaking success event facilitated current public speaking, compared to recalling an irrelevant success memory. Thus, memories of past success can facilitate subsequent performance, at least in a related domain. In addition, two post-task measures of stress indicated higher stress levels in the irrelevant success memory (i.e., control) condition than in the public speaking success memory condition. In other words, recalling past performance affected the appraisal of an upcoming task. However, no mediation analyses were reported in this paper to test whether stress mediated performance.

Going one step further, Selimbegović, Régner, Sanitioso, and Huguet (2011) investigated the impact of general and specific memories of past academic performance on subsequent cognitive performance. Indeed, it is important to distinguish general from specific memories (Brunot & Sanitioso, 2004; Conway et al., 2004; Ford, Addis, & Giovanello, 2011; Gibbs & Rude, 2004; Holland, Addis, & Kensinger, 2011). General memories refer to repeated, similar events, occurring in different timeframes and blending together (e.g., coffee breaks with Alice) on which we focus here, or to extended events that lasted more than one day (e.g., vacation in Italy). Specific memories refer to unique occurrences that lasted up to one day, highly contextualised and detailed (Conway & Pleydell-Pearce, 2000; Conway et al., 2004; Singer & Blagov, 2000–2001). In the framework of the identity function of autobiographical memory, these two types of memories are likely to impact self-perception differently. Because stable characteristics are readily inferred from general memories that summarise repeated events, they have a stronger impact on self-perception than specific memories. In contrast, the latter can easily be accounted for by elements of context, having fewer implications for the self (Klein, Loftus, & Sherman, 1993). Turning now to the directive function of autobiographical memory, Pillemer (2003) underlines the power that a memory of a specific event can have in guiding subsequent behaviour, sometimes throughout life. He specifies, however, that memories of specific episodes are particularly useful in new, relatively unfamiliar situations, while general memories of repeated events are more likely to guide behaviour in routine, familiar circumstances. This distinction between specific and general memories is thus crucial in studying their impact on behaviour.

In line with the general-specific distinction, Selimbegović et al. (2011) predicted and found that general memories of success and specific memories of failure resulted in better performance than general memories of failure and specific memories of success. This performance pattern was found on a standard math test (Study 1) and a standard test of intellectual ability (Study 2). These results are consistent with the idea that general memories of success imply high aptitude more strongly than specific memories. Likewise, general memories of failure seem to imply low aptitude, while specific memories of failure, because they refer to unique occasions, bear less negative implications. Selimbegović et al.'s (2011) findings not only show how powerful autobiographical memories can be in determining one's current performances, and support the distinction between general and specific memories, but also raise several questions.

Of particular interest here, Selimbegović et al. (2011) found that the negative impact of general memories of failure and specific memories of success on performance was mediated by increased fear of failure. However, this mediator cannot explain the positive impact of general memories of success and specific memories of failure on performance. Here, we suggest a more integrative explanation based on the distinction between threat and challenge appraisal. Threat appraisal is likely when situational demands are perceived as surpassing one's coping resources, while challenge appraisal is likely when resources are perceived as surpassing situational demands (Lazarus & Folkman, 1984). Compared to threat appraisals, challenge appraisals induce more positive emotion, more confidence in one's coping abilities, and higher performances (Blascovich, Mendes, Hunter, & Salomon, 1999; Blascovich, Seery, Mugridge, Weisbuch, & Norris, 2004; Blascovich & Tomaka, 1996; Chalabaev, Major, Cury, & Sarrazin, 2009; Skinner & Brewer, 2002). On these grounds, we hypothesise that general memories of success and specific memories of failure increase challenge appraisal and decrease threat appraisal compared to general memories of failure and specific memories of success. Task appraisal, in turn, is predicted to mediate memories' effect on performance. This prediction is consistent with theorizing about both the identity and the directive function of autobiographical memory. To engage in a given behaviour, it is necessary to elaborate a mental construal of the future, which has been shown to heavily depend on remembering previous experience (Schacter et al., 2007). Task appraisals are construals of the future, developed in anticipation of a performance situation. They are based on self-perception of ability and on perception of situational demands, that depend, we argue, on recalled experience. The construct of task appraisal, that integrates the perception of one's capacities with the perception of situational demands, thus appears as quite likely to embody the mediation between memories and performance. At the same time, taking tests is a familiar situation for university students. Therefore, just as general memories have more weight in influencing self-perception, they should also have more weight in perceiving situational demands in such a familiar context.

