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Memories of 'The Rivalry': Differences in How Fans of the Winning and Losing Teams Remember the Same Game

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Summary: Berntsen's social identity model of flashbulb memory was applied to recall of the 2008 Lafayette–Lehigh ('The Rivalry') football game, which Lehigh won. Consistent with Berntsen's theory, Lehigh fans found the game to be more emotional and therefore rehearsed the event more frequently. They also remembered the factual details of the game more accurately than did Lafayette fans, particularly those facts that enhanced positive social group identity. Although students from both schools recalled the event equally vividly initially, the Lehigh fans maintained that vividness over time, whereas Lafayette fans' memories decreased in vividness. Surprisingly, both teams' fans were equally consistent in describing their personal circumstances during the event, were equally confident in the accuracy of those recollections, and felt an equally high degree of reliving the event while remembering it. The significant influence of emotional affect on vividness, reliving, and confidence was partially mediated by rehearsal, consistent with Berntsen's model.

Flashbulb memories (FBMs; Brown & Kulik, 1977) can be described as a subset of autobiographical memories that are long lasting and recalled with enhanced vividness, an enhanced sense of reliving the event while remembering it, and enhanced confidence in the accuracy of the memory. These memories are typically, but not necessarily, generated in response to surprising, emotional public events. One promising account for how FBM develop is the social identity mechanism articulated by Berntsen (2009). She proposed that in the aftermath of an event, the activation of one's social identity leads to an emotional reaction. Emotional salience and social relevance, in turn, enhance both individual and collective rehearsal. The outcome of these processes is a memory that is long lasting, vivid, and perceived as accurate. Furthermore, these memories support and maintain one's social identity. One promising context for investigating this model is memory for sporting events.

Activation of social identity

Fan identification with sport teams enhances individual emotional involvement and influences behavior. Group membership and socialization have been identified as among the primary benefits of fandom (Sloan, 1989; Wann, Schrader, & Wilson, 1999). Sports fans often rate their own self-image more highly after their team wins (Cialdini et al., 1976; Snyder, Lassegard, & Ford, 1986). Fandom not only identifies an in-group of fellow fans of the same team, it also serves to identify out-groups of opponents' fans (Sloan, 1989). The in-group/out-group dynamic is exaggerated by long-standing rivalries between two specific teams. College athletics particularly tend to emphasize tradition and the continuity from past to future teams as a way of enhancing connections among alumni, current students, and future applicants. Bizman and Yinon (2002) found that emotional reactions and willingness to associate oneself with the team were influenced by the immediate performance of the team, but that identification as a fan of the team was not affected. The abundant evidence that team fans are reliable, strongly identified social groups suggests that such identification should have mnemonic as well as emotional and behavioral consequences.

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Emotional salience

Any sporting event will result in different emotional interpretations for fans of the winning and losing teams. This allows for the systematic investigation of emotional tone on mnemonic processes within the context of predictable and frequently recurring events. Berntsen (2009) claims that the 'long-term durability of FBMs to some extent depends on whether the target event is seen to support or to challenge positive values of the group' (p. 192). Although the majority of events studied in FBM research are negative in emotional tone, past research has demonstrated that events interpreted positively are rehearsed more frequently (Baker-Ward, Eaton, & Banks, 2005; Bohn & Berntsen, 2007), remembered more vividly (Bohn & Berntsen, 2007), include more reliving (Bohn & Berntsen, 2007), and are believed with more confidence (Kensinger & Schacter, 2006). Furthermore, these differences at least persist, if not increase, with time.

A positivity bias can influence recall of specific elements, not just overall event recall. Botzung, Rubin, Miles, Cabeza, and LaBar (2010) had Duke University and University of North Carolina-Chapel Hill basketball fans study a video of a previous rivalry game in the laboratory and then asked them to recall the outcome of specific shots shown during that video. Both groups rated the shots as equally emotionally intense, were equally accurate in overall recall, and were equally confident in their recall. However, each group accurately recalled more positive shots than negative, and those positively valent shots were rated as more intense and with more confidence even though the specific shots in question were different for each group (i.e., a basket shot by Duke was positive for those fans but negative for the University of North Carolina fans and vice versa). Emotionally intense events, particularly those of positive valence, enhance the social group identity, thereby becoming more memorable to individual members of that group.

If events undermine positive group identity, forgetting the event is not the only way to cope; reinterpreting the event in order to preserve positive group identity is also possible. For example, school newspaper stories differed so widely in the aftermath of a Dartmouth–Princeton football game that Hastorf and Cantril (1954) sought to systematically examine the influence of social identity on event interpretation. They showed that Dartmouth fans thought that each team had an equal number of infractions during the highly contested game (that Dartmouth won), but Princeton fans thought that Dartmouth had a much greater number of infractions during the same game. In other words, Princeton fans sought to explain the loss by attributing it to external forces, specifically the 'dirty play' of their opponents. In a more controlled laboratory study, De Fiore and Kramer (1982) showed a series of video clips of a basketball game to students of the schools that had participated in the game as well as students from a third, unaffiliated school. They found that students from each school that participated in the game attributed more fouls to the other team and fewer fouls to their own team. Students from the school whose team did not participate in the game most accurately estimated the number of fouls committed by either team. These results indicate that even in a highly controlled, evenly played game, fans are likely to interpret ambiguous stimuli in ways that are consistent with enhancing their own social group.

