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Emotions experienced at event recall and the self: Implications for the regulation of self-esteem, self-continuity and meaningfulness

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The intensity of positive affect elicited by recall of positive events exceeds the intensity of negative affect elicited by recall of negative events (fading affect bias, or FAB). The research described in the present article examined the relation between the FAB and three regulatory goals of the self: esteem, continuity and meaningfulness. The extent to which an event contributed to esteem (Study 1), continuity (Study 2) or meaningfulness (Study 3) was related to positive affect at event recall provoked by positive memories and to negative affect at event recall provoked by negative memories. The relation between affect experienced at recall and the three regulatory goals was bidirectional. The results showcase how individuals use recall for self-regulatory purposes and how they implement self-regulatory goals for positive affect.

Keywords: Autobiographical memory; Fading affect bias; Self-esteem; Self-continuity; Meaning in life.

Individuals often have affective responses to memories of their personal pasts. One might feel joy when recalling the first meeting with the person who became one's life partner, whereas one might feel sadness when recalling the death of a loved one. However, averaging across recalled events, the intensity of positive affect provoked by recalling positive life events exceeds the intensity of negative affect provoked by recalling negative life events (Cason, 1932; Holmes, 1970). In part, this difference emerges because negative affect usually fades faster than positive affect from event occurrence to event recall, a phenomenon termed the *fading affect bias* (FAB; Ritchie & Batteson, 2013; Walker, Skowronski, & Thompson, 2003; Walker, Vogl, &

Thompson, 1997; for a review, see Skowronski, Walker, Henderson, & Bond, 2014).

Evidence suggests that the FAB cannot be accounted for by mundane theoretical mechanisms and methodological artefacts. For example, dispositional mood (Ritchie, Skowronski, Hartnett, Wells, & Walker, 2009, Study 3) or predictions about affect change over time (Ritchie et al., 2009, Study 4) are unable to explain the FAB. Moreover, confounds between event valence and affect activation level cannot account for the FAB, as it occurs independently of whether recall-prompted affect is classified as weak or highly arousing (Ritchie et al., 2009, Study 2). Further, the FAB cannot be explained by better recall of positive events than negative events, by confounds

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between event valence and extremity of initial affect elicited by events, or by the extent to which participants report thinking about events after they have occurred (Ritchie & Batteson, 2013; Ritchie & Skowronski, 2008; Ritchie et al., 2006; Skowronski, Gibbons, Vogl, & Walker, 2004; Walker, Skowronski, Gibbons, Vogl, & Ritchie, 2009; Walker, Skowronski, Gibbons, Vogl, & Thompson, 2003; Walker, Skowronski, & Thompson, 2003).

Research on the FAB typically controls for intensity of affect at event recall. In most such studies, and across various methods used to solicit life events, the difference in the initial affect intensity of positive events and negative events is small, often non-significant statistically. In comparison, the difference in the affect intensity experienced at recall of positive events and negative events is large (Skowronski, 2011; Skowronski, Walker, et al., 2014; Walker et al., 2009). In the current investigation, we capitalise on this established pattern by focusing on the difference in affect intensity that participants report when they recall positive life events and negative life events. In particular, we examine the reciprocal relation between the FAB and three regulatory goals of the self: esteem, continuity and meaningfulness.

The FAB and the self

The FAB does not occur equally in all individuals. For example, it is observed for individuals who evince little or no dysphoria, but is absent for those evincing the highest levels of dysphoria (Walker, Skowronski, Gibbons, et al., 2003). In addition, the FAB is large for individuals who see themselves as average to above average on dispositional mood pleasantness, but is small for individuals who see themselves as below-average on dispositional mood pleasantness (Ritchie et al., 2009). Similarly, the FAB is large for individuals evincing low dispositional anxiety, but is small for those evincing moderate or high dispositional anxiety (Walker, Yancu, & Skowronski, 2014). The FAB does not occur equally for all events, either. For example, the FAB is smaller for events important to the self than for events unimportant to the self (Ritchie et al., 2006), and for events that are psychologically open than for events that are psychologically closed (Beike & Wirth-Beaumont, 2005; Ritchie et al., 2006).

Such findings implicate the relevance of the self to the FAB: The differential intensity of affective responding to positive memories and negative memories may be related to how one thinks about oneself, and vice versa. Recent research (Ritchie, Skowronski, Cadogan, & Sedikides, 2014) has begun to explore this possibility. The reasoning behind this research was grounded in two notions: (1) most persons are characterised by the proclivity to favour and guard the self (self-enhancement and self-protection, respectively; Alicke & Sedikides, 2009; Sedikides, 2012) and (2) the affect experienced at event recall is partly a reflection of the proclivity to favour and protect the self and the corresponding mechanisms that produce this proclivity (Skowronski, 2011; Walker & Skowronski, 2009). For example, in the service of attaining or sustaining positive affect, individuals may: (1) savour positive (but not negative) events from their personal past (Ritchie et al., 2006); or (2) explain away negative events while engaged in social rehearsal (e.g., conversations), which, over time, will reduce the affect associated with such events at recall (Ritchie et al., 2006).

Ritchie et al. (2014) examined the relation between strength/positivity of the self and the intensity of affective responses to both recalled positive personal memories and recalled negative personal memories. These authors hypothesised a positive relation between strength/positivity of the self and affective responses to positive memories, and an inverse relation between strength/positivity of the self and negative memories. The results were consistent with the hypotheses. Across different ways of assessing strength/positivity of the self and different ways of assessing the FAB (while controlling for intensity of affect experienced at event occurrence), the stronger/more positive the self-concept, the greater the intensity of affect provoked by positive memories and the lower the intensity of affect provoked by negative memories.