In Selimbegović et al.'s (2011) research, participants' autobiographical recall impacted their math performance while the memories recalled were not specifically related to math (Study 1). Similarly, memories of "school performance" impacted performance in verbal, spatial, and abstract reasoning (Study 2). These findings suggest that autobiographical memories do not have to be specifically related to the upcoming task to operate. To test this additional hypothesis, participants in the current study were instructed to recall general vs. specific memories of success or failure in scientific disciplines and then performed two tests (counterbalanced), with only one being related to the science domain.

Methods

Participants

Participants were 80 French university students (44 women, 34 men, and 2 gender-unspecified, $M_{age} = 21.73$, $SD_{age} = 2.69$) enrolled at all levels of the curriculum. All volunteered to participate in a study on human memory.

Materials and procedure

Autobiographical recall

Participants were provided informed consent, and were handed a booklet that contained instructions and material for autobiographical recall. They next read that the researchers are particularly interested in memories of past performance in scientific disciplines. They were asked to recall three of their own past performances in this domain. Participants were randomly assigned to one of four experimental conditions. Specificity and generality were orthogonally manipulated by varying the beginnings of three sentences printed on a response sheet (for sentence beginnings, see Appendix). After completing each sentence with their own memories of performance, participants rated each memory on pleasantness (valence) and self-typicality (1 = not at all, 7 = completely).

Intellectual aptitude tests and test appraisal

Participants were then told that the memory study was over, and asked whether they agreed to take part in a supposedly distinct study about intellectual abilities. Upon agreement (all agreed), they were handed a booklet with an introductory page specifying that this additional study was conducted nationwide by the National Center for Scientific Research. Participants actually had to complete two tests (counterbalanced). One was related to the scientific domain in which they previously recalled memories (Mental Rotation Test—MRT, assessing spatial ability), and the other one was unrelated to this domain (Mill-Hill vocabulary test).

Test appraisal (potential mediator)

Participants completed test appraisal scales twice (once for each test), after viewing examples of items for each test, but before taking the tests. Items were taken from Skinner and Brewer's (2002, Study 2) state appraisal scale. Four items tapped threat (e.g., "I am thinking about the consequences of performing poorly") and four tapped challenge appraisal (e.g., "I am looking forward to testing my knowledge, skills, and abilities"). Both challenge and threat appraisal had high reliability in this study for mental rotation ($\alpha_{challenge} = .87$, $\alpha_{threat} = .89$) and for vocabulary test ($\alpha_{challenge} = .90$, $\alpha_{threat} = .92$).

Mental Rotation Test

We used the French version of the Vandenberg and Kuse's (1978) 20-item MRT (Albaret & Aubert, 1996), one of the most commonly used measures of spatial ability. The test was completed under time pressure (6 minutes overall). Each item was composed of one three-dimensional reference figure and four alternative solutions. Participants' task was to indicate which two of the four response-choice figures are rotated reproductions of the target figure, allowing free rotation in three-dimensional space (the two incorrect solutions represented mirror images of the reference figure). Participants were given 2 points if they successfully identified both correct responses, 1 point if they indicated one correct solution (and no incorrect solution), and no point if they indicated one correct and one incorrect solution or two incorrect solutions (scores could range from 0 to 40).[1]

Vocabulary test

To assess performance in the verbal domain, we used the Mill-Hill vocabulary test (Raven, Raven, & Court, 1998, French adaptation by Deltour (1993)) composed of 34 items of increasing difficulty. Each item consisted of one target word and six alternative solutions, only one being correct. Participants had to indicate which of the six solutions is a synonym of the target word. Each correct answer was worth one point. Scores could range from 0 to 34.

Test perception

After completing the tests, participants answered 10 items about test perception. For each test, participants had to indicate to what extent they thought that a high score on that test was related to high performance in scientific disciplines, language/literature, arts, sports, and humanities. The three latter domains served as filler items. Response scales ranged from 1 (not at all) to 7 (completely).

Finally, participants filled out a short demographic questionnaire. They were then debriefed and thanked.

Results

Preliminary analyses

Self-reports on memories

Memory valence (averaged across the three memories, $\alpha = .80$) and perceived self-typicality of memories ($\alpha = .77$) were submitted to a 2 (content: success vs. failure) × 2 (generality: general vs. specific) ANOVA. A main effect of content on memory valence showed that memories of failure were rated as less pleasant ($M = 2.23$, SD = 1.07) than memories of success ($M = 4.83$, SD = .84), $F(1, 76) = 144.65$, $p < .001$, $\eta_p^2 = .66$. Similarly, a main effect of content on typicality judgments showed that success was perceived as being more typical ($M = 3.90$, SD = 1.54) than failure ($M = 3.17$, SD = 1.59), $F(1, 76) = 5.44$, $p < .03$, $\eta_p^2 = .07$, reflecting the well-documented tendency to maintain a positive self-image (Taylor & Brown, 1988). In addition, general memories were rated as more typical ($M = 4.24$, SD = 1.56) than specific memories ($M = 2.83$, SD = 1.31), $F(1, 76) = 20.30$, $p < .001$, $\eta_p^2 = .21$, consistent with the idea that general memories impact self-perception more than specific memories. No other effects were found. Thus, reported memories were consistent with the instructions given to participants.