Individual and collective rehearsal

When the self or social group is enhanced, there is a natural inclination to share that information. Increased rehearsal enhances autobiographical memory (Thompson, Skowronski, Larsen, & Betz, 1996), and FBM are no different (Talarico & Rubin, 2009). When directly compared, FBM are rehearsed more frequently than are everyday autobiographical memories, although rehearsal for both memories decreases over time (Talarico & Rubin, 2003, 2007). Walker, Skowronski, Gibbons, Vogl, and Ritchie (2009) found that social communication was the most frequent motivation for rehearsal of autobiographical memories. Social rehearsal also seemed to serve the emotion regulation needs of the individual sharing an autobiographical memory. They found rehearsal to be generally more frequent for positive events than for negative events and that socially rehearsed positive events retained emotional salience, whereas socially shared negative events lost emotional salience. This is consistent with individual goals of maintaining positive emotion and reducing negative emotion. These emotion regulation goals may be particularly salient when the event has greater social relevance, and therefore, the larger social group has a vested interest in maintaining or mitigating emotional value. Social sharing motives for rehearsal of sports fans are likely to be quite high immediately before and after each game and to diminish over time as new games become more relevant. Sloan (1989) observed that 'fans frequently "prepare" for the sport by ruminating over past games' (p. 178).

In addition to individual rehearsal, events that lead to FBM are subject to collective rehearsal via the media. Sporting events are highly anticipated events (although the outcome is still surprising), and therefore, media coverage is high both before and after the event. Pre-event coverage signifies the importance of the to-be-encoded event, and post-event coverage focuses on the outcome of the game and its implications for the winners and losers. As media coverage of an event increases, memory for the factual details of the event, but not autobiographical memory of event, increases (Curci & Luminet, 2006; Er, 2003; Shapiro, 2006). Similarly, Hirst and Meksin (2009) found that the pattern of forgetting the factual details of an FBM-producing event tracks with decreasing media coverage of that event. Therefore, it seems as if media rehearsals are more important for factual event memory, whereas personal social rehearsal is more important for FBM of personal experience.

Reinforcing social identity

There is circularity to FBM and social identity in that 'having a FBM testifies to "belongingness" and identification with the group' (Berntsen, 2009, p. 202). Previous research has shown that priming a particular social identity can be effective in producing autobiographical memories that are consistent with that identity (Trafimow, Triandis, & Goto, 1991). Those memories serve as evidence that one's social identification is valid. The particular events that one identifies as having led to a personal FBM will depend on an individuals' social identity. Neisser (1982) went so far as to claim that 'It is the very existence of the memory that matters, not its contents' (p. 48). However, this claim may be hyperbole in that the aforementioned data suggest that the contents, too, are biased in such a way to enhance social identity.

Berntsen's (2009) social identity mechanism for FBM posits that social identity predicts emotional salience. Events that maintain positive social group identity are more likely to be rehearsed and therefore to be recalled accurately and with increased vividness, reliving, and confidence in their accuracy. Events that challenge positive social group identity will diminish in accessibility or will be distorted such that a positive reinterpretation of the event is possible via a selective rehearsal mechanism. With a readily available collegiate population, we can take advantage of an intense inter-school rivalry to tap social identity as it influences recall of the same nominal event with differential emotional interpretations depending on the game's outcome.

METHOD

We examined Lafayette College and Lehigh University students' memories for the 144th meeting of 'The Rivalry' football game (see Appendix for a brief game summary). The Rivalry is the most played and longest uninterrupted football rivalry in the country, and it has attracted sufficient national attention to be ranked as #12 of the top 25 greatest college football rivalries by two longtime Associated Press sportswriters (Rappoport & Wilner, 2007).

Participants

An invitation to complete the online questionnaire was included in the daily announcement e-mails sent to the

undergraduate populations of both Lafayette and Lehigh.[1] The two schools draw from applicant pools of similar demographics, and students frequently apply to and are admitted to both schools.

The data to be discussed here are from participants who completed both the initial and follow-up questionnaires completely.[2] In addition, participants were excluded if they had not been in attendance at the stadium to watch the game (i.e., had watched it on television), if they were participants in the game-day events (e.g., players, cheerleaders, and band members), or if their score on the initial team identification measure (described later) was below 28 (the midpoint of the scale). The final sample included 81 Lafayette students (24 of whom were male) and 31 Lehigh students (17 of whom were male).

Procedures

The initial questionnaire was available from 24 November (the Monday following the game) through 01 December (Monday). At the end of that instrument, participants were asked to provide their e-mail address if they would be willing to participate in the follow-up portion of the study. The re-test measure was available from Tuesday, 03 February through Tuesday, 10 February, 10 weeks after the initial measure. Students who began either survey were entered into a drawing for a $25 gift card to Amazon.com as a reward for their participation; one card was awarded to an individual at each school.

