Romantic Relationships and Fading of Affect for Memories of the Shared Past

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Abstract

The tendency for the affect associated with positive autobiographical events to fade less over time than the affect associated with negative autobiographical events (the ***fading affect bias***, FAB) has been observed in a variety of contexts, but numerous mediators have been reported. This current study searches for the FAB, and for potential moderators of the FAB, in the context of romantic relationship memories. Both non-sexual types of memories and sexual types of memories showed the FAB. Moreover, the FAB emerged for memories of current relationships, but not for memories of past failed relationships. The FAB also emerged for securely attached individuals, but not for individuals exhibiting other attachment styles. In addition, the FAB was moderated by relationship quality, (for failed relationships) need to belong, sexual esteem and sexual depression. Implications of these findings both for memory and for relationships are discussed.

*Keywords:* fading affect bias, autobiographical memory, emotion, romantic relationship**Romantic Relationships and Fading of Affect for Memories of the Shared Past**

He was still too young to know that the heart’s memory eliminates the bad and magnifies the good and that thanks to this artifice we manage to endure the burden of the past.

*- Gabriel Garcia Marquez*

Romantic relationships often take center stage in an individual’s life. This central role has implications for one’s general well-being and is supported by the strong association between relationship health and physiological and psychological health (Kiecolt-Glaser & Newton, 2001; Proulx, Helms, & Buehler, 2007; Umberson & Montez, 2010). Given that romantic events are often charged with affect, it follows that memories of these romantic events may similarly be affectively charged. These memories and the affective responses that accompany them may have important consequences. For example, taking romantic rejection personally and failing to “get past” rejection might prompt low self-esteem, even depression (Williams & Riskind, 2004). Moreover, the health of existing romantic relationships may depend on the extent to which people retain a sense of positivity when remembering positive interactions with their current romantic partner, while at the same time allowing the negativity of the hard times to dissipate. Some have suggested that the promotion of positive emotions can serve as a brief intervention to aid the maintenance of long-distant relationships (Borelli, Rasmussen, Burkhart, & Sbarra, 2015).

However, it may be premature to address consequences of affective responses to memories of romantic relationship events without first knowing what those responses are. To our knowledge, there has been little systematic exploration of the affective responses that accompany memories of romantic relationship events. Research that explores the ***fading affect bias*** (FAB; for a review, see Skowronski, Walker, Henderson, & Bond, 2014) can serve as a jumping-off point for such an exploration. The FAB is the finding that positive events tend to retain more of their affect across the time from event occurrence to event recall than negative events.

Existing research and theory lead us to expect that romantic relationship event memories will generally evince a FAB, but that this tendency may be moderated by characteristics of: (a) the individuals recalling the events, (b) the events remembered, and (c) the romantic relationships. The rationales for these expectations will become clear in the sections that follow. The first section describes the FAB. The second section describes research on autobiographical memories in the context of personal relationships, with an eye toward those relationship-linked variables that are important to relationship memories. The third section uses these reviews to forge linkages between existing relationship memory research and the FAB.

**The Fading Affect Bias**

Researchers have long explored how affect is related to the content of recall (see Skowronski, 2011). However, a lesser-pursued aspect of the affect-memory relation concerns the affect that accompanies event recall. Results from such research (for early examples, see Cason, 1932, Holmes, 1970) reveal the Fading Affect Bias: Positive events tend to retain more of their affect across the time from event occurrence to event recall than negative events. This effect seems to be fairly general and stable, even reliably emerging across cultures (Ritchie et al., 2014a).

Some argue that the FAB helps people recover from the negativity of life events while allowing them to savor their positive life elements (Walker & Skowronski, 2009; Walker, Skowronski, & Thompson, 2003b). This reasoning fits with the temporal characteristics of the FAB. It emerges after a relatively short time between event occurrence and recall and tends to increase with increasing time (Gibbons, Lee, & Walker, 2011; Walker, Vogl, & Thompson, 1997).

The reasoning also fits with observations indicating that the FAB is not equally evinced for all people and for all events. The FAB is diminished in individuals exhibiting dysphoria (Walker, Skowronski, Gibbons, Vogl, & Thompson, 2003a), dispositional negative mood (Ritchie, Skowronski, Harnett, Wells, & Walker, 2009), and trait anxiety (Walker, Yancu, & Skowronski, 2014). The FAB also varies across various properties of events, such as: (a) event age (Gibbons, et al., 2011; Ritchie, et al., 2006; Walker et al., 1997), (b) whether an event is typical or atypical (Ritchie et al. 2006); (c) event self-importance (Ritchie et al. 2006; Ritchie, Skowronski, Cadogan, & Sedikides, 2014b), (d) whether events are psychologically open (e.g., are relevant to the current self) or are psychologically closed (e.g., are not seen as relevant to the current self; Beike & Crone, 2008; Beike & Wirth-Beaumont, 2005; Ritchie et al., 2006), and (e) the vividness with which a memory is recalled (Lindeman, Zengel, & Skowronski, 2017; Ritchie & Batteson, 2013).

 Indeed, moderation of the FAB also extends to certain combinations of individuals and event characteristics. For example, in one study, the FAB was muted in people who engaged in negative religious coping for death-related events (Gibbons et al., 2016). Results from another study showed that the FAB was small for low alcohol consumers recalling alcohol related events (Gibbons et al., 2013). Results from yet another study showed that the FAB was muted for narcissists who remembered communal events (Ritchie, Walker, Marsh, Hart, & Skowronski, 2014c). Finally, while the FAB enlarges as the frequency with which one discloses events to others increases (Ritchie et al., 2006; Skowronski, Gibbons, Vogl, & Walker, 2004), results from one study showed that this relation was weakened when an informant interacted with disengaged listeners (Muir, Brown, & Madill, 2014).

**Autobiographical Memories and Romantic Relationships**

Romantic relationships are often sweet, but they are not solely made from gingerbread and honey. Couples will have conflict, and marital strain is associated with reduced physiological functioning (Kiecolt-Glaser & Newton, 2001; Umberson, Williams, Powers, Liu, & Needham, 2006). Research results suggest that negative memories may be linked to the relationship dynamic. For example, when partners have high trust in their relationship partner, they tend to remember transgressions in the past as less severe compared to those with lower trust (Luchies et al., 2013).