Test perception

Two one-way ANOVAs were conducted on the perception of MRT and Mill-Hill tests as related to scientific and verbal skills. They showed that the MRT was perceived as more diagnostic of scientific ($M = 5.33$, SD = 1.26) than of verbal skills ($M = 2.71$, SD = 1.19), $F(1, 77) = 161.45$, $p < .001$, $\eta_p^2 = .68$, whereas the Mill-Hill test was perceived as more diagnostic of verbal ($M = 5.73$, SD = 1.10) than of scientific skills ($M = 2.89$, SD = 1.32), $F(1, 77) = 233.11$, $p < .001$, $\eta_p^2 = .75$. These findings supported that each test was perceived as expected.

Main findings

A preliminary analysis including type of test (MRT vs. Mill-Hill) as a repeated measure along with Content and Generality yielded a non-significant three-way interaction.[2] In addition, performance, challenge appraisal, and threat appraisal were significantly correlated for the two tests ($r_{performance} = .45$, $p < .0001$; $r_{challenge} = .90$, $p < .0001$; and $r_{threat} = .85$, $p < .0001$). Therefore, we collapsed the analyses across test type. In what follows, we present the results on averaged scores.

Test performance

A significant effect of Generality showed that performance was better when general rather than specific memories were recalled, $F(1, 74) = 5.46$, $p = .02$, $\eta_p^2 = .07$. Nevertheless, this effect was qualified by the predicted Content by Generality interaction, $F(1, 74) = 11.47$, $p = .001$, $\eta_p^2 = .13$ (Figure 1(a). General memories of success and specific memories of failure resulted in higher performance compared to general memories of failure and specific memories of success (Table 1).

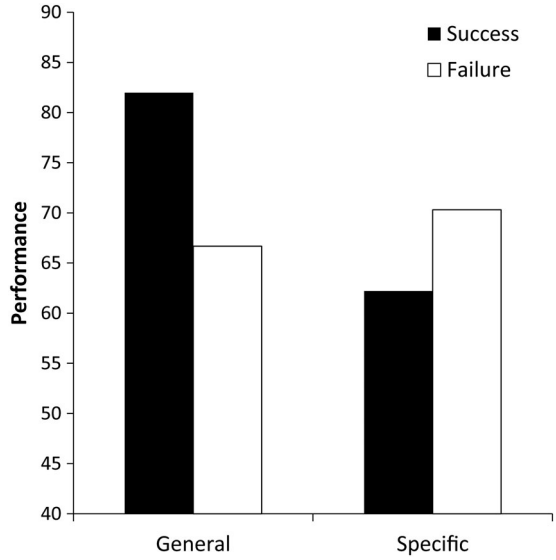

Figure 1. Performance as a function of previously recalled memories' content and generality.

Challenge appraisal

The Content by Generality interaction affected challenge appraisal, $F(1, 74) = 25.36$, $p < .0001$, $\eta_p^2 = .26$. Consistent with results on performance, general memories of success and specific memories of failure increased challenge appraisal compared to general memories of failure and specific memories of success (Table 1). No other effects were found.

Threat appraisal

The content by generality interaction effect also affected threat appraisal, $F(1, 74) = 33.46$, $p < .0001$, $\eta_p^2 = .31$. As expected, general memories of failure and specific memories of success increased threat appraisal compared to general memories of success and specific memories of failure (Table 1). No other effects were found.

Table 1. Descriptive statistics for performance and task appraisal (raw means with standard deviations in parentheses) as a function of performance domain, content and generality of recalled memories.

Memory generality	Success memories *M*(SD)	Failure memories *M*(SD)
Performance		
General memories	81.98 (15.62)	66.68 (13.63)
Specific memories	62.22 (13.37)	70.31 (17.98)
Challenge appraisal		
General memories	4.53 (1.74)	2.60 (1.40)
Specific memories	2.61 (0.95)	3.83 (1.29)
Threat appraisal		
General memories	1.87 (0.52)	3.86 (1.78)
Specific memories	3.75 (1.73)	2.24 (0.84)

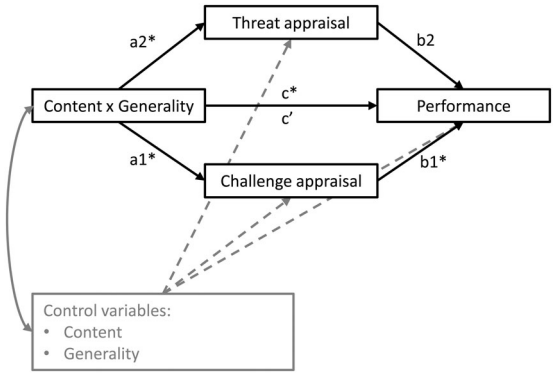

Figure 2. Mediation model (significant paths are marked with an asterisk).