Materials

The questionnaire included five separate sections assessing the following (in order of presentation): level of team identification, background football knowledge, knowledge of the history of The Rivalry, factual event memory of the 144th game, and autobiographical memory of that game. The *team identification* scale (Wann & Branscombe, 1993) assessed the importance of the game outcome to the participant through seven 8-point Likert-type rating items.

Background football knowledge was measured through eight multiple choice questions: How many points are awarded for a touchdown?, How many yards are necessary for a first down?, How many players are on the field for each team?, Identify which is not a defensive position., Identify which is not a way of scoring points., Identify which team is not in the Patriot League., and How many total football teams are in the Patriot League?. The eighth question, asking participant to identify the 'current' (2008) college football national champion, was eliminated from analysis, as the new 2009 champion was declared in the interim between the two questionnaires and the question became unclear at re-test. To measure participants' *knowledge of The Rivalry* in particular, two multiple choice questions were asked: In what year was the first Lehigh–Lafayette football game played? and What was the game record from 2004–2007?

Memory for the factual details of the game (*event memory*) was measured through seven multiple choice questions: Who were the starting quarterbacks for each team?, What were the halftime and final scores?, How many times did Lafayette have the lead?, Which team scored a safety?, and Which player had an interception and 94-yard touchdown return in the 4th quarter? In the spirit of Hastorf and Cantril (1954), bias was examined by asking participants, 'How was the officiating at the game?' Participants could select unbiased responses of good or bad all around or responses that indicated the officials were biased toward Lafayette or toward Lehigh.

Memory for one's personal experiences at the game (*autobiographical memory*) was measured through four free recall questions: Who were you with?, Where did you sit?, What were you wearing?, and What was the weather like? These were based on prototypical features of FBM with changes made to reflect a shift from hearing about a news event to witnessing a sporting event. On the basis of the coding scheme outlined by Neisser and Harsch (1992), consistency of free response answers was coded on a scale of zero to three with three corresponding to completely consistent (i.e., the same information with the same specificity was provided at both times), two to mostly consistent (i.e., a minor change in detail or less specificity at Time 2 than at Time 1), one to mostly inconsistent (i.e., a major change in detail or partial omission of information at Time 2), and zero to completely inconsistent (i.e., contradictory information was provided at Time 2 relative to Time 1). The four scores were then summed to give each participant a composite FBM consistency score with a 12 indicating complete overlap in all aspects of the memory report.

Finally, the abbreviated version of the Autobiographical Memory Questionnaire (Rubin, Schrauf, & Greenberg, 2003) administered by Talarico and Rubin (2003, 2007) was administered to determine how people remembered their personal experience of the game. *Vividness* was assessed with one question asking if participants could 'see, hear, or otherwise perceive' in their mind the event as they thought about it. Participants were asked to rate their *reliving* of the experience on the same scale (1—*not at all* to 7—*as clearly as if it were happening now*). *Confidence* in their memory was assessed by asking whether they 'believe the event in my memory really occurred in the way I remember it' (1—*100% imaginary* to 7—*100% real*). Participants were asked to rate the current emotional *affect* (1—*extremely negative* to 7—*extremely positive*) and *intensity* of the memory (1—*not at all* to 7—*extremely*). To assess *rehearsal*, participants rated how often they 'thought about' and 'talked about' the event (1—*not at all* to 7—*more than for any other memory*), and responses to these two items were averaged. As a measure of collective rehearsal via the media, participants were asked if they read any coverage about the game (newspapers or online) or watched any highlights from the game (on TV or online) through simple 'Yes' or 'No' questions included in the previous section. Personal *significance* was assessed by asking participants if the

[1] The invitation included the names of both authors and our affiliation with Lafayette College. We speculate that this may have enhanced participation rates at Lafayette (even though their team had lost) and reduced participation at Lehigh (even though their team had won).

[2] To address selection bias concerns, an independent samples *t*-test was conducted on all initial measures between participants who did and those who did not complete the follow-up questionnaire. No significant differences were found.

memory 'is significant to my life' (1—*not at all* to 7—*more than for any other memory*).[3]

RESULTS

Preliminary analysis: Social identification and background knowledge

We classified each participant as either highly identified [team identification score of 35 or above (Wann & Branscombe, 1993)] or moderately identified (team identification score from 28 through 34) and found no difference in the percentage of fans from each school (Lafayette = 58, Lehigh = 22) who would be classified as highly identified, χ^2 ($N = 112$) = .004, $p > .94$. We also conducted a 2 (school: Lafayette versus Lehigh) by 2 (time: initial versus 10-week delay) analysis of variance (ANOVA) on team identification scores and found no main effect of school, $F(1, 110) < 1$, $p > .32$. Interestingly, both schools' team identification ratings decreased equally with time, as demonstrated by a main effect of time, $F(1, 110) = 19.16$, $p < .01$ ($M = 40.11$, $SEM = .77$ and $M = 38.07$, $SEM = .85$ for Time 1 and Time 2, respectively), and the lack of an interaction between group and time, $F(1, 110) < 1$, $p > .51$. Previous research has shown that the progression of the season and the relationship between fan expectations and team performance can influence team identification (Wann, 1996). The second questionnaire was administered in February after the completion of the bowl games and prior to the start of spring practice, recruiting season, and other activities that mark the unofficial start of 'next season'; therefore, this might represent a low point for team identification.