Overview

This article expands the Ritchie et al. (2014; see Figure 1) findings by linking regulatory goals of the self (i.e., esteem, continuity and meaningfulness) to both affective responses to positive personal memories and affective responses to negative personal memories (Harris, Rasmussen, & Berntsen, 2014; Pasupathi, 2003). Central to the present research is the notion that esteem, continuity and meaningfulness are linked to
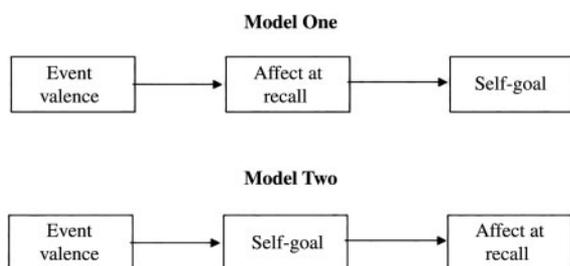
Model One

```
┌──────────┐      ┌──────────┐      ┌──────────┐
│  Event   │ ───▶ │ Affect at│ ───▶ │Self-goal │
│ valence  │      │  recall  │      │          │
└──────────┘      └──────────┘      └──────────┘
```

Model Two

```
┌──────────┐      ┌──────────┐      ┌──────────┐
│  Event   │ ───▶ │Self-goal │ ───▶ │ Affect at│
│ valence  │      │          │      │  recall  │
└──────────┘      └──────────┘      └──────────┘
```

Figure 1. Affect at recall mediates the relation between event valence and self-goals (Model One, upper panel); self-goals mediate the relation between event valence and the affect prompted at event recall (Model Two, lower panel).

events from the personal past, and that recall of such events is linked to these self-regulatory goals. Study 1 focuses on esteem, Study 2 focuses on continuity and Study 3 focuses on meaningfulness. We more fully discuss the potential links among events, the affect prompted by event recall, and each of the three self-regulatory goals in the Introduction to each of the three studies (presented below).

Analytic approach across studies

Many research methods could be used to examine the relation between self-appraisals and affect-appraisals that are each prompted by autobiographical event recall. By using a cross-sectional approach to collect data, as we did in each of the following three studies, we operated under the assumption that, on recalling an autobiographical event, a person could concurrently experience both self-related appraisals and affect-related appraisals. That is, the reconstruction in memory of a past event could involve neural structures distributed throughout the brain that operates in parallel, such as a self-appraisal process (e.g., how thinking about the event makes a person feel about their own current self) operating in tandem with an emotion or affect-appraisal process (i.e., how presently thinking about the event prompts an emotional response). However, it is also possible that the passage of time affects these processes, mediating and/or moderating, the impact that self-appraisals have on affect-appraisals (and vice versa).

Indeed, we appreciate the caution that Maxwell and Cole (2007) expressed, that testing for evidence of statistical mediation via cross-sectional data could be short-sighted and invalid. This caution would be germane if the process in question requires the passage of time for it to occur. The caution is less critical in research that concerns a possible mediation effect for processes that feasibly occur in parallel in the same instance. Thus, we direct the readers' attention to this important analytical issue, because it has implications for many studies of psychological processes. In our case, we used a modern tool that tests for evidence of possible mediation under the assumption that the processes in question could occur instantaneously rather than longitudinally.

We offer two theoretical models that could account for the relation between affect provoked by recall of a personal event and each of the self-regulatory goals. In one model (which we designate as *Model One*), we viewed the affect at recall/self-esteem relation as stemming from event-provoked affect being used as a cue for, and contributing to, a self-regulatory goal. Hence, we examined the extent to which affect provoked at event recall serves as a mediator between event valence and a given self-regulatory goal. In a second model (which we designate as *Model Two*), we consider the idea that the self-regulatory goal could contribute to the affect experienced at event recall. Hence, we examined the extent to which an event-prompted regulatory goal serves as a mediator of the relation between event valence and affect provoked by event recall.

We used the multi-algorithm macro *Process* via IBM SPSS 20 (algorithm #4; Hayes, 2013) to evaluate the two models. The Process macro uses a nonparametric bootstrapping procedure that does not assume that a model's total effects and indirect effects are distributed normally. Each indirect effect that we report specified 1000 bootstrap resamples at a 95% bias-corrected confidence interval (95% CI). This is a significance test, interpreted such that a CI that does not pass through zero is statistically significant (Hayes, 2009).

Our data were multilevel: multiple personal events were nested within each person. Hence, we controlled for variance between participants by including in each analysis a nominal-level person variable. Moreover, given the expected correlation between an event's affect at occurrence and its affect at recall, we included the former as a covariate into each model. As such, the results cannot be accounted for by recourse to either between-subject effects in event selection or the initial intensity of affect provoked by events at their occurrence. Finally, in each study, we evaluated two process models: Model One

and Model Two. In Table 2, for each model, we report the path coefficients and their corresponding statistics, as well as the unstandardised indirect effect estimates.

STUDY 1: AFFECT PROVOKED AT EVENT RECALL AND EVENT-PROMPTED SELF-ESTEEM

Among the most studied aspects of the self is self-esteem: a person's attitude towards, or evaluation of, oneself (Greenwald, Bellezza, & Banaji, 1988; Sedikides & Gregg, 2003). However, although the maintenance or elevation of self-esteem is regarded as one of the key functions of autobiographical memory (Harris et al., 2014), the extent to which thinking about past events is linked to self-esteem in the present is not especially well-researched.