Mediation analysis

Given that the Content by Generality interaction had significant effects on performance, threat appraisal, and challenge appraisal for both tests, bootstrapping mediation analyses were run to test whether task appraisal mediated the effect of memories on performance (Preacher & Hayes, 2008). Categorical variables were recoded as follows. For content, failure was coded −0.50 and success was coded 0.50. For generality, specific memories were coded −0.50 and general memories 0.50. The interaction term was obtained by multiplying these two recoded variables. In the mediation model, the Content by Generality interaction was treated as the independent variable, performance as the dependent variable, and challenge and threat appraisal as the mediators, while Content and Generality main effects were controlled for (Figure 2). This corresponds to a multiply mediated moderation test with two mediators. As noted before, the Content by Generality effect was significant on challenge appraisal (a1 path), on threat appraisal (a2 path), and on performance (c path). However, while challenge appraisal was significantly related to performance (b1 path), threat appraisal was not (b2 path). The direct effect of the interaction on performance through both mediators taken together was significant (i.e., the CI excluded zero), indicating mediation. Individual mediation tests indicated, nevertheless, that only challenge appraisal had a significant direct effect, consistent with the lack of relationship between threat appraisal and performance (Table 2). To resume, while memories impacted both mediators and performance, only challenge appraisal was subsequently related to performance and mediated this effect.

Table 2. Mediation effects of Challenge and Threat appraisal on the relationship between (a) Generality by Content interaction (Interaction) and Performance with main effects of Generality and Content controlled for ($N = 78$).

Regression paths	*B*	*t*	*p*
Mediation *a1* path (Interaction on Challenge appraisal)	3.15	5.04	<.001
Mediation *b1* path (Challenge appraisal on Performance)	4.89	4.22	<.001
Mediation *a2* path (Interaction on Threat appraisal)	−3.50	−5.78	<.001
Mediation *b2* path (Threat appraisal on Performance)	−1.34	−1.12	.27
Total effect, *c* path (Interaction on Performance; No mediator)	23.40	3.39	<.002
Direct effect *c'* (Interaction on Performance including Challenge and Threat appraisal as mediators)	3.29	0.39	.70
Indirect effect through Challenge appraisal: bootstrapped 95% CI[a]	[6.59, 27.95]		
Indirect effect through Threat appraisal: bootstrapped 95% CI[a]	[−2.32, 12.58]		
Indirect effect through Challenge and Threat appraisal: bootstrapped 95% CI[a]	[7.76, 35.96]		

Note. *B* = unstandardised coefficient; CI = confidence interval. Fit for model $R^2 = .36$, Adjusted $R^2 = .32$, $F(5, 72) = 8.26$, $p < .001$.

[a]The effect of the Content by Generality interaction on performance when Threat and/or Challenge appraisal were introduced as mediators. The indirect effect may not be normally distributed thus the CI is derived from bootstrap resample (here 1000). If the CI produced does not include zero then criteria for mediation has been meet (Preacher & Hayes, 2008).

Discussion

Although recalling episodes from one's personal history is quite frequent in everyday life, research on the relationship between autobiographical memory and behaviour is scarce. The present research helps to fill this gap in a number of important ways. First, it replicates preliminary findings (Selimbegović et al., 2011) indicating that autobiographical memories of past performance do not have the same meaning for the self and thus the same impact on performance depending on whether they refer to recurrent events (general memories) or unique occurrences (specific memories). In line with Selimbegović et al. (2011), general memories of success and specific memories of failure both resulted in better performance than general memories of failure and specific memories of success. Given their importance and novelty, the replication of Selimbegović et al. (2011) was necessary, and also consistent with an increasing concern about the replicability of research results in psychological science ("Replicability in Psychological Science", 2012).