Individual χ^2 values were calculated for each football-related multiple choice question at each time point comparing accuracy for students of each school. There were no significant differences in accuracy on any of the questions at either time point, largest χ^2 ($N = 112$) = 1.59, $p > .21$. Both groups were equally educated about college football and that knowledge was stable over time. Similarly, there were no differences in participants' knowledge of the date of the first Rivalry game either initially or after the delay, χ^2 ($N = 112$) = .16 and 1.20, respectively, both $p > .27$. Given that Lafayette had a 4–0 Rivalry record heading into this game, we thought Lafayette students might respond to this question more accurately. There was a trend in this direction initially, χ^2 ($N = 112$) = 3.80, $p = .05$, but this apparent difference was gone by the 10-week follow-up, χ^2 ($N = 112$) = 1.82, $p > .18$. There was no difference between Lafayette ($M = 2.27$, $SEM = .17$) and Lehigh ($M = 2.74$, $SEM = .30$) students' ratings of the personal significance of the game at the February follow-up, $t(110) = 1.44$, $p > .15$. Lafayette and Lehigh students were not different in their levels of team identification, general football knowledge, knowledge of The Rivalry, or ratings of the personal significance of the game; therefore, these factors cannot account for other differences between the groups.

[3] Because of experimenter error, this question was omitted from the initial questionnaire.

Emotional salience

Consistent with our expectation, we found that fans of the winning team, Lehigh students ($M = 6.18$, $SEM = .17$), rated the game as significantly more positive than did fans of the losing team, the Lafayette students ($M = 3.64$, $SEM = .10$), $F(1, 110) = 170.67$, $p < .01$, partial $\eta^2 = .61$. Interestingly, the Lafayette students' rated the game near the midpoint of the emotional tone scale. This may reflect the generally festive nature of The Rivalry game and the particular ebb-and-flow of the 2008 game overcoming unpleasant feelings after the loss. The Lehigh students ($M = 5.77$, $SEM = .17$) also rated the game as more emotionally intense than did Lafayette students ($M = 4.84$, $SEM = .10$), $F(1, 110) = 19.89$, $p < .01$, partial $\eta^2 = .15$. Here, too, we see that the lower rating was above the midpoint for emotional intensity, as would be expected for a game of this importance to these groups. Both emotional tone and intensity reactions to the game were stable: neither decreased with time [$F(1, 110) = 3.69$ and 3.39 for affect and intensity, respectively, both $p > .05$, partial $\eta^2 < .03$] nor were there interactions between school and time [$F(1, 110) = .13$ and 1.75 for affect and intensity, respectively, both $p > .18$, partial $\eta^2 < .02$]. Therefore, the event outcome successfully influenced emotion by social group, and mnemonic differences between the groups may be attributable to these differences in emotional interpretation.

Individual and collective rehearsal

As predicted, we found a main effect of school such that Lehigh students thought and talked ($M = 4.36$, $SEM = .17$) about the event more than Lafayette students ($M = 3.78$, $SEM = .10$), $F(1, 110) = 8.69$, $p < .01$, although both groups rehearsed the event less frequently at Time 2 ($M = 3.46$, $SEM = .13$) than at Time 1 ($M = 4.69$, $SEM = .12$), $F(1, 110) = 70.05$, $p < .01$. There was no interaction between school and time on individual rehearsal, $F(1, 110) < 1$, $p > .89$.

As for collective rehearsal via the media, we found that in the initial questionnaire, Lehigh students reported watching highlights of the game more frequently than did Lafayette students, χ^2 ($N = 112$) = 4.28, $p < .04$, $\varphi = .20$. There were no differences between the groups, however, on reported reading about the game, χ^2 ($N = 112$) = 1.64, $p > .20$, $\varphi = .12$. By the delayed test, there were no differences between the groups on either measure, χ^2 ($N = 112$) = .95 and .11 for watching and reading, respectively, both $p > .33$, $\varphi < .09$. Consistent with ratings of individual rehearsal, one measure of collective rehearsal was increased for Lehigh fans initially but decreased for both groups over time.

Phenomenological and metacognitive characteristics

As FBMs are typically differentiated from ordinary autobiographical memories by their enhanced vividness, sense of reliving the experience while remembering, and confidence in the accuracy of one's memory, we expected Lehigh students to have higher ratings on these scales than Lafayette students and for those differences to increase with time. Consistent with this prediction, as shown in Figure 1 (bottom panel), there was an interaction between school and time

for vividness, $F(1, 110) = 5.32$, $p < .03$, partial $\eta^2 = .05$. Initially, both Lafayette and Lehigh students rated their memory for their personal circumstances during the game as equally vivid. However, the vividness of Lafayette students' memories faded over time, whereas this did not happen for the Lehigh students who felt that their memories where just as vivid 10 weeks later as they were the week after.