The literature on autobiographical memory and the self provides a basis for such a relation. Self-Memory System theory (Conway & Pleydell-Pearce, 2000) suggests that individuals possess a working self and autobiographical knowledge base (i.e., information stored from personal experience) that, at times, interact with each other. The working self links to autobiographical memory experiences by influencing what is accessed from long-term memory and by directing how such information is related to current self-appraisals. Given that individuals are motivated to enhance and protect the self (Alicke & Sedikides, 2011; Sedikides & Alicke, 2012; Sedikides, Skowronski, & Gaertner, 2004), the memories they recall, and the way they use them, will work towards the establishment of a positive self and the maintenance of a positive self (Sedikides & Green, 2009; Skowronski, 2011; Wilson & Ross, 2003).

One way in which autobiographical memory can contribute to this latter goal is by preserving the intensity of emotions associated with positive outcomes (Walker & Skowronski, 2009). The intensity of an emotion can prompt a person to consider the relative importance of the event that provoked the emotion. Hence, when recall of personal positive events from the past provokes strong positive emotions in the present, individuals will ascribe high self-importance to such events (Ritchie et al., 2014). For example, experiencing a strong sense of pride when recalling an event in which one rescued a potential drowning victim from the water will elevate self-esteem. Thus, the strong positive emotion associated with positive event recall (as evidenced in the FAB)

should raise self-esteem. A similar effect should occur when the intensity of emotions associated with recall of negative personal events is diminished across time. Recall of negative events that do not elicit strong emotions will likely be ascribed low self-importance. Hence, the diminishment of negative emotion (as evidenced in the FAB) should also be associated with higher levels of self-esteem.

These considerations led us to expect that the intensity of emotions experienced at recall of positive life events and negative life events will be related to the events' contribution to self-esteem. This also implies that the relation between event valence and event affect will be mediated by the self-esteem prompted by thinking about events.

This logic, however, does not constitute the sole reason for expecting a relation between self-esteem and the affect prompted by event recall. Although the emotions provoked by recall can raise self-esteem, it may also be the case that self-esteem works to promote the maintenance of emotion for positive events and to diminish emotion for negative events. For example, the mobilisation-minimization hypothesis (Taylor, 1991) posits that individuals experience an initial rapid and strong reaction to aversive stimuli (e.g., events). Over time, though, neural, cognitive and social processes dampen the impact of negativity associated with those aversive events.

These processes should be especially robust among high self-esteem individuals, who should be especially likely to savour positive life events and to connect them to other positive events. Such rehearsals should contribute to the maintenance of event positivity (Ritchie et al., 2006). Similarly, high self-esteem individuals may be especially likely to engage in physical, cognitive and social activities that contribute to the diminishment of negative event-related emotions. Such activities include journaling (Pennebaker, 1997), reframing events to fit positive themes in the life story (e.g., overcoming obstacles; Pasupathi, Weeks, & Rice, 2006) and describing negative events in social contexts that help to eliminate event negativity (Skowronski et al., 2004).

In response to such considerations, Study 1 not only probed for a relation between affect provoked by memories of personal events and the extent to which events were linked to self-esteem, but it also examined two plausible models that predict such a link. In particular, the study tested: (1) a model in which event valence predicted

affect intensity experienced at event recall, which then contributed to the self-esteem implications of an event (Model One); and (2) a model in which event valence predicted the self-esteem implications of an event, which then contributed to the intensity of affect experienced at event recall (Model Two). Given the plausibility of a bidirectional relation between intensity of affect experienced at event recall and the self-esteem implications of events, and consistent with the preliminary investigation on the link between the self and the FAB (Ritchie et al., in press), we expected to obtain support for both models.

Method

Participants

Participants were 81 University of Southampton undergraduate student volunteers (mostly Caucasian; 68 women, 13 men). Their mean age was 19.5 years (SD = 1.72, $range$ = 18–30).

Procedure

Participants acquired a research booklet from a campus commons area. They completed the materials at their own pace in environments of their own choosing and returned the booklet to a secure drop box on campus. Each participant was then sent a web link to the debriefing form and was later awarded course credit.

Booklet instructions specified that participants recall ordinary events from their personal pasts. Instructions also stated that participants complete measures of event-prompted self-esteem, affect at occurrence and affect at recall (in that order).

Materials

Event valence. We assessed valence on a between-subjects basis, such that about half of the research booklets asked participants to recall three positive autobiographical events, and the other half asked participants to recall three negative autobiographical events. Instructions were: "Please recall a negative [or positive] event that occurred at some time in your life that makes you feel unpleasant [or pleasant]".

Event-prompted self-esteem. Participants responded to four items (Cronbach's α = .95) that assessed the extent to which event recall prompted self-esteem, an indication of state self-esteem. These items followed the stem "Thinking about this event …" and were: "makes me feel good about myself", "makes me like myself better", "makes me value myself more" and "makes me feel I have many positive qualities" (1 = *strongly disagree*, 6 = *strongly agree*). This self-esteem scale has been validated by Hepper, Ritchie, Sedikides, and Wildschut (2012), and by Wildschut, Sedikides, Routledge, Arndt, and Cordaro (2010).

Affect at occurrence. Participants rated each event's affect at occurrence by responding to the following item: "When the event happened, how did the event make you feel then?" (1 = *very unpleasant* to 6 = *very pleasant*).