Yet, the present results also offer a more complete picture of the mechanisms underlying the impact of autobiographical memories on performance. As expected, general memories of success and specific memories of failure both increased challenge appraisal and decreased threat appraisal, compared to general memories of failure and specific memories of success. This is consistent with our approach suggesting that general memories of success and specific memories of failure lead to perceiving one's resources as surpassing situational demands, whereas general memories of failure as well as specific memories of success lead to perceiving situational demands as surpassing one's coping resources. Furthermore, challenge appraisals mediated the performance pattern, indicating that performance was affected *because* task appraisal was affected previously. This is an important step forward, considering the paucity of research on the relationships between autobiographical

recall and performance. To better understand how autobiographical recall affects task appraisal, future research might seek to disentangle its impact on perceived coping resources on one hand, and on perceived situational demands on the other hand. Meanwhile, it is worth noting that the present results provide insight into one way in which autobiographical memories underlie projection in the future and behaviour: by grounding perception of an upcoming task. These findings are thus consistent with the "prospective brain" perspective (Schacter & Addis, 2007; Schacter et al., 2007; Szpunar & McDermott, 2008), according to which elements of retained experiences are used to construct mental simulations of future events.

The present results are also compatible with theories of autobiographical memory functions. Our hypotheses are consistent with previous work related to the identity and directive functions of autobiographical memory. We relied on the construct of task appraisal as a specific instance of future construals, based on self-perception and the perception of situational demands (Lazarus & Folkman, 1984). While memories' impact on self-perception reflects the identity function, their influence on the perception of situational demands is more closely related to the directive function. The interplay of these two constructs determines threat or challenge appraisals, which mediate memories' influence on performance.

It seems worth noticing that although participants recalled memories exclusively related to scientific disciplines, this recall impacted their performance as well as their threat and challenge appraisals regardless of whether the test at hand was perceived as related or unrelated to these disciplines. This suggests, for example, that conducting students with a failure history in math to recall general memories of success or specific memories of failure in *another* discipline may help them to perceive the math test as challenging (rather than self-threatening) and improve their math performance. Indeed, only challenge appraisal had a significant mediating role. This is apparently contradictory to Selimbegović et al.'s (2011) findings, where fear of failure but not self-efficacy mediated the effect. However, complementary analyses of the present data showed that threat appraisal mediated performance on the mental rotation, but not on the vocabulary test (see Note 2). This may be so because people tend to discount negative self-related information (Taylor & Brown, 1988), which is easier to do when the upcoming test is unrelated to recalled memories.

Our reasoning and our findings suggest that general memories are more impactful for performance than specific memories. Nonetheless, Pezdek and Salim (2011) reported findings showing that a specific memory of public speaking success facilitated performance in a subsequent public speaking situation. However, in their control condition, participants also recalled a specific memory, unrelated to the upcoming performance (i.e., resisting medical/animal-related fear). General memories were not examined in Pezdek and Salim's study, thus our results are not directly comparable to theirs. We do note that a memory relevant to the upcoming performance (public speaking success) impacted performance in comparison to a less relevant memory (resisting medical/animal fear). This aspect of Pezdek and Salim's findings echoes the fact that the present effects were marginally more pronounced on the related (MRT) than on the unrelated (Mill-Hill) test (see Note 2).

Limitations and future research

One potential limitation of the present research is the self-reported nature of the mediating variables (threat and challenge appraisals). Challenge and threat states may be difficult to assess via self-report, and self-reported measures may also be less sensitive, more censored, and overall less reliable for various reasons than physiological indicators (Blascovich, Vanman, Mendes, & Dickerson, 2011; Chalabaev et al., 2009). However, research also indicates that cognitive appraisal as measured by self-reports can reliably predict physiological responses to stress (Tomaka, Blascovich, Kelsey, & Leitten, 1993). Furthermore, it has been shown that self-reported cognitive appraisal is causally antecedent to physiological stress responses, while the reverse could not be established (Tomaka, Blascovich, Kibler, & Ernst, 1997). Cognitive appraisal thus seems to have primacy over physiological stress response, and to be a reliable indicator of the way an upcoming task is experienced.

To get a clearer picture of how task appraisals operate under the influence of autobiographical recall, future research could also investigate the cognitive components of this influence. Today, there is ample evidence that socio-evaluative threats lead to lower performance by consuming executive resources needed to perform complex tasks. Such evidence can be found in research on stereotype threat (Beilock, Rydell, & McConnell, 2007; Mazerolle, Régner, Morisset, Rigalleau, & Huguet, 2012; Régner et al., 2010; Rydell, McConnell, & Beilock, 2009; Schmader & Johns, 2003; Schmader, Johns, & Forbes, 2008), choking under pressure (Beilock & Carr, 2005; Beilock & DeCaro, 2007; Belletier et al., 2015; Gimmig, Huguet, Caverni, & Cury, 2006; Markman, Maddox, & Worthy, 2006), and social presence effects (Baron, 1986; Huguet, Barbet, Belletier, Monteil, & Fagot, 2014). Determining whether challenge appraisals induced by general memories of success and specific memories of failure can have the opposite effect (i.e., facilitate the deployment of cognitive resources) also deserves attention. The present research is one step towards a better understanding of how autobiographical recall can influence behaviour, yet a lot of work remains to be done.