 Other research has similarly linked memory content to relationship satisfaction and commitment (e.g., Baxter & Pittman, 2001).  For example, in one study, when couples were asked to separately report significant couple-related events, and to rate their own memories and the memories reported by their partner regarding the satisfaction of the needs for autonomy, competence, and relatedness (Philippe, Koestner, & Lekes, 2013), connections to relationship commitment emerged. In a related study (Guilbault & Philippe, 2017), each partner of a couple reported a significant couple-related memory and rated their level of need satisfaction linked to the event. Each partner was then shown his/her partner's memory and rated his/her own level of need satisfaction for this event. Among the results that emerged was the finding that women’s’ need satisfaction ratings of their own memories positively predicted their commitment to the relationship.

**Linking Memories of Romantic Relationships to the FAB**

One can extrapolate from these existing findings to consider affective responses to romantic relationship-linked event memories (i.e., the FAB). Results from at least one study document the plausibility of this linkage. When people recalled specific autobiographical events related to romantic relationships (compared to those who recalled a generic romantic vignette), they experienced a strong sense of warmth towards their romantic partner (Alea & Bluck, 2007; also see Alea & Vick, 2010). Women also experienced a heightened sense of closeness to their romantic partner. These effects strengthened with increasing participant age.

Taking a cue from such findings, we considered how some of the variables that have been studied in the relationships literature might be related to the FAB. The study reported in this article focused on three categories of such variables.

**Possible moderation of FAB effects by relationship-level variables**. The literature that explores healthy romantic relationships suggests that memory (Luchies et al., 2013; Puente-Diaz & Cavazos-Arroyo, 2016) serves to promote and maintain positivity and dissipate negativity. Thus, we speculated that for stable and strong relationships, affect at recall might be especially strong for positive romantic relationship-linked events, while negative relationship-linked events might be especially likely to lose their affect at recall. In contrast, we speculated that when relationships are unstable and weak, this pattern of positivity might weaken, or even dissipate altogether. Similar effects ought to occur for other relationship-level variables. These include relationship duration, and satisfaction. That is, the FAB ought to be especially strong for long-term relationships and when satisfaction is high, and should be especially weak for short-term relationships and satisfaction is low. These predictions reflect a new insight for the FAB literature: That the FAB might vary across these kinds of relationship variables.

Another characteristic of romantic relationships is that they often end. Sometimes a person can put past relationships behind them with relative ease and rapidity (e.g., “she’s a thing of the past”). On the other hand, sometimes a person may continue to pine for a former partner (e.g., “I still love her.”). This distinction (see Slotter & Ward, 2014) maps on well to the FAB literature that explores responses to psychologically open events and psychologically closed events (e.g., Beike & Wirth-Beaumont, 2005; Beike & Crone, 2008). Accordingly, we hypothesized that the FAB should be linked to whether a relationship has ended (is closed) or is ongoing (is open). More specifically, because of their high current self-relevance, for current relationships positive emotions should remain particularly strong.

**Possible moderation of the FAB by event characteristic variables.** Engagement in sexual activity obviously is a feature that tends to distinguish romantic relationships from other kinds of relationships. Sex is posited to reinforce relationship intimacy (McCarthy, 2003), and low sexual frequency has been found to be associated with relationship dissolution (Yabiku, Gager & Johnson, 2009). For several reasons, it seemed plausible to us that the FAB might be different for events with sexual content and for events without sexual content.

One reason lies in the finding showing that recall of important events tends to be associated with high levels of affect (Ritchie et al., 2006). We assumed that events with sexual content might be perceived as especially important to relationships, so the affect prompted by such events at recall should be especially strong. A second reason underlying our expectation is the potential memory vividness of sexual events. Events that are vivid at recall are also associated with especially strong affect at recall (Lindeman, et al. 2017; Ritchie & Batteson, 2013). Thus, if sexual events are especially high in vividness at recall, then they ought to also be linked to an especially strong emotional response. Finally, we speculated that events with sexual content might be rehearsed especially often, likely in private. Because frequent event rehearsal tends to be associated with high affect at recall (Lindeman et al., 2017), one can infer that events with sexual content should be especially likely to prompt strong affect at recall.

**Possible moderation of the FAB by individual differences.** Our approach to the selection of individual difference variables that would be included in this study was guided by three ideas. The first idea was to focus on individual difference measures that specifically assessed approaches to, or reactions to, relationships. Those that focused on approaches to, or reactions to, aspects of romantic relations (such as sexuality) were especially attractive. The second idea was to focus on relationship-focused individual difference variables that are considered to be important to the relationships research area or that have been shown to be strongly linked to interpersonal functioning. The third idea pursued the notion that there should be certain relationship-focused variables that could logically be linked to disruption of the FAB. We selected three individual-difference variables that fit these ideas: (a) need to belong, (b) attachment style, (c) sexual esteem, sexual depression, and sexual preoccupation (as indicators of sexual health).

**Need to belong.** Need to belong reflects a hypothesized need to form and maintain strong, stable interpersonal relationships (see Baumeister & Leary, 1995; Spielmann et al., 2013) and has often been explored in the context of romantic relationships (see Fagundes & Diamond, 2013). For purposes of the present research, especially important is the idea that people vary in the strength of this need: in some people is it especially powerful. Also important to the present research is the idea that real, potential, or imagined changes in one's belongingness status will produce emotional responses, with positive affect linked to increases in belongingness and negative affect linked to decreases in it. One can use these ideas to hypothesize that an individual’s need to belong may moderate the FAB experienced in response to romance-linked event memories (for a similar idea in the nostalgia literature, see Seehusen et al., 2013). Our insight was that individuals who evince a high need to belong might be especially nervous and insecure about their romantic relationships. If this were the case, then one would expect the FAB to be disrupted in those whose need to belong was especially high.