Affect at recall. Participants rated each event's affect at recall by responding to the following item: "When you remember the event now, how does remembering the event make you feel?" (1 = *very unpleasant*, 6 = *very pleasant*).

Results and discussion

Event-instigated affect and self-esteem

Table 1 (top panel) displays the means (SD) and correlations among variables. As anticipated, positive events prompted higher self-esteem than negative events, $F(1, 238)$ = 79.36, p < .0005. In addition, the FAB was replicated. Positive events and negative events evinced similar affective intensity at event occurrence, $F(1, 210)$ = 0.05, p > .80, but positive events maintained their initial affect, whereas negative events evinced fading of affect from event occurrence to event recall, $F(1, 240)$ = 16.47, p < .0005. Correlations among variables also evince the hypothesised relation between affect and self-esteem: the more positive the affect experienced at event recall, the greater the self-esteem prompted by the recalled event.

Model testing

As noted in the study's Introduction, we offered two theoretical models that could account for the relation between affect provoked by recall of a personal event and event-prompted self-esteem. In one model (*Model One*), we viewed the affect at recall/self-esteem relation as stemming from the fact that event-provoked affect is used as a cue for, and contributes to, self-esteem. Hence, we examined the extent to which affect

TABLE 1
Raw means (SE) and correlations across all studies

Study	Variable	Positive event	Negative event	Event valence	Self-esteem
1	*Self-esteem*	4.37 (1.30)	2.22 (1.14)	.66***	–
	Affect at recall[a]	5.31 (0.94)	2.27 (1.09)	.83***	.72***
	Affect at occurrence[a]	5.49 (1.05)	1.49 (1.09)	.88***	.60***
				Valence	*Self-continuity*
2	*Self-continuity*	4.36 (1.21)	3.47 (1.45)	.32***	–
	Affect at recall[b]	4.84 (1.31)	3.59 (1.82)	.37***	.44***
	Affect at occurrence[b]	5.35 (0.87)	4.84 (1.31)	.11	.17**
				Valence	*Meaningfulness*
3	*Meaning*	4.49 (1.35)	3.07 (1.42)	.45***	–
	Affect at recall[b]	5.04 (1.00)	2.93 (1.77)	.57***	.45***
	Affect at occurrence[b]	5.49 (0.73)	4.88 (1.27)	.28***	.28***

Valence coding: *positive events* = 1, *negative events* = 0.
[a]Bipolar affect scale per item, 1 = *very unpleasant* to 6 = *very pleasant*; [b]Unipolar affect scale per item, 1 = *slightly unpleasant*, 6 = *exceptionally unpleasant*.
*$p < .05$; **$p < .005$; ***$p < .0005$.

provoked at event recall serves as a mediator between event valence and event-prompted self-esteem. In a second model (*Model Two*), we argued that self-esteem could contribute to the affect experienced at event recall. Hence, we examined the extent to which event-prompted self-esteem serves as a mediator of the relation between event valence and affect provoked by event recall.

Results appear in the top panel of Table 2. The Model One test showed that self-esteem was a plausible partial mediator of the relation between

event valence and affect at recall, in that the indirect effect was significant (0.50, $p < .05$). The Model Two test showed that affect at recall was a plausible partial mediator of the relation between event valence and self-esteem, in that the indirect effect was also significant (0.91, $p < .05$). In fact, the indirect effect for Model Two was slightly larger than the indirect effect for Model One. Moreover, in Model Two, the indirect self-esteem effect fully mediated the relation between valence and event affect. As expected, these results manifest support for both models, suggesting a

TABLE 2
Path coefficients and indirect effects for the relations between event valence, affect at recall and self-esteem (Study 1), self-continuity (Study 2) and meaningfulness (Study3), controlling for affect at event occurrence

Study	Path	*Model One* b (SE)	t	Indirect effect	*Model Two* b (SE)	t	Indirect effect
1	a	1.59 (.37)	4.32***		1.62 (.27)	5.85***	
	b	0.32 (.04)	6.51***		0.56 (.08)	6.51***	
	c	1.62 (.27)	5.85***		1.59 (.37)	4.42***	
	c′	1.12 (.26)	4.25***	0.50*	0.69 (.31)	1.95	0.91*
2	a	0.84 (.16)	5.14***		1.06 (.17)	6.15***	
	b	0.34 (.06)	5.28***		0.31 (.06)	5.28***	
	c	1.06 (.17)	6.15***		0.84 (.16)	5.14***	
	c′	0.78 (.17)	4.50***	0.29*	0.52 (.17)	3.09**	0.32*
3	a	1.27 (.23)	5.52***		1.70 (.21)	8.08***	
	b	0.17 (.07)	2.38*		0.21 (.08)	2.38*	
	c	1.70 (.21)	8.08***		1.27 (.23)	5.52***	
	c′	1.47 (.22)	6.51***	0.22*	0.91 (.27)	3.39**	0.35*

a = Valence to Mediator; b = Mediator to Outcome; c = Total effect of Valence on Outcome; c′ = Direct effect of Valence on Outcome after Controlling for Mediator. Valence coding: *positive events* = 1, *negative events* = 0.
*$p < .05$; **$p < .005$; ***$p < .0005$.

bidirectional relation between the FAB and self-esteem.