Notes

1. Because the two tests differed in their score range, we computed percentage accuracy scores to have a similar measurement scale.

For mental rotation, the number of attempted items was first multiplied by two, because each problem could bring a maximum of two points. This term represented the maximum score each participant could obtain, taking into account the number of attempted items. The raw score that was actually obtained was then divided by this multiplication term and subsequently multiplied by 100, to obtain a percentage accuracy score. For the Mill-Hill, the raw scores were divided by the number of attempted items and multiplied by 100 to obtain a percentage accuracy score.

2. This interaction was in fact marginal ($p = .086$), suggesting that the impact of memories on performance was stronger on mental rotation than on vocabulary performance. When the two tests are analysed separately, the results on each test mirrored the reported results on the averaged score, with two differences between the tests. First, there was a significant main effect of generality on vocabulary but not on mental rotation performance. Second, mental rotation performance was significantly mediated by both challenge and threat appraisals, while vocabulary performance was mediated only by challenge appraisal.

Acknowledgements

The authors would like to thank Cécile Lièvre for help in data collection.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

Albaret, J.-M., & Aubert, E. (1996). Test de rotation mentale de Vandenberg: Étalonnage 15–19 ans [Vandenberg's mental rotation test: Standardization 15–19 years]. *Evolutions Psychomotrices, 8*, 206–215.

Alea, N., & Bluck, S. (2003). Why are you telling me that? A conceptual model of the social function of autobiographical memory. *Memory, 11*, 165–178. doi:10.1080/741938207

Baron, R. S. (1986). Distraction-conflict theory: Progress and problems. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 1–40). New York, NY: Academic Press. doi:10.1016/S0065-2601(08)60211-7

Beilock, S. L., & Carr, T. H. (2005). When high-powered people fail: Working memory and "choking under pressure" in math. *Psychological Science, 16*, 101–105. doi:10.1111/j.0956-7976.2005.00789.x

Beilock, S. L., & DeCaro, M. S. (2007). From poor performance to success under stress: Working memory, strategy selection, and mathematical problem solving under pressure. *Journal of Experimental Psychology: Learning, Memory, & Cognition, 33*, 983–998. doi:10.1037/0278-7393.33.6.983

Beilock, S. L., Rydell, R. J., & McConnell, A. R. (2007). Stereotype threat and working memory: Mechanisms, alleviation, and spillover. *Journal of Experimental Psychology: General, 136*, 256–276. doi:10.1037/0096-3445.136.2.256

Belletier, C., Davranche, K., Tellier, I., Dumas, F., Hasbroucq, T., Vidal, F., … Huguet, P. (2015). Choking under monitoring pressure: Being watched by the experimenter reduces executive attention. *Psychonomic Bulletin & Review*. doi:10.3758/s13423-015-0804-9

Blascovich, J., Mendes, W. B., Hunter, S. B., & Salomon, K. (1999). Social "facilitation" as challenge and threat. *Journal of Personality and Social Psychology, 77*, 68–77. doi:10.1037//0022-3514.77.1.68

Blascovich, J., Seery, M., Mugridge, C., Weisbuch, M., & Norris, K. (2004). Predicting athletic performance from cardiovascular indexes of challenge and threat. *Journal of Experimental Social Psychology, 40*, 683–688. doi:10.1016/j.jesp.2003.10.007

Blascovich, J., & Tomaka, J. (1996). The biopsychosocial model of arousal regulation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. *28*, pp. 1–51). New York, NY: Academic Press. doi:10.1016/S0065-2601(08)60235-X

Blascovich, J., Vanman, E., Mendes, W. B., & Dickerson, S. S. (2011). *Social psychophysiology for social and personality psychology*. London: Sage.

Bluck, S. (2003). Autobiographical memory: Exploring its functions in everyday life. *Memory, 11*, 113–123. doi:10.1080/741938206

Bluck, S., & Alea, N. (2002). Exploring the functions of autobiographical memory: Why do I remember the autumn? In J. D. Webster & B. K. Haight (Eds.), *Critical advances in reminiscence: From theory to application* (pp. 61–75). New York, NY: Springer.