**Attachment style**. Attachment style (e.g., Bartholomew & Horowitz, 1991) is a variable that reflects the nature of the attachment bond that an individual experiences with a close other. Some see adults as having one of four primary attachment styles: (a) secure, (b) anxious-preoccupied, (c) dismissive-avoidant, and (d) fearful-avoidant (in this article we will use the summary labels secure, preoccupied, dismissive, and avoidant). Securely attached people tend to have positive views of themselves and their attachments, and they tend to have positive views of their relationships. Often they report greater satisfaction and adjustment in their relationships than people with other attachment styles (Feeney, 1999). Moreover, attachment style can influence the way people perceive sexual encounters. Securely attached individuals report experiencing more positive emotions during sex than non-securely attached individuals (Stefanou & McCabe, 2012), and individuals with higher attachment anxiety report sexual experiences ambivalently (Birnbaum, Reis, Mikulincer, Gillath, & Orpaz, 2006).

Extrapolation from the existing FAB research leads to the expectation that securely attached individuals should exhibit a robust FAB. Extrapolation from existing research linking the FAB to anxiety, depression, and the self also leads to the expectations that the FAB should be disrupted in those who: (a) have excessive anxiety about their relationship and who constantly monitor the partner for signs of relationship disruption (preoccupied); (b) do not see relationships as especially important (dismissive), or (c) because of fear of being hurt, do not want to allow themselves to become too close to others (avoidant).

**Sexual esteem, sexual depression level, and sexual preoccupation.** These variables were attractive to us because of their focus on romantic relationships (as opposed to relationships in general). Sexual esteem is formally defined by Snell and Papini (1989) as the generalized tendency to engage in nonspecific internal reinforcement toward oneself as a result of one’s capacity to relate sexually to another person. More intuitive is the description that sexual esteem reflects the extent to which one perceives oneself to be a good sexual partner. The sexual-esteem subscale of the Sexuality Scale (Snell & Papini, 1989) has previously been used to study sexual well-being (Muise, Preyde, Maitland, & Milhausen, 2010). Sexual depression level is seen by Snell and Papini (1989) as the tendency to feel saddened and discouraged about one’s capacity to relate sexually to another individual. Sexual preoccupation is seen by Snell and Papini as the tendency for one’s thinking to become absorbed in, and obsessed about, sex in a relationship.

Extrapolating from existing research that relates the FAB to personality characteristics and to the self, we expected that the FAB would be robust in those who had high sexual esteem and who felt positively about their sexual experience with their partner. We expected the FAB to be disrupted in those who lacked sexual esteem and who felt saddened or depressed about their capacity to relate sexually to their partner. Predictions for the sexual preoccupation variable are less clear. High levels of rehearsal can sometimes exacerbate the FAB (as when one savors positive events), but can sometimes minimize the FAB (as when one perseverates in thinking about negative events). Hence, we refrain from making a prediction about the relation between this variable and the FAB.

**Method**

**Participants**

Data were collected from two sub-samples. One sub-sample contained workers from Amazon’s Mechanical Turk (MTurk). These individuals received one dollar as compensation for participation. The second sub-sample contained students attending a mid-sized Midwestern university. They received partial course credit as compensation for their participation. We chose to collect data from separate samples in order to: (a) obtain a large enough sample to be confident in our findings, (b) provide an internal replication of our findings, and (c) provide evidence that that the findings are generalizable across samples from somewhat different populations.

To keep the type of romantic relationships the same across participants and because the number of non-heterosexual participants was too small to analyze separately, only heterosexual participants were used in the study. This restriction led to the exclusion of 10 participants from the MTurk sample. Two additional participants were excluded because the data they provided was incomplete. Five more MTurk participants were excluded because they did not record personal memories, but instead either entered other information or copied material from internet blogs.

Thus, after all exclusions, the MTurk sub-sample contained 85 participants. These ranged in age from 20 to 77 years (*M* = 40, *SD* = 13.66). They were predominantly female (72.9%) and Caucasian (83.5%; African American: 8.2%, Asian: 1.2%, Hispanic: 2.4%, Native American: 1.2%, with 3.5% choosing not to answer). About half the participants reported on past romantic relationships (49.4%), and the other half reported on current relationships. The length of the relationships varied between 3 months and 732 months (*M* = 112.39, *SD* = 142.27).

For the student sample, 15 participants were excluded because they provided incomplete data. Five additional participants were excluded because the reported relationship did not involve a romantic partner (e.g., sister). The data from 34 additional participants were excluded because the respondents did not indicate that they were heterosexual.

Thus, after all exclusions, the student sub-sample contained 132 participants. These ranged in age from 18 to 33 years (*M* = 19.27, *SD* = 24.94). They were evenly split between male and female (50.0%), and were predominantly Caucasian (46.2%; African American: 1.5%, Asian: 2.4%, Hispanic: 17.4%, bi-racial or multi-racial: 3.8%, with one person opting not to indicate ethnicity). More than half of the participants (62.9%) reported memories about a past relationship. Relationship durations varied from less than one month to 72 months (*M* = 17.50, *SD* = 14.40). The relationship duration of one participant was set to missing as she claimed to be in a 21-year-old relationship at age 21.

**Materials and Procedure**

Qualtrics (www.qualtrics.com) hosted the study. MTurk participants completed the study in a location of their own choosing. Student participants completed the study in a laboratory.

At the beginning of the study, participants were asked to think of one specific romantic relationship with which they connected both positive events and negative events in both sexual contexts and nonsexual contexts. They were asked to report a total of eight memories: Two memories each for the four combinations of valance and context of the event (positive/nonsexual, positive/sexual, negative/nonsexual, negative/sexual). Valence and context were assigned in random order. Participants were then asked to provide the first name of the relationship partner so that they could be reminded throughout the study to focus on the chosen romantic relationship. Participants also reported if the chosen relationship was a current romantic relationship or a past romantic relationship (i.e., the relationship status), and also reported the relationship duration. Neither relationship status nor relationship duration was assigned; they were both merely measured.