STUDY 2: AFFECT PROVOKED AT EVENT RECALL AND EVENT-PROMPTED SELF-CONTINUITY

In addition to pursuing the goal of enhancing self-esteem, individuals may pursue the regulatory goal of self-continuity. Self-continuity refers to the extent to which a person perceives coherence and connectedness between their past and their present (Bluck, Alea, Habermas, & Rubin, 2005; Conway, Singer, & Tagini, 2004; Sadeh & Karniol, 2012). The perception of continuity requires that one thinks about the self in both the past and the present (Sedikides, Wildschut, Gaertner, Routledge, & Arndt, 2008; Sedikides, Wildschut, Routledge, & Arndt, 2014). For example, reminiscing can reaffirm the stability of a person's sense of self across time and can help to reconcile discrepancies induced by life changes (Chandler & Proulx, 2008; Conway et al., 2004; McAdams, 2001). This dual temporal perspective is consistent with the FAB: both phenomena involve a person reflecting on the past in relation to the present. Indeed, factor analysis results reported by Bluck et al. (2005) indicated that the maintenance of self-continuity was one of the major functions served by remembering events from one's personal past (also see Harris et al., 2014).

The Bluck et al. (2005) findings suggest that the perception of self-continuity is desirable. This suggestion is supported by other empirical findings. For example, self-continuity correlates positively with psychological adjustment such as subjective well-being (McAdams, 2001; Ritchie, Sedikides, Wildschut, Arndt, & Gidron, 2011; Sani, Bowe, & Herrera, 2008) and psychological equanimity (Landau, Greenberg, & Solomon, 2008). Self-continuity also correlates inversely with psychological maladjustment, such as negative affect and anxiety (Lampinen, Odegard, & Neuschatz, 2004) and ineffective coping following life vicissitudes (e.g., job loss; Sadeh & Karniol, 2012).

Might the affect experienced at event recall be related to self-continuity? The literature documents an association (Reid, Green, Wildschut, & Sedikides, 2015; Sedikides et al., 2008, 2014), which might emerge for several reasons. Given that people generally think well of themselves in the present (Sedikides & Gregg, 2003, 2008), a match between the positive evaluation of the current self and positive affect provoked by recall of positive personal events will promote self-continuity. Similarly, the literature documents an association between negative affect and self-discontinuity (Sedikides et al., 2008, 2014). This association also makes conceptual sense. The negative affect provoked by recall of negative personal events will conflict with the positive current self. This mismatch will reduce self-continuity. Collectively, the above reasoning intimates that, regardless of event valence, the more positive (or less negative) the affect provoked by recall of events from the personal past, the greater the self-continuity.

However, as with self-esteem, we recognise that a different mechanism may also account for a relation between event-provoked affect and self-continuity. When a person perceives an event as consistent with the self, various processes might work to maintain or enhance the affect associated with positive events and to diminish the affect associated with negative events.

Note that we do not suggest that past negative events always lack self-continuity value. Not all individuals have a positive self-concept (Ogilvie, 1987), and even those with positive self-concepts may have life intervals during which they felt negatively about themselves (Schwartz, 1986). The negative emotions that are provoked by recall of negative events from the personal past may match these circumstances, leading to increases in self-continuity. However, we argue that these trends will be exceptions to the general rule: People are generally favourable towards themselves (Sedikides & Gregg, 2003, 2008), so that positive (or an absence of negative) emotional reactions to an individual's personal past will prompt comparatively higher self-continuity.

Prompted by these theoretical considerations, we examined the extent to which each of the two plausible, hypothetical causal models depicts our data. In particular, we tested: (1) a model in which event valence predicted affect intensity experienced at event recall, which then contributed to self-continuity; and (2) a model in which event valence predicted self-continuity, which then contributed to affect intensity experienced at event recall. Given the plausibility of a bidirectional association between affect intensity experienced at event recall and self-continuity, and given prior findings (Ritchie et al., 2014; current Study 1), we anticipated the emergence of support for both models.

Method

Participants

Volunteer participants (*N* = 64; mostly Caucasian; 46 women, 15 men, 3 unspecified) included University of Southampton students (*n* = 22), Southampton community adults (*n* = 23) and older adults from a residential nursing home near Southampton (*n* = 19). Mean participant age was 49 years (*SD* = 26.79, *range* = 18–99).

Procedure

Participants independently completed the materials in the form of a booklet, on their own time, in a setting of their choosing, and with no time limit. They returned their booklets to a secure drop box on campus, whereas community adults did so using a postage-paid envelope. Both students and community adults recorded their autobiographical events in writing. As part of a semi-structured interview conducted by a research assistant within the assisted living facility, assisted living adults had their autobiographical events recorded on a digital voice recorder, with no time limit and with breaks as needed. Participants were debriefed verbally or via email.

Materials

Participants completed measures of event valence, event-prompted self-continuity, affect at occurrence and affect at recall (in that order).

Event valence. Participants recalled and described two positive events and two negative events ("an event that you felt positively (negatively) about at that time"). One of each was from 5 years ago and one of each from 10 years ago. The order in which this valence manipulation occurred was counterbalanced: half of participants recalled positive events first and half recalled negative events first.

Event-prompted self-continuity. Participants responded to three items (Cronbach's *α* = .83) assessing the extent to which event recall prompted self-continuity: the average of the responses to the three items was the measure of self-continuity (for validation information, see Sedikides et al., 2014). These items followed the stem "Thinking about this event makes me feel …" and were: "connected with who I was in the past", "that there is continuity in my life" and "like important aspects of my personality remain

the same over time" (1= *strongly disagree,* 6 = *strongly agree*).

Affect at occurrence. Participants rated each event's affect at occurrence by responding to the following item: "When it happened, how did the event make you feel?". For negative items, the response scale was: 1 = *slightly unpleasant*, 6 = *exceptionally unpleasant*. For positive items the response scale was: 1 = *slightly pleasant*, 6 = *exceptionally pleasant*.