Brunot, S., & Sanitioso, R. (2004). Motivational influence on the quality of memories: Recall of general autobiographical memories related to desired attributes. *European Journal of Social Psychology, 34*, 627–635. doi:10.1002/ejsp.220

Chalabaev, A., Major, B., Cury, F., & Sarrazin, P. (2009). Physiological markers of challenge and threat mediate the effects of performance-based goals on performance. *Journal of Experimental Social Psychology, 45*, 991–994. doi:10.1016/j.jesp.2009.04.009

Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self memory system. *Psychological Review, 107*, 261–288. doi:10.1037/0033-295X.107.2.261

Conway, M. A., Singer, J. A., & Tagini, A. (2004). The self and autobiographical memory: Correspondence and coherence. *Social Cognition, 22*, 491–529. doi:10.1521/soco.22.5.491.50768

Deltour, J. J. (1993). *Echelle de vocabulaire Mill Hill de J. C. Raven: Adaptation Francaise et normes comparées du Mill Hill et du Standard Progressive Matrices (PM38). Manuel et annexes [J. C. Raven's Mill Hill vocabulary test: French adaptation and standard comparison for Mill Hill and Standard Progressive Matrices (PM 38). Manual and appendices]*. Braine le Chateau: Editions L'Application des Techniques Modernes SPRL.

Ford, J. H., Addis, D. R., & Giovanello, K. S. (2011). Differential neural activity during search of specific and general autobiographical memories elicited by musical cues. *Neuropsychologia, 49*, 2514–2526. doi:10.1016/j.neuropsychologia.2011.04.032

Gibbs, B. R., & Rude, S. S. (2004). Overgeneral autobiographical memory as depression vulnerability. *Cognitive Therapy and Research, 28*, 511–526. doi:10.1023/B:COTR.0000045561.72997.7c

Gimmig, D., Huguet, P., Caverni, J.-P., & Cury, F. (2006). Choking under pressure and working-memory capacity: When performance pressure reduces fluid intelligence. *Psychonomic Bulletin and Review, 13*, 1005–1010. doi:10.3758/BF03213916

Harris, C. B., Rasmussen, A. S., & Berntsen, D. (2014). The functions of autobiographical memory: An integrative approach. *Memory, 22*, 559–581. doi:10.1080/09658211.2013.806555

Holland, A. C., Addis, D. R., Kensinger, E. A. (2011). The neural correlates of specific versus general autobiographical memory construction and elaboration. *Neuropsychologia, 49*, 3164–3177. doi:10.1016/j.neuropsychologia.2011.07.015

Huguet, P., Barbet, I., Belletier, C., Monteil, J.-M., & Fagot, J. (2014). Cognitive control under social influence in baboons. *Journal of Experimental Psychology: General, 143*, 2067–2073. doi:10.1037/xge0000026

Huguet, P., Brunot, S., & Monteil, J. M. (2001). Geometry versus drawing: Changing the meaning of the task as a means to change performance. *Social Psychology of Education, 4*, 219–234. doi:10.1037/xge0000026

Klein, S. B., Loftus, J., & Sherman, J. W. (1993). The role of summary and specific behavioral memories in trait judgments about the self. *Personality and Social Psychology Bulletin, 19*, 305–311. doi:10.1177/0146167293193007

Kuwabara, K. J., & Pillemer, D. B. (2010). Memories of past episodes shape current intentions and decisions. *Memory, 18*, 365–374. doi:10.1080/09658211003670857

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer Publishing.

Markman, A. B., Maddox, W. T., & Worthy, D. A. (2006). Choking and excelling under pressure. *Psychological Science, 17*, 944–948. doi:10.1111/j.1467-9280.2006.01809.x

Mazerolle, M., Régner, I., Morisset, P., Rigalleau, F., & Huguet, P. (2012). Stereotype threat strengthens automatic recall and undermines controlled processes in older adults. *Psychological Science, 23*, 723–727. doi:10.1177/0956797612437607

Monteil, J. M., Brunot, S., & Huguet, P. (1996). Cognitive performance and attention in the classroom: An interaction between past and present academic experiences. *Journal of Educational Psychology, 88*, 242–248. doi:10.1037//0022-0663.88.2.242

Monteil, J. M., & Huguet, P. (1993). The influence of social comparison situations on individual cognitive task performance: Experimental illustrations. *International Journal of Psychology, 28*, 627–643. doi:10.1080/00207599308246948

Monteil, J. M., & Huguet, P. (1999). *Social context and cognitive performance: Towards a social psychology of cognition*. Hove, East Sussex: Psychology Press.