For each relationship memory, participants then provided a short description of the event. To ensure that participants reported a personal memory and did not describe the event from the perspective of the romantic partner, they were asked to think about how they themselves experienced the event. Participants indicated how positive (or negative) they felt about the event at the time it occurred (*initial affect*). After responding to several filler items1, they also indicated how positive or negative the event made them feel when they recalled it in the present (*affect at recall*). Both items were assessed on 7-point scales (0 = *not at all positive* [*negative*] to 6 = *extremely positive* [*negative*]). These assessments reproduce procedures used in prior retrospective memory FAB studies (e.g., Ritchie et al., 2009; Skowronski et al., 2004; for a discussion of the fact that the memory collection procedure used is usually unrelated to the FAB, see Skowronski et al., 2014).

Readers might experience concern about the potential biases that accompany this retrospective recall procedure. For example, sometimes events might be retrospectively reported as being especially bad when they occurred, in particular if doing so makes oneself look good in the present (see Cameron, Wilson, & Ross, 2004). Such a bias could produce the illusion of a FAB. However, many studies have shown that the FAB also emerges in diary paradigms in which ratings of initial emotional responses to events are obtained proximally to event occurrence (e.g., Gibbons, et al., 2011; for an extensive review of this evidence, see Skowronski et al., 2014). Thus, the results of these many studies suggest that retrospective bias is not a plausible cause of the FAB.

After completing the memory assessment, participants completed: (a) the Need to Belong Scale (NTBS; Leary, Kelly, Cottrell & Schreindorfer, 2013); (b) the Sexuality Scale (Snell & Papini, 1989), which was used to assess sexual esteem, sexual depression, and sexual preoccupation; (c) the Relationship Assessment Scale (RAS; Hendrick, 1988) which was used to assess relationship satisfaction, and (d) the Relationship Questionnaire (Bartholomew & Horowitz, 1991), which assessed attachment style. The NTBS (MTurk: α = .873; students: α = .745) uses a 5-point scale (1 = *Not at all*, 2 = *Slightly*, 3 = *Moderately*, 4 = *Very*, 5= *Extremely*) and consists of 10 items (e.g*. I want other people to accept me*). The RAS (MTurk: α = .911; students: α = .882) uses a 5-point scale with individual anchors at the endpoints and midpoint of the scale (e.g. *How well does your partner meet your needs?* 1= *poorly*, 3 = *average*, 5 = *extremely well*). The 10-item Sexual Esteem subscale (MTurk: α = .938; students: α = .886) of the Sexualilty Scale presents statements to which subjects report agreement on a -2 (*disagree*) to +2 (*agree*) scale, as does the 10-item Sexual Depression subscale (MTurk: α = .887; students: α = .793), and the 10-item Sexual Preoccupation subscale (MTurk: α = .931; students: α = .900). The Relationship Questionnaire describes the 4 relationship styles, asks people to self-identify by selecting one, and obtains agreement (1=disagree strongly, 7-agree strongly) with each. When needed, wording of items on all scales was adjusted to reflect the relationship (current or past) for which participants had reported memories. At the end of the study, participants reported demographic information. They were then thanked and debriefed.

**Results**

**The Affect Difference Score**

To assess the fading of affect from event occurrence to event recall, averaged difference scores (original affect minus affect at recall) were calculated for each cell of the within-subjects Valence (positive, negative) × Context (nonsexual, sexual) design (collapsing across the two behaviors in each). This matches the data-handling process used in many previous FAB studies (e.g. Ritchie et al., 2009; for a discussion of the implications of this difference score, and of various other data-handling procedures, see Skowronski, et al., 2014). The within-subject design means that the data are clustered, and the sample sizes per each within-subjects cell matched the sample size (*N* = 217).

**Overview of the Analysis Strategy**

Several sets of analyses were conducted. The first set focused on the extent to which the FAB was replicated for romantic relationship memories, and whether the magnitude of this effect was moderated by memory context (sexual vs. nonsexual).

Subsequent sets of analyses each reflected variations on the theme established by the initial analysis. These variations explored the extent to which the FAB effects established in the initial analysis might be further moderated by other variables. These included relationship-level variables, such as: (a) relationship duration, (b) whether the relationship was ongoing or had ended, and (c) relationship satisfaction; and (d) individual difference variables such as an individual’s need to belong. The relations of these variables to the FAB were each explored in a separate set of analyses devoted to each variable.

For the interested reader we also include a correlation table of our continuous moderator variables (Table 1).

**Basic Replication of the FAB for Memories of Romantic Relationship Events**

To assess whether a FAB emerged for romantic relationship memories a 2 (Valence: positive, negative) × 2 (Context: nonsexual, sexual) × 2 (Data-Source: MTurk, students) mixed model ANOVA was conducted. Data-source was the sole between-subjects variable in this analysis, and was included to ensure comparability across subsamples. For brevity, this design will be referred to as the basic ANOVA later in this article.2

There was neither a significant data-source main effect nor any significant interaction effects involving the data-source variable (*p*s > .31). Thus, data patterns in the MTurk sample were mirrored in the student sample. As evidenced by a significant valence effect, this included the emergence of a FAB, *F*(1, 215) = 11.52, *p* = .001, *η*p2 = .05, *95% CI* [.01, .12]. As expected, positive events retained more affect from event occurrence to event recall (*M* = 0.78, *SD* = 1.15) than negative events (*M* = 1.13, *SD* = 1.27). Moreover (see Figure 1), the FAB was equivalent for memories that included sexual content and for memories that did not (interactions containing the context variable *p*s > .12).

A FAB emerged in memories for romantic relationship events. The magnitude of this FAB effect was not moderated by whether or not the memories included sexual content, nor was it moderated by the data source.

**Moderation of the FAB by Relationship Variables**

**The FAB and relationship status (current relationship vs. past relationship).** In this set of analyses, we explored whether the FAB that emerged from the initial analysis was related to the relationship status. This analysis set also explored whether any relationship status-FAB relation was moderated by the memory context. This analysis duplicated the basic ANOVA, except that relationship status was added to the ANOVA as an additional categorical between-subjects variable.