Unlike vividness, ratings of reliving (Figure 1, middle panel) did not differ between Lafayette and Lehigh students, $F(1, 110) = 3.13$, $p > .08$, partial $\eta^2 = .03$, nor was there an interaction between school and time, $F(1, 110) = 2.00$, $p > .16$, partial $\eta^2 = .02$. The only significant effect was a decrease in reliving ratings with time, $F(1, 110) = 17.89$, $p < .01$, partial $\eta^2 = .14$. This is surprising given that reliving ratings typically track with vividness (Rubin et al., 2003).

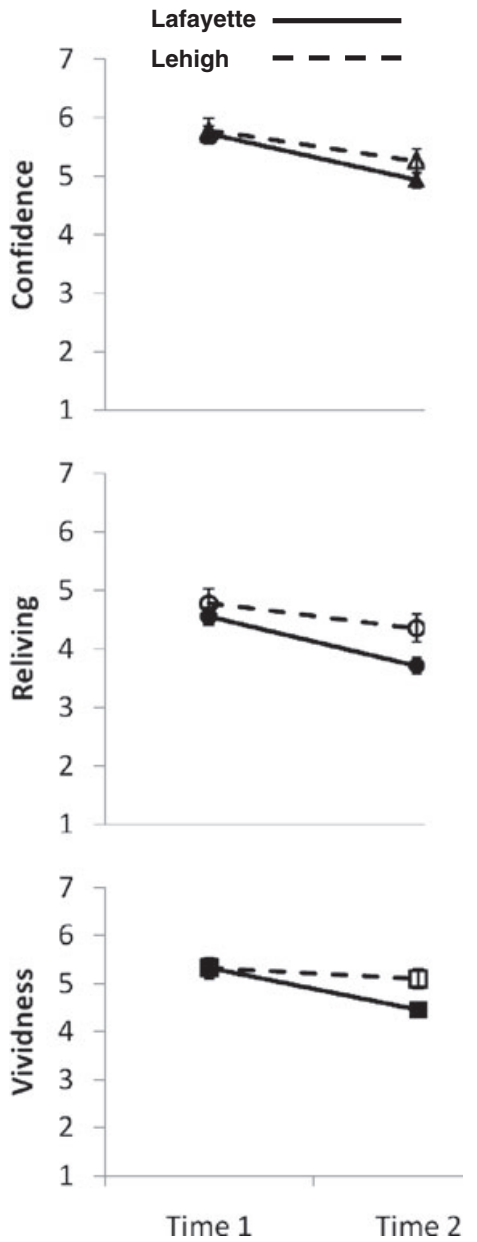

Figure 1. Phenomenological memory characteristics for Lafayette and Lehigh students' memories of the 2008 Rivalry football game. Vividness and reliving were anchored from 1 (*not at all*) to 7 (*more than any other memory*), and confidence was rated from 1 (*100% imaginary*) to 7 (*100% real*). Error bars represent standard error of the mean

Contrary to our prediction but consistent with the findings for reliving, the only significance difference in confidence ratings was a main effect of time, $F(1, 110) = 21.76$, $p < .01$, partial $\eta^2 = .17$. Neither the main effect of school [$F(1, 110) = .82$, $p > .36$, partial $\eta^2 = .01$] nor the interaction between school and time [$F(1, 110) = .89$, $p > .34$, partial $\eta^2 = .01$] was significant (see top panel in Figure 1). Surprisingly, social group had no effect on how confident individuals were in their memories for their personal circumstances during the game.

Autobiographical memory consistency

Both teams' fans were equally consistent in describing their personal circumstances during the game, $t(110) = .63$, $p > .52$, Cohen's $d = .12$; Lehigh students ($M = 7.58$, $SEM = .35$) were not more consistent in recalling the details of their personal experience than were Lafayette students ($M = 7.36$, $SEM = .17$). The pattern was the same if each individual question was examined [largest $t(110) = 1.12$, $p > .26$, Cohen's $d < .21$]. The range in average consistency scores across all four questions was from $M = 1.45$, $SEM = .07$ for what participants were wearing to $M = 2.25$, $SEM = .08$ for who participants were with. This implies that responses to most questions for most individuals had some inconsistencies but not major contradictions. Interestingly, consistency of the memory reports did not track with participants' confidence in the accuracy of their memories for their personal circumstances either initially [$r(110) = -.02$, $p > .79$] or after the delay [$r(110) = .08$, $p > .38$]. This is consistent with previous findings that confidence and consistency of FBM are dissociable (Talarico & Rubin, 2003).

Event memory accuracy

As shown in Figure 2, there were significant differences in how accurately each group remembered the game, both initially and after the delay. The only time where Lafayette students outperformed Lehigh students was in answering the question about Lafayette's starting quarterback initially, χ^2 ($N = 112$) $= 4.71$, $p < .05$, $\varphi = .21$. After 10 weeks, both groups scored equally well on that question, χ^2 ($N = 112$) $= .22$, $p > .63$, $\varphi = .04$. For all other questions at each time point, either Lehigh students outscored Lafayette students or they responded equally accurately.