Affect at recall. Using the same response scales as for the affect at occurrence item, participants rated each event's affect at recall by responding to the following item: "When you remember the event now, how does remembering the event make you feel?"

Results and discussion

Event-instigated affect and self-continuity

Table 1 (middle panel) displays means (*SD*) and correlations among variables. As anticipated, positive events prompted more self-continuity than negative events, $F(1, 245) = 27.46$, $p < .0005$. Once again, the FAB was replicated: The positive recalled events and negative recalled events evinced a smaller affective intensity difference at event occurrence, $F(1, 247) = 2.94$, $p > .08$, than at event recall, $F(1, 247) = 39.19$, $p < .0005$. Clearly, the difference in affect intensity at event recall was mostly due to the greater fading of affect for negative events than for positive events. Correlations among variables also document the hypothesised positive relation between affect and self-continuity: The more positive (or less negative) the affect experienced at recall, the greater the self-continuity prompted by the recalled event.

Model testing

We proposed two theoretical models purported to account for the relation between affect and self-continuity. In Model One, we viewed this relation as stemming from the fact that event-provoked affect is used as a cue for, and contributor to, self-continuity. Here, we examined the extent to which affect experienced at event recall mediates the relation between event valence and self-continuity. In Model Two, we claimed that self-continuity could contribute to affect provoked at event recall.

Here, we examined the extent to which self-continuity mediates the relation between event valence and the affect experienced at event recall. Due to the correlation between an event's affect at occurrence and affect at recall, we included the former as a covariate in each model. Our results, then, cannot be accounted for by recourse to the initial intensity of affect provoked by events at their occurrence.

A results summary (produced by the same bootstrapping technique used in Study 1) appears in the middle panel of Table 2. The Model One test revealed that self-continuity was a plausible partial mediator of the relation between event valence and affect at recall: the indirect effect was significant (0.29, $p < .05$). The Model Two test revealed that affect at recall was a plausible partial mediator of the relation between event valence and self-continuity: the indirect effect was also significant (0.32, $p < .05$). Furthermore, Model Two's indirect effect was slightly larger than Model One's. Thus, Study 2 conceptually replicated and extended a similar pattern of results from Study 1: The results are consistent with both models, suggesting a bidirectional relation between the FAB and self-continuity.

STUDY 3: AFFECT PROVOKED BY EVENT RECALL AND EVENT-PROMPTED MEANINGFULNESS

Our final study examined both models in a third self-regulatory context. In addition to the self-regulatory goals to feel good about one's self and to preserve self-continuity across time, a third key regulatory goal involves deriving meaning in life (Hicks & Routledge, 2013; Markman, Proulx, & Lindberg, 2013). Individuals desire to perceive their life as purposeful and significant. The desirability of this goal is reflected in the extent to which perceptions of meaningfulness are related to other psychological constructs. For example, meaningfulness predicts both psychological well-being and physical well-being (Reker, Peacock, & Wong, 1987; Ritchie et al., 2011). Moreover, a lack of meaningfulness has been suggested as one root of psychopathology (Reker, 2000), a primary source of depression (Phillips, 1980) and anxiety (Ruffin, 1984) and a source of general unhappiness (Shek, 1992).

The maintenance or promotion of meaning is regarded an essential function of autobiographical memory (Harris et al., 2014). Recall of negative events from one's personal past may prompt perceptions of meaningfulness in the present. For example, reflecting on a past accident or a loss can restore or imbue a sense of purpose to life in the present (e.g., "I lost my spouse to cancer and have made it my mission to eradicate the disease."). However, as with self-esteem and self-continuity, it is more likely that, on average, individuals will derive meaningfulness by thinking mostly about positive events from their personal pasts (e.g., "I worked like a dog to get my grad student through graduate school, and look at the contribution she's made to the field!"). Indeed, we maintain that meaningfulness can sometimes occur by thinking about relatively ordinary, everyday personal life events. While not all pleasant memories will provoke a sense of meaning, some do. We think that positive autobiographical memories might act as a vast store of information, to be incorporated into a person's current conceptualisation of their own self, current goals, and sometimes to generate meaning in the present.

The affect provoked at event recall may play a role in perceived meaningfulness. The experience of positive affect can serve as a signal that one has made correct choices and has engaged in effective action (Forgas, Bower, & Moylan, 1990; Fredrickson, 2001; Trope, Ferguson, & Ragunanthan, 2001), which will facilitate the appraisal that one's life has meaning. Thus, the more strongly positive affect is maintained from event occurrence to event recall, as is evidenced in the FAB, the more meaning one will perceive in life. In comparison, the experience of negative affect at recall may cause a person to doubt their own choices and actions, which could lower perceived meaning in life. Thus, a diminishment of negative affect associated with recall of negative events, as is evidenced in the FAB, will reduce the tendency to challenge meaningfulness.

However, an alternative process is equally plausible. The tendency to perceive meaning in life could promote the retention of affect in recalled positive events and foster the diminishment of affect from recalled negative events.

Thus, we were concerned with two hypothetical causal models: (1) a model in which event valence predicted affect intensity experienced at event recall, which subsequently contributed to meaningfulness; and (2) a model in which event valence predicted meaningfulness, which then contributed to affect intensity experienced at event recall. Given the plausibility of a bidirectional relation between affect intensity experienced at event recall and meaningfulness, and

given prior findings (Ritchie et al., 2014; current Studies 1 and 2), we expected that the data would support both models.