The analysis yielded two significant effects (Valence × Relationship Status interaction (*F*(1, 213) = 36.82, *p* < .001, *η*p2 = .15, *95% CI* [.07, .23]), main effect for valence (*F*(1, 213) = 19.00, *p* < .001, *η*p2 = .08, *95% CI* [.03, .16])). The decomposition of the Valence × Relationship Status interaction showed that there was no significant effect for valence (i.e., no FAB) when the relationships were in the past (positive *M* = 1.14, *SD* = 1.33; negative *M* = 0.95, SD = 1.31; *p* = .20). However, for current relationships, a robust FAB emerged such that the fading of affect associated with positive memories (*M* = 0.29, *SD* = 0.56) was smaller than the fading associated with negative memories (*M* = 1.38, *SD* = 1.17), *F*(1, 91) = 70.04, *p* < .001, *η*p2 = .44, *95% CI* [.28, .55]

The data evinced a robust FAB for both sexual memories and non-sexual memories associated with current romantic relationships. However, for terminated romantic relationships, this FAB clearly dissipated. These results occurred for both data sources.

**The FAB and relationship duration.** In this set of analyses, we explored whether the FAB that emerged from the basic analysis was related to the duration of the romantic relationship (in months). This analysis set also explored whether any duration-FAB relation was moderated by the memory context (sexual vs. non-sexual). To better interpret the results from these analyses, we note that relationships in the MTurk sample tended to be of longer duration that relationships in the student sample. This was particularly true for past relationships (*M* = 14.69 months, *SD* = 12.72 for students, *M* = 75.62 months, *SD* = 117.98 for MTurk workers).

To pursue the extent to which the FAB might be moderated by relationship duration, pooled within-subjects hierarchical regression analyses were conducted (Cohen & Cohen, 1983; Chapter 11). Dummy coded variables indicating individual participants (accounting for between-subjects effects) were entered into these analyses first. Subsequent steps in the analyses then entered the main effects of within-subjects variables (context, valence), followed by stepwise entry of increasingly higher-level interactions that included the variables of context, valence, and the mean-centered relationship duration variable.

In this analysis (and in all hierarchical regression analyses in the following sections), the valence effect that replicates the basic FAB effect was significant, *F*(1, 649) = 17.78, *p* < .001. Moreover, the interaction between valence and relationship duration was significant, *F*(1, 643) = 17.63, *p* < .001, *η*p2 = .027, *95% CI* [.006, .042]. Decomposition of the interaction showed that for positive event memories increased relationship duration was associated with decreased fading of affect, *F*(1, 430) = 7.34, *p* = .007, *b* = -0.002, *η*p2 = .017, *95% CI* [.001, .048]. For negative event memories, increased relationship duration was associated with increased fading of affect, *F*(1, 430) = 6.41, *p* = .012, *b* = 0.002, *η*p2 = .015, *95% CI* [.001, .045]. Memory context did not further moderate this effect, nor was the main effect of the context variable significant (*p* = .195), nor was the context variable involved in other interactions (*p*s > .22).3

The duration data showed that the FAB increased with increased romantic relationship duration and that this effect occurred regardless of whether or not the romantic relationship memories included sexual content.

**The FAB and perceived relationship quality.** In this set of analyses, we explored whether the FAB that emerged from the initial analysis was related to an individual’s perceptions of relationship quality. This analysis set also explored whether any relationship quality-FAB relation was moderated by the memory context (sexual vs. non-sexual). The analysis duplicated the hierarchical within-subject regression procedure employed to explore the relationship duration variable, except that in the analyses the relationship quality measure (centered RAS) replaced the duration variable.

The results showed that, as evidenced by the significant RAS × Valence interaction, the significant FAB effect was moderated by the relationship quality (RAS) measure: Heightened perceived relationship satisfaction predicted a stronger FAB effect, *F*(1, 641) = 106.66, *p* < .001, *η*p2 = .14, *95% CI* [.07, .15]. Decomposition of the interaction showed that higher RAS scores were associated with less fading of affect for positive memories, *F*(1,430) = 46.68, *p* < .001, *b* = -0.41, *η*p2 = .10, *95% CI* [.05, .15], and with more fading of affect for negative memories, *F*(1,430) = 21.57, *p* < .001, b = 0.07, *η*p2 = .07, *95% CI* [.03, .12].

The relationship quality data showed that the FAB increased with increased romantic relationship quality and that this effect occurred regardless of whether or not the romantic relationship memories included sexual content.

**Moderation of the FAB by Individual Difference Variables**

**The FAB and need to belong.** In one set of analyses, we explored whether the FAB that emerged from the initial analysis was related to an individual’s perceived belongingness needs. This analyses set also explored whether any need belongingness-FAB relation was moderated by the memory context. The analysis duplicated the hierarchical within-subject regression procedure employed to explore the relationship duration variable, except that in the new analyses the need for belongingness measure (centered NTBS) replaced the duration variable.

The significant valence effect reflecting the FAB was moderated by a NTBS × Valence interaction, *F*(1, 641) = 11.77, *p* = .001. *η*p2 = .02, *95% CI* [.003, .033]. Decomposition of this interaction showed that heightened NTBS scores were associated with increased fading of affect for positive events [*F*(1, 430) = 5.43, *p* = .02, *η*p2 = .01, *95% CI* [.0002, .0410], *b* = 0.19] and were associated with decreased fading of affect for negative events [*F*(1, 430) = 4.35, *p* = .04, *η*p2 = .01, *95% CI* [.000, .037], *b* = -0.20]. Another way to frame this interaction (see Figure 2a) is that those with a low need to belong exhibited a FAB, but in those in whom the need to belong was high, this FAB was not only eliminated, but reversed.