One example of the selective omission of facts counter to positive social group identity is that, initially, 77% of Lehigh fans knew Lafayette had scored a safety, but this negative fact was retained by only about 10 of those 24 (42%) participants 10 weeks later. Although safeties are rare, this was a relatively trivial event in the game given the eventual outcome. Of those who initially responded correctly, the majority (54%) changed their response to saying that Lehigh had scored the safety and only one participant later said that neither team had scored a safety. The fact that more participants incorrectly selected Lehigh as having scored those two points instead of selecting the more typical response (i.e., that neither team did so) is further evidence that a positivity bias can alter memories of specific facts. In comparison, 68% of Lafayette students initially remembered that their team had scored a safety and 37 of those 55 (67%) participants retained that fact at Time 2. It is common for a team to earn 15

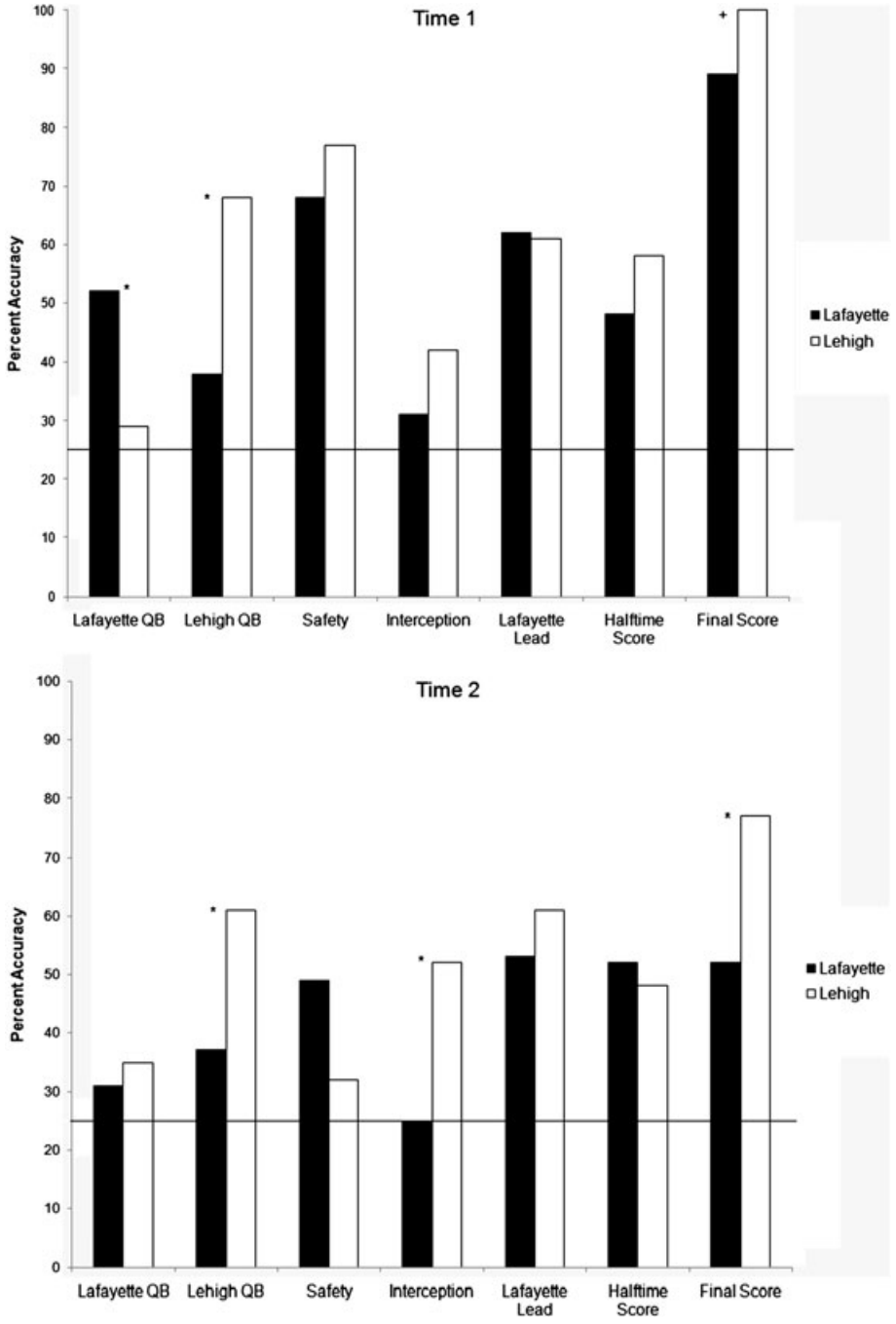

Figure 2. Accurate responses given for each question about the 2008 Rivalry game from Lafayette and Lehigh students. The top panel shows initial responses and the bottom panel shows responses at the 10-week delay. Each item was a four alternative forced choice question; therefore, chance performance is indicated by the line at 25%. $^{+}p < .10$, $^{*}p < .05$

points without a safety; therefore, responses to this question had to be based on episodic memory for the game (and could not have been based on inferential reasoning from the score or general familiarity with the teams and their players). Therefore, the enhanced memory for this particular fact by Lafayette students similarly demonstrates the positivity bias but in terms of increased accuracy rather than distortion.