Method

Participants

Volunteers (N = 39; 29 women, 10 men, mostly Caucasians) included University of Southampton students (n = 21) and Southampton community members (n = 18). Their mean age was 33.62 years (SD = 16.27, $range$ = 18–75).

Procedure

Completion and return of materials, as well as the debriefing, were identical to Study 2. Participants completed measures of event valence, affect at occurrence, affect at recall and event-prompted meaningfulness (in that order).

Materials

Event valence. The event valence measure duplicated the one used in Study 2.

Event-provoked meaningfulness. Participants responded to three items (averaged into an index: Cronbach's α = .95) assessing the extent to which event recall prompted meaningfulness (for validation information, see Routledge et al., 2011). Each item followed the stem "Thinking about this event makes me feel life …" and were: "is meaningful", "has a purpose" and "is worth living" (1 = *strongly disagree* to 6 = *strongly agree*).

Affect at occurrence. The affect at occurrence measure duplicated the one used in Study 2.

Affect at recall. The affect at recall measure duplicated the one used in Study 2.

Results and discussion

Event-instigated affect and meaningfulness

Table 1 (bottom panel) displays means (SD) and correlations among variables. As anticipated, positive events prompted higher perceived meaningfulness than negative events, $F(1, 154) = 40.09$, $p < .0005$. Moreover, as previously, we obtained the FAB: The positive recalled events and negative recalled events evinced smaller affective

intensity differences at event occurrence, $F(1, 154) = 12.65$, $p < .0005$, than at event recall, $F(1, 154) = 80.68$, $p < .0005$. Again, the difference in affective intensity observed at event recall was mostly due to the greater fading of affect for negative (than positive) events. The correlations among variables also show the hypothesised positive relation between affect and meaningfulness: The more positive (or less negative) the affect experienced at recall, the greater the meaningfulness of the event.

Model testing

We posited two theoretical models to account for the relation between affect provoked by event recall and event-elicited meaningfulness. In Model One, we viewed the affect/meaningfulness relation as stemming from the fact that event-provoked affect is implemented as a cue for, and contributor to, meaningfulness. Therefore, we examined the extent to which affect provoked at event recall mediates the relation between event valence and event meaningfulness. In Model Two, we theorised that the meaningfulness of an event could contribute to the affect experienced at event recall. Therefore, we examined the extent to which meaningfulness mediates the relation between event valence and the affect provoked by event recall.

As in prior studies, we controlled for variance between participants by including in the analyses a nominal-level person variable (i.e., the data were again clustered, with multiple events nested within each person). Moreover, due to the correlation between an event's affect at occurrence and affect at recall, we included the former as a covariate in each model. Thus, as before, the results cannot be accounted for by recourse to either between-subject effects due to even selection biases or to the initial intensity of affect provoked by events at their occurrence.

We provide in the bottom panel of Table 2 a summary of results from model-testing, using the same bootstrapping technique as in Studies 1 and 2. The Model One test indicated perceived meaningfulness as a plausible partial mediator of the relation between event valence and affect at recall; the indirect effect was significant (0.22, $p < .05$). The Model Two test indicated affect at recall as a plausible partial mediator of the relation between event valence and perceived meaningfulness; the indirect effect was also significant (0.35, $p < .05$). Indeed, as in the first two

studies, the Model Two indirect effect was slightly larger than the Model One indirect effect. More importantly, as anticipated, the results are consistent with both models, suggesting a bidirectional relation between affect provoked by event recall and event meaningfulness.

GENERAL DISCUSSION

Summary and relevance of results

According to the FAB, affect associated with positive events generally persists when those events are later recalled, but affect associated with negative events dissipates comparatively quickly (Ritchie & Batteson, 2013; Skowronski, Walker, et al., 2014; Walker & Skowronski, 2009). Research that has been conducted has looked at whether the FAB varies by event characteristics, such as event typicality, the extent to which an event is psychologically open or psychologically closed and the kinds of emotions prompted by events. Extant research has also examined the extent to various individual differences, such as depression and dispositional anxiety, potentially moderate the FAB (see Skowronski et al., 2004, for a review).

One other line of research has suggested a relation between the self and the FAB (Ritchie et al., 2006): The stronger/more positive the self, the greater the intensity of affect provoked by positive memories of personal pasts and the lower the intensity of affect provoked by negative memories of personal pasts (Ritchie et al., 2014). The present article conceptually advances and empirically advances the preliminary findings reported by Ritchie et al. (2014). The article connects three regulatory goals of the self (i.e., esteem, continuity and meaningfulness) to the affect prompted by positive memories of the personal past and to the affect prompted by negative memories of the personal past. High levels of esteem, continuity and meaningfulness were associated with high positive affect at event recall provoked by positive memories, and were associated with low negative affect at event recall provoked by negative memories.

However, our investigation went beyond simply establishing an association between event-provoked affect and regulatory goals of the self. Our work probed the possible causes of such an association. Specifically, we tested two theoretical models (Ritchie et al., 2014; Skowronski, 2011). The first model states that individuals can use recalled events to regulate the self. Individuals use the affect provoked by event recall as a clue to an event's self-importance, so that: (1) events that provoke positive affect at recall promote esteem, continuity and meaningfulness; whereas (2) events that provoke negative affect at recall detract from esteem, continuity and meaningfulness. The second model states that the regulatory goals of the self work to maintain and elevate positive emotions provoked by positive event memories and to reduce negative emotions provoked by negative event memories. As we anticipated, the results of mediational analyses were consistent with both models, suggesting a bidirectional relation between affect provoked at recall and the self-relevant characteristics of recalled events.