In an additional exploratory analysis, the regression model was expanded to also include Relationship Status as an additional categorical between-subjects variable. This analysis was inspired by the idea that the moderation of the FAB by the need to belong may be especially strong for current relationships. Evaluation of the regression model’s interaction effects that contained both the NTBS variable and the relationship status variable revealed a significant NTBS × Relationship Status ×Valence × Data-Source interaction effect, *F*(1, 625) = 6.05, *p* = .01, *η*p2 = .01, *95% CI* [.0002, .0222]. Decomposition of the effect showed that NTBS × Relationship Status ×Valence interaction was not significant for the student sample (*p* = .42), but was significant for the MTurk sample, *F*(1, 251) = 7.76, *p* = .01, *η*p2 = .03, *95% CI* [.002, .062]. Further decomposition of this latter effect showed that NTBS did not moderate the valence effect for present relationships (*p* = .45). However, in the MTurk sample, for past relationships [*F*(1, 124) = 17.26, *p* < .001, *η*p2 = .12, *95% CI* [.03, .18]; see Figure 2b], increased NTBS was associated with increased fading of affect for positive event memories [*F*(1, 82) = 5.13, *p* = .03, *η*p2 = .06, *95% CI* [.00, .18], *b* = 0.36] and with decreased fading of affect for negative event memories [*F*(1, 82) = 9.26, *p* = .003, *η*p2 = .10, *95% CI* [.01, .23], *b* = -0.60].

Collectively the results of these analysis show that those with a low need to belong exhibited a FAB, but that the FAB was reversed in those in whom the need to belong was high. However, this effect was exhibited only in the sample of MTurk workers. Moreover, in contrast to our expectations, the results also suggest that this FAB moderation effect was especially pronounced in memories for past relationship events.

**The FAB and attachment style.** Using established scoring procedures, peoples’ responses to the Relationship Questionnaire were used to place people into one of the four attachment style categories (secure, dismissing, preoccupied, fearful; see Table 2). However, because our original hypothesis for this variable contrasted securely attached individuals (strong FAB) against all other attachment styles (disrupted FAB), in our initial analysis we combined the data from the three non-securely attached categories. Exploration of whether attachment style moderated the FAB was accomplished by adding this categorical attachment style variable (securely attached vs. not securely attached) to the basic ANOVA.

The analysis yielded a significant Valence × Attachment Style interaction (see Table 3), *F*(1, 213) = 12.11, *p* = .001, *η*p2 = .05, *95% CI* [.01; .12]. Decomposition of the interaction showed that for securely attached participants the FAB was quite robust (*F*(1, 78) = 30.76, *p* < .001, *η*p2 = .28, *95% CI* [.13; .42]; positive: *M* = 0.61, *SD* = 0.97; negative: *M* = 1.46, *SD* = 1.30). However, for non-securely attached participants the FAB was disrupted (*F*(1, 137) = 0.26, *p* = .61, *η*p2 = .00). These results were not moderated by data source: The analysis yielded no significant interaction with the data source variable (*p*s > .20). The analysis results also yielded a significant main effect for valence (*F*(1, 213) = 17.65, *p* < .001, *η*p2 = .08, *95% CI* [.02; .15]; positive: *M* = 0.78, *SD* = 1.15; negative: *M* = 1.13, *SD* = 1.27), but interpretation of this effect is qualified by the interaction.

We further explored the data by conducting analyses looking at the extent to which the FAB may have occurred for each of the non-secure attachment styles (see Table 3). The FAB was disrupted in each of the three non-secure participant categories: The valence effect was not significant both for those in the fearful attachment category (*F*[1, 70] = 2.19, *p* = .14, *η*p2 = .03), the preoccupied category (*F*[1, 34] = 1.12, *p* = .30, *η*p2 = .03) and the dismissive category (*F*[1, 28] = 0.05, *p* = .83, *η*p2 = .00). However, we note the relatively small sample sizes in both the preoccupied category and the dismissive category should lead to caution when interpreting these non-effects. By contrast, the valence effect magnitude in the securely attached category (*F*[1, 77] = 31.78, *p* < .001, *η*p2 = .29, *95% CI* [.13; .43]) is robust.

These subsidiary analyses also yielded two unanticipated higher-order interactions involving the critical valence variable. For participants exhibiting fearful attachment, the FAB was especially weak for MTurk workers reporting non-sexual memories and for student samples reporting sexual memories (Context × Valence × Data Source interaction, *F*[1, 70] = 4.76, *p*= .03, *η*p2 = .06, *95% CI* [.00; .19]). Moreover, for dismissive participants, the FAB emerged in nonsexual event memories, but it was reversed in memories that contained sexual content (Context × Valence interaction *F*[1, 28] = 4.66, *p* = .04, *η*p2 = .14, *95% CI* [.00; .37]).

Thus, the attachment data show that a robust FAB emerged for those who were classified as securely attached, and that this FAB was disrupted for individuals who did not exhibit secure attachment styles. However, for those exhibiting fearful attachment the FAB was especially weak for MTurk workers, and for those exhibiting dismissive attachment the FAB was reversed for sexual memories. These latter two interaction effects were unanticipated, and because of small sample sizes in these categories (dismissing attachment: student *n* = 19, MTurk *n* = 11; preoccupied attachment: student *n* = 26, MTurk *n* = 10), we suggest that they should be treated with caution. Replication of such higher-order effects with larger sample sizes would be desirable before effort is spent trying to understand the differing higher-order interaction patterns that emerged.

**The FAB and sexual esteem.** In this set of analyses, we explored whether the FAB that emerged from the initial analysis was related to an individual’s level of sexual esteem. This analysis set also explored whether any sexual esteem-FAB relation was moderated by the memory context. The analysis duplicated the hierarchical within-subject regression procedure employed to explore the relationship duration variable, except that in the analyses the mean-centered esteem subscale score from the Sexuality Scale replaced the duration variable.

As expected, an individual’s level of sex esteem moderated the FAB (Sexual Esteem × Valence interaction *F*(1, 644) = 4.73, *p* = .03, *η*p2 = .01, *95% CI* [.00; .02]; see Figure 4). Decomposition of the interaction showed that there was no association between sexual esteem and the fading of affect for negative events (*p* = .73), but increased sexual esteem was significantly associated with decreased fading of affect fading of positive events, *F*(1, 432) = 5.73, *p* = .01, *η*p2 = .01, *95% CI* [.0003; .0420], *b* = -0.18.