Another example of this accuracy enhancement is that, after the delay, Lehigh students were significantly more accurate in recognizing the name of the player who caught the interception that was run back for a touchdown, $\chi^2\ (N = 112) = 7.45$, $p < .01$, $\varphi = .26$. [There was no difference between the two groups on this question initially, $\chi^2\ (N = 112) = 1.23$, $p > .26$, $\varphi = .11$.]

Notably, 100% of Lehigh students knew the correct final score of the game at the initial test; this was not true of Lafayette students. However, the ceiling effect for Lehigh resulted in a non-significant difference between the two groups initially, $\chi^2\ (N = 112) = 3.75$, $p > .05$, $\varphi = .18$. At the February follow-up, the Lehigh accuracy advantage was significant, $\chi^2\ (N = 112) = 6.06$, $p < .02$, $\varphi = .23$.

We also asked participants to rate the officiating at the game for comparison with previous accounts of bias in this area. Media accounts of the game did not mention the officiating, presumably because good officiating goes unnoticed. The vast majority of participants from both schools agreed, rating the officiating as 'good on both sides of the ball' both

initially ($n = 82$, 55 of whom were Lafayette students) and at the delay ($n = 76$, 51 of whom were Lafayette students). With such a small number of participants left to potentially indicate bias, inferential tests are unreliable; we report the raw values as they may be of interest to future investigators. Only one fan (3%) of the winning team said that the officiating was 'bad all around' at either time, whereas a number of Lafayette students endorsed that choice initially or after the delay [$n = 6$ (7%) and 8 (10%), respectively]. This might indicate that Lafayette students were attempting to use the officiating as an external attribution for the game outcome. Both initially and after the delay, more Lafayette students [$n = 16$ (20%) at both times] than Lehigh students [$n = 1$ (3%) and 2 (6%), respectively] indicated that the officiating was biased toward Lehigh. Similarly, at both times, proportionally more Lehigh students [$n = 2$ (6%) and 3 (10%), respectively] than Lafayette students [$n = 4$ (5%) and 6 (7%), respectively] said the officiating was biased toward Lafayette. Therefore, there is some preliminary evidence that fans of the losing team were more likely to reinterpret ambiguous information so that it reflected positively on their team and to seek external attributions for their team's performance.

Relationship between autobiographical and event memory

We examined the relationship between autobiographical memory consistency and accuracy on each factual question at each time point through a series of 2 (school: Lafayette versus Lehigh) $\times$ 2 (factual accuracy: accurate versus inaccurate) ANOVAs. Given a conservation alpha of .01 (due to the number of comparisons), only memory of the final score at Time 2 seemed to be related to autobiographical memory consistency. There was a significant interaction [$F(1, 108) = 11.13$, $p < .01$] such that Lafayette students who accurately recognized the final score ($M = 7.19$, $SD = 1.61$) were no more consistent in recall of their personal circumstances than were those who did not correctly recognize the final score ($M = 7.54$, $SD = 1.47$), $t(79) = 1.01$, $p > .31$. However, Lehigh students who accurately recognized the final score ($M = 8.08$, $SD = 1.67$) were significantly more consistent in recall of their personal circumstances than were those who failed to recognize the correct final score ($M = 5.86$, $SD = 1.95$), $t(29) = 3.00$, $p < .01$. This pattern is consistent with our claim that facts (or events) which reflect positively on social group identity will enhance autobiographical memory consistency.

Relationships among emotional salience, rehearsal, and memory

Lastly, we used path analysis (MacKinnon & Fairchild, 2009) to examine whether the influence of team identification on FBM phenomenology and event memory accuracy was mediated by rehearsal as would be predicted by Berntsen's (2009) model. We did not use team identification ratings because of range restriction concerns. However, others have demonstrated that team identification influences recollection of past team performance (Wann & Dolan, 1994). Instead, in each case, our predictor variable was emotional affect as rated at the initial test only, and our mediator variable was individual rehearsal as rated at the initial test only. Our outcome variables were assessed at the delayed interval only. See Figure 3 for each path diagram.

For event memory accuracy, we first computed a percent accuracy score for all of the game knowledge questions for each participant. We then found that the total effect of emotional affect significantly predicted accurate recall after the 10-week delay ($R^2 = .06$, $p < .03$). Although the direct effect of emotional affect on event memory was diminished with the inclusion of the indirect path through rehearsal, the difference between the two paths was not statistically significant, Sobel's test = 1.56, $p = .12$. Although seemingly inconsistent with previous findings (Breslin & Safer, 2011; Curci & Luminet, 2006; Er, 2003; Hirst & Meksin, 2009; Shapiro, 2006), most work in this area has demonstrated the influence of collective rehearsal but not individual rehearsal specifically. Although collective rehearsal is presumed to encourage individual rehearsal, these results suggest that the specific influence of each should be examined more fully.