Methodological issues

A methodological issue concerns the degree to which our results were due to biases in participant sampling, event sampling or measurement. Given the observational nature of the data, such alternatives cannot be ruled out. However, the growing FAB literature suggests that these alternatives are not particularly plausible. Researchers have deliberately used a multi-method approach to ensure that FAB-supportive results occurred across samples and methods (Ritchie & Batteson, 2013; Ritchie et al., 2006, 2014). These research efforts have attested to the robustness of the FAB (Landau & Gunter, 2009; Ritchie et al., 2009; Skowronski, Walker, et al., 2014). The few exceptions (e.g., individual differences of dysphoria and anxiety, event-related properties of psychological closure) have enriched rather than challenged the scope of FAB.

However, methodological concerns remain. For example, we measured all regulatory goals (esteem, continuity, meaningfulness) at the same time that we assessed the affect prompted by event recall. A multi-method approach, in which these cross-sectional findings were checked or replicated by longitudinal designs (with esteem, continuity and meaningfulness being measured at a temporal distance from event recall), could increase both the internal validity and the external validity of our findings.

However, it should be noted that many studies in the FAB research programme have used many different variations in event collection and event rating methodology, and the FAB has almost

always been proven to be unaffected by such methodological variations (for a comprehensive review of this point, see Skowronski, Walker, et al., 2014). For example, the studies conducted by Ritchie et al. (2014) that linked the FAB to the self used diary methodologies (instead of the retrospective recall method used in the three studies reported in the present article), and they also obtained support for a reciprocal relation between the self and the FAB. Similar inelasticity was shown by Landau and Gunter (2009), who instead of using the within-subjects approach to data collection employed in the present article, used a between-subjects design in which participants recalled positive event memories and negative event memories and made either ratings of initial affect or current affect. Despite the use of the between-subjects design, the data were entirely consistent with prior FAB findings. Landau and Gunter's (2009) article also reported results from a study showing that the FAB emerged in within-subjects designs, regardless of whether people were asked to rate initial affect before rating affect at recall, or whether they made these ratings in the reverse order (i.e., affect at recall first). We encourage the use of such methodological variations across studies; they minimise the possibility that the FAB is an artefact, a consequence of a specific set of methods used to explore the FAB.

Another method-related issue has to do with the difficulty in causally interpreting results involving the self–FAB relation, given the observational methods involved. The results of our model tests can provide information about the causal processes that are more or less plausible, but they do not indicate that causality actually exists. Thus, while our results suggest that both of the causal models that we explored remain plausible, compelling proof of causality will only come from results produced by experimental methods.

Implications

Indeed, experimental work will do well to examine the idea that divergent selves lead to differences in the affect provoked by event recall. Such work may rely on the notions that the self entails a degree of temporal instability (Markus & Wurf, 1987), that the working self can be altered by experimental manipulation (Wallace & Tice, 2012), and that such a manipulation can have consequences on the affect reported at assessed

memory (Skowronski, Sedikides, Xie, & Zhou, 2015). For example, imagine an experiment in which a participant reports a positive memory (e.g., met my first love in 8th grade). Then imagine a manipulation that either increases the level of self-esteem associated with the working self or decreases the level of self-esteem associated with the working self. Finally, imagine that the person is cued to recall the memory that they reported. A person with temporarily high self-esteem might feel especially positive when recalling the memory (O', the sweetness of young love!), whereas a person with temporarily low self-esteem may not do so (O', what a missed opportunity!).

How does such research fit into the broader literature on the relation between memory and the self? We suggest that existing research has focused on two threads. First, the self has been linked to *selectivity* in memory. An example comes from the literature on mnemic neglect (Sedikides & Green, 2009). Individuals have trouble remembering negative behaviours that have implications for important personal traits, but only when they think of themselves as the actor in the behaviours; when another person is the actor, the memory impairment for the negative behaviours does not occur. Second, the self has been linked to *distortion* in memory. An example is research by Bahrick, Hall, and Berger (1996). College students who were asked to report their high school grades tended to misrecall their grades by overestimating the grades that were present on their transcripts. Similar findings were reported by Gramzow and Willard (2006). Such ideas are relevant to the maintenance of self-continuity in memory across time. We hope that our findings on the relation between self-continuity and autobiographical event-prompted affect contribute to the growing interest in memory selectivity, that is, how and why individuals distort their memory of past events in the present.

Our research, which examines how people are induced *to feel* when they recall events from the personal past, adds a third important thread to this literature. Our results are linked by the same common themes of self-promotion in self-regulation (e.g., the selective use of memory to promote the self) and the propensity of the self to direct information processing to influence perceptions of the personal past (via selectivity, distortion and emotion). In all, it is the stories that individuals share with others that contribute to a sense of coherence and meaning. The rehearsal of past

events privately, unshared with others, also contributes to how a person thinks about their self in the present, ultimately crafting a narrative of meaning.

Coda

The research reported in the present article examined the link between the self and the FAB. The research related three regulatory goals of the self (i.e., esteem, continuity, meaningfulness) to the affective responses prompted by memories of personal past events. The extent to which events facilitated each regulatory goal was positively associated with positive affect provoked by positive memories and was negatively associated with negative affect prompted by negative memories. The findings open interesting empirical avenues on the potential causal relations between affective responses to personal events and regulatory goals.

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DISCLOSURE STATEMENT

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