As with measures of general self-esteem, increased sexual self-esteem was associated with an increased FAB. This increase occurred largely because of differences between high sexual self-esteem individuals and low sexual self-esteem individuals in affective responses to positive romantic relationship events.

**The FAB and sexual depression.** In this set of analyses, we explored whether the FAB that emerged from the initial analysis was related to an individual’s level of sexual depression. This set of analyses also explored whether any sexual depression-FAB relation was moderated by the memory context. The analysis duplicated the hierarchical within-subject regression procedure employed to explore the relationship duration variable, except that in the analyses the mean-centered depression subscale score from the Sexuality Scale replaced the duration variable.

As expected, an individual’s level of sexual depression moderated the FAB (see Figure 3): The Sexual Depression × Valence interaction was significant, *F*(1, 644) = 32.19, *p* < .001, *η*p2 = .05, *95% CI* [.02; .06]. Decomposition of the interaction showed that increased sexual depression was associated with increased affect fading for positive events (*F*(1, 432) = 8.84, *p* = .003, *η*p2 = .02, *95% CI* [.002; .053]. *b* = 0.24), and was also associated with decreased affect fading for negative events (*F*(1, 432) = 15.13, *p* < .001, *η*p2 = .03, *95% CI* [.01; .07], *b* = -.37).

Thus, as with measures of general depression, increased sexual depression was associated with a diminished or reversed FAB. This diminishment occurred because of differences between high sexual depression individuals and low sexual depression individuals in affective responses to both positive romantic relationship events and negative romantic relationship events.

**The FAB and sexual preoccupation.** In this set of analyses, we explored whether the FAB that emerged from the initial analysis was related to an individual’s level of sexual preoccupation. This analysis set also explored whether any sexual preoccupation-FAB relation was moderated by the memory context. The analysis duplicated the hierarchical within-subject regression procedure employed to explore the relationship duration variable, except that in the analyses the mean-centered preoccupation subscale score from the Sexuality Scale replaced the duration variable.

No significant FAB moderation effects emerged from this analysis. This result is notable in the context of the significant results obtained for the sexual depression and sexual esteem subscales. It provides evidence of the discriminative validity of those subscales. It also shows that not all personality proclivities are associated with alterations in the FAB. This suggests that only certain proclivities are linked to the kinds of responses and cognitions that are related to the dissipation or retention of memory-related affect.

**Discussion**

The results that we report documented evidence of a FAB in memory for events about romantic relationships. However, the evidence also showed that FAB varied across people with different characteristics, romantic relationships with different characteristics, and different kinds of recalled events.

For example, in our study, the FAB for memories of events in intimate relationships was moderated by both an individual’s level of sexual depression and their level of sexual self-esteem. However, though new findings, these results closely mimic research results documenting similar alterations of the FAB in response to individual differences in general depression, anxiety, general self-esteem, and dispositional negative mood (Ritchie et al., 2009; Walker et al., 2003a; Walker et al., 2014). Perhaps more novel is our finding that for those who exhibit a high need to belong the FAB is actually reversed. One possible explanation for this effect is that a high need to belong may reflect or produce a high amount of insecurity in relationships, which may serve to promote the maintenance of negative affect and the dissipation of positive affect in romantic relationship event memories. However, this speculation needs to be confirmed by research that focuses more intently on relationship security, and that considers how security is related to both the need to belong and to the FAB in memory for events in romantic relationships.

The data that we report in this research also show that the FAB is moderated by relationship satisfaction and relationship duration. Higher relationship satisfaction scores were associated with a larger FAB, a relation that was linked to both reduced fading of affect for positive memories and enhanced fading of affect for negative memories. The relationship duration data similarly showed that the FAB increased with increased romantic relationship duration. The precise pattern differs depending if the variable was log-transformed or not. Future research might provide further insights.

Our explorations of the FAB as it was related to memory content also yielded new findings. These data generally evinced a robust FAB for both sexual memories and non-sexual memories associated with current romantic relationships. However, for romantic relationships that had ended, there was no FAB for non-sexual events, and sexual events evinced a reversed FAB in which there was more affective fading for positive memories than for negative memories. This pattern was typical of the way in which the event characteristic of sexual memory content mattered to the FAB: it typically did not yield a main effect, but often yielded effects when considered in combination with individual difference variables and/or relationship characteristic measures.

Given that, to our knowledge, this is the first FAB study to focus on memories for romantic relationship events, replication and extension of this study is highly recommended. It is true that, given that some effects that we report in this study either directly replicate or conceptually replicate existing FAB research (e.g., the moderation of the FAB by sexual depression and by sexual esteem), our confidence in those effects is reasonably high. However, it is especially desirable to attempt to replicate the new effects that this article reports (e.g., when the FAB might be moderated by whether events contained sexual content). In this regard, we note that our study already provided one replication: Many of the effects reported were unmoderated by the population sampled (college undergraduates vs. MTurk workers). This similarity persisted despite the fact that these samples differed both demographically and in terms of the average duration of relationships reported.

Most desirable would be replication efforts that use alternative methods, such as different ways to obtain events to be rated (e.g., diaries, experience sampling). While it is true that in the past such methodological variations have not been related to the emergence of the FAB (for a review, see Skowronski et al., 2014), one should be cautious until a body of research produces converging results across different methodologies. A similar note of methodological caution arises from the fact that we did not randomly assign relationship status: Participants freely chose if they wanted to write about a current or a past relationship. Replications and extensions of the study that we report may attempt to manipulate relationship status to eliminate potential biases and confounds that might have resulted from this self-selection. Additionally, assessing whether participants had moved on from a past relationship (e.g., by starting a new romantic relationship) might reveal further insights. Furthermore, it would be worthwhile to investigate if the length of time that had passed between event occurrence and recall might be confounded with the differences in relationship status.