Pezdek, K., & Salim, R. (2011). Physiological, psychological and behavioral consequences of activating autobiographical memories. *Journal of Experimental Social Psychology, 47*, 1214–1218. doi:10.1016/j.jesp.2011.05.004

Pillemer, D. B. (2003). Directive functions of autobiographical memory: The guiding power of the specific episode. *Memory, 11*, 193–202. doi:10.1080/741938208

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879–891. doi:10.3758/BRM.40.3.879

Raven, J., Raven, J. C., & Court, J. H. (1998). *Manual for Raven's progressive matrices and vocabulary scales*. San Antonio, TX: Harcourt Assessment.

Régner, I., Smeding, A., Gimmig, D., Thinus-Blanc, C., Monteil, J.-M., & Huguet, P. (2010). Individual differences in working memory moderate stereotype threat effects. *Psychological Science, 21*, 1646–1648. doi:10.1177/0956797610386619

Replicability in Psychological Science: A Crisis of Confidence?. (2012). *Perspectives on Psychological Science, 7*, 528–530.

Rydell, B. J., McConnell, A. R., & Beilock, S. L. (2009). Multiple social identities and stereotype threat: Imbalance, accessibility, and working memory. *Journal of Personality & Social Psychology, 96*, 949–966. doi:10.1037/a0014846

Schacter, D. L., & Addis, D. R. (2007). The cognitive neuroscience of constructive memory: Remembering the past and imagining the future. *Philosophical Transactions of the Royal Society B: Biological Sciences, 362*, 773–786. doi:10.1098/rstb.2007.2087

Schacter, D. L., Addis, D. R., & Buckner, R. L. (2007). Remembering the past to imagine the future: The prospective brain. *Nature Reviews Neuroscience, 8*, 657–661. doi:10.1038/nrn2213

Schmader, T., & Johns, M. (2003). Converging evidence that stereotype threat reduces working memory capacity. *Journal of Personality and Social Psychology, 85*, 440–452. doi:10.1037/0022-3514.85.3.440

Schmader, T., Johns, M., & Forbes, C. (2008). An integrated process model of stereotype threat effects on performance. *Psychological Review, 115*, 336–356. doi:10.1037/0033-295X.115.2.336

Selimbegović, L., Régner, I., Sanitioso, R. B., & Huguet, P. (2011). Influence of general and specific autobiographical recall on subsequent behavior: The case of cognitive performance. *Journal of Experimental Social Psychology, 47*, 72–78. doi:10.1016/j.jesp.2010.08.011

Singer, J. A., & Blagov, P. S. (2000–2001). *Classification system and scoring manual for self-defining autobiographical memories*. Unpublished manuscript, Connecticut College, New London, CT.

Skinner, N., & Brewer, N. (2002). The dynamics of threat and challenge appraisals prior to a stressful achievement event. *Journal of Personality and Social Psychology, 83*, 678–692. doi:10.1037//0022-3514.83.3.678

Szpunar, K. K., & McDermott, K. B. (2008). Episodic future thought and its relation to remembering: Evidence from ratings of subjective experience. *Consciousness and Cognition, 17*, 330–334. doi:10.1016/j.concog.2007.04.006

Taylor, S. E., & Brown, J. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103*, 193–210. doi:10.1037/0033-2909.103.2.193

Tomaka, J., Blascovich, J., Kelsey, R. M., & Leitten, C. L. (1993). Subjective, physiological, and behavioral effects of threat and challenge appraisal. *Journal of Personality and Social Psychology, 65*, 248–260. doi:10.1037//0022-3514.65.2.248

Tomaka, J., Blascovich, J., Kibler, J., & Ernst, J. M. (1997). Cognitive and physiological antecedents of threat and challenge appraisal. *Journal of Personality and Social Psychology, 73*, 63–72. doi:10.1037//0022-3514.73.1.63

Vandenberg, S. G., & Kuse, A. R. (1978). Mental rotations, a group test of three dimensional spatial visualization. *Perceptual and Motor Skills, 47*, 599–604. doi:10.2466/pms.1978.47.2.599

Wilson, A. E., & Ross, M. (2003). The identity function of autobiographical memory: Time is on our side. *Memory, 11*, 137–149. doi:10.1080/741938210

Appendix

Sentence beginnings used to manipulate content and generality of memories.

Experimental condition	Sentence beginnings
General/success	"In science, I was usually successful in … " "In science, It was never problem for me to … " "In science, I was always very good at … "
General/failure	"In science, I usually failed to … " "In science, it was always a problem for me to … " "In science, I was always very bad at … "
Specific/success	"In science, I once succeeded in … " "In science, I once managed to … " "In science, I remember of the day when I succeeded in … "
Specific/failure	"In science, I once failed in … " "In science, it once happened to me to fail to … " "In science, I remember of the day when I failed in … "