Consistency of autobiographical memory reports was not influenced by emotional affect ($R^2 = .02$, $p > .29$). However, the metacognitive and phenomenological characteristics showed a much different pattern than did the objective memory measures. Consistent with Berntsen's model, vividness ($R^2 = .11$, $p < .01$) and reliving ($R^2 = .14$, $p < .01$) were significantly predicted by emotional affect, and this relationship was partially mediated by rehearsal, Sobel's test = 2.05 and 2.27, respectively, both $p < .05$. The effects of emotional affect on confidence in the accuracy of one's memory ($R^2 = .07$, $p < .02$) were somewhat different. However, rehearsal did not significantly mediate the effect according to Sobel's test = 1.87, $p < .07$. Importantly, there were strong and reliable relationships between emotional affect and rehearsal ($r = .22$, $p < .01$) and between rehearsal and each of these phenomenological measures (smallest $r = .22$, $p < .02$), which is exactly as predicted by the social identity mechanism of FBM.

DISCUSSION

Consistent with Berntsen's (2009) model of FBM, a positive outcome consistent with one's social identity lead to increased rehearsal that, in turn, enhanced autobiographical memory phenomenology. Lehigh students (i.e., fans of the winning team) rated the game as more emotionally intense and more emotionally positive. Furthermore, those questions were the only variables not to decrease with time for either group, demonstrating that the emotional interpretation of the event was stable. Lehigh students also thought more about, talked more about, and initially watched more highlights of the game than did Lafayette students, although rehearsal for both groups decreased over time. This is consistent with social conventions that encourage rehearsal of positive events, especially those that enhance group identity. Furthermore, rehearsal partially mediated the relationship between emotional affect and phenomenological and metacognitive processes. Therefore, differences between the groups may be attributed to emotional

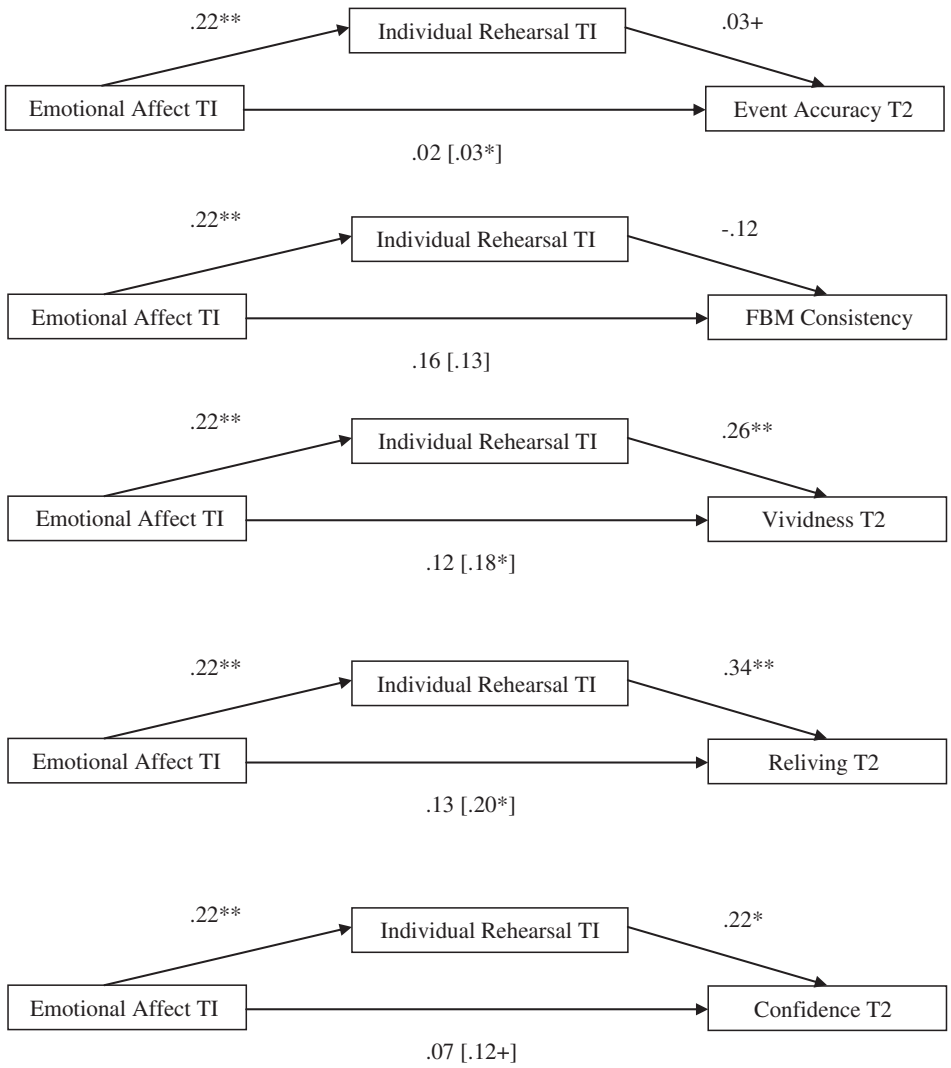

Figure 3. Path diagrams for the influence of emotional affect (T1 only) on event memory accuracy (T2 only) and autobiographical memory phenomenology (T2 only) as mediated by individual rehearsal (T1 only). $^{+}p < .10$, $*p < .05$, $**p < .01$

differences in the interpretation of the event and subsequent differences in rehearsal based on social identity.

Also consistent with our