There are a number of additional directions that can be taken in future research. One of them is to look more closely at some of the variables that might serve to explain the effects that we reported. One of the leading candidates among these variables is the extent to which, and the manner in which, a memory is rehearsed. There are many different kinds of rehearsal that have been studied in autobiographical memory and it has been demonstrated that different kinds of rehearsal can potentially have an impact on how one feels about an event when it is recalled (Lindeman et al., 2016; Ritchie et al., 2006). Three important issues emerge in regard to rehearsal and the FAB in the context of interpersonal events. The first is the frequency/time: Do people rehearse relationship events more often and/or for longer periods than they rehearse non-relationship events? The second issue revolved around rehearsal method: Do people rehearse relationship events in the same way that people rehearse non-relationship events? The third issue concerns the link between rehearsals and the FAB: Do rehearsals have the same impact on the emotions experienced at recall for relationship events and for non-relationship events? These are just some of the event-related questions that can be addressed in future research.

The research reported here can be viewed as one more step to an ongoing line of inquiry. Not only could this research enlighten researchers interested in autobiographical memory and the FAB, but it could also enlighten researchers interested in romantic relationships.

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Footnotes

1Following best practices (e.g., Ritchie et al., 2009), we used filler items to physically separate the initial affect questions from affect at recall questions. This was done to minimize the danger that initial affect ratings would influence affect at recall ratings. As filler items we included questions about how detailed and how significant the memory was, if the event influenced the future relationship with the partner, and if the event influenced the future relationship with other people.

2FAB analyses focus on difference scores because such scores fit the FAB’s theoretical emphasis on affect change, and because such scores are easily described. However, the analysis of difference scores can also be tricky, especially when some of the effects in the difference scores are potentially caused by differences in the initial affect ratings across event valences. Accordingly, we confirmed the difference score results in analyses that did not use difference scores. To do so, we averaged across the two memories for each cell of the design, but calculated initial affect and affect at recall separately. Affect time (initial affect, affect at recall) was then added to the basic ANOVA as an additional within-subjects variable. Results showed that the fading affect bias was replicated (Valence × Affect Time was significant, *F*(1, 216) = 10.13, *p* = .002, *η*p2 = .045, CI [.01; .11]) independent of memory context (Context × Valence × Affect Time not significant, *F*(1, 216) = 1.68, *p* = .196, *η*p2 = .008). Means (and standard deviations) are as follows: Initial Affect/Nonsexual/Positive = 5.47 (.84); Initial Affect/Nonsexual/Negative = 5.20 (1.02); Initial Affect/Sexual/Positive = 5.42 (.89); Initial Affect/Sexual/Negative = 4.49 (1.48); Recall Affect/Nonsexual/Positive = 4.79 (1.27); Recall Affect/Nonsexual/Negative = 4.09 (1.57); Recall Affect/Sexual/Positive = 4.55 (1.56); Recall/Sexual/Negative = 3.35 (1.80).

3Because the relationship duration variable was strongly skewed (Skewness: 4.19; Kurtosis: 21.26), we experienced concern about the results of this regression analysis. Accordingly, to further probe the data, we also analyzed the data after first performing a log transformation on the relationship duration variable prior to mean-centering (Skewness: .18; Kurtosis: .16). The analysis results substantially duplicated the results of the original analysis. The valence effect that replicates the basic FAB effect was significant, *F*(1, 649) = 17.78, *p* < .001. Moreover, as expected, the interaction between valence and relationship duration was significant, *F*(1, 643) = 8.12, *p* = .005, *η*p2 = .013, 95% CI [.001, .035]. Decomposition of the interaction showed that for positive event memories relationship duration did not predict the fading of affect (*p* = .105). However, for negative event memories, increased relationship duration was weakly associated with increased fading of affect, *F*(1, 430) = 3.67, *p* = .056, *b* = 0.106, *η*p2 = .009, 95% CI [.00, .03]. Memory context did not further moderate this effect, nor was the main effect of the context variable significant (*p* = .195), nor was it involved in other interactions (*p*s > .23).

Table 1

*Correlations between Continuous Moderator Variables*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1. | 2. | 3. | 4. | 5. | 6. |
| 1. Relationship Duration | -- |  |  |  |  |  |
| 2. Perceived Relationship Quality | .17\* | -- |  |  |  |  |
| 3. Need to Belong | -.16\* | .01 | -- |  |  |  |
| 4. Sexual Esteem | .10 | .13 | -.24\*\* | -- |  |  |
| 5. Sexual Depression | -.01 | -.34\*\* | .15\* | -.56\*\* | -- |  |
| 6. Sexual Preoccupation | -.06 | -.04 | .00 | .31\*\* | -.19\*\* | -- |

Note: \*: significant at .05 level (2-tailed); \*\*: significant at .01 level (2-tailed)

Table 2

*Percentages of Attachment Styles per sub-sample*

|  |  |
| --- | --- |
|  | Attachment Style |
| Sample | Secure | Dismissing | Preoccupied | Fearful |
| MTurk | 41.2 | 12.9 | 11.8 | 34.1 |
| Students | 33.3 | 14.4 | 18.9 | 33.3 |

Table 3

*Means (Standard Deviations) of Affect Fading for sexual relationship memories*

|  |  |  |
| --- | --- | --- |
| Attachment Style | Fading of Positive Affect | Fading of Negative Affect |
| Secure | 0.61 (0.97) | 1.46 (1.30) |
| Not Secure             Dismissing | 0.88 (1.23)0.99 (0.93) | 0.95 (1.22)0.93 (1.24) |
|             Preoccupied | 1.10 (1.30) | 0.85 (1.14) |
|             Fearful | 0.71 (1.30) | 1.01 (1.26) |

*Figure 1.* Replication of FAB (valence main effect) for romantic relationship memories with no moderation by memory context (sexual vs. non-sexual).

|  |
| --- |
|  |
|  |

*Figure 2.* NTBS (Need to Belong) × Valence interaction for romantic relationship memories (a) overall and (b) for past relationships in the MTurk sample.

*Figure 3*. Sexual depression as a moderator of the FAB for romantic relationship memories.

*Figure 4.* Sexual esteem as a moderator of the FAB for romantic relationship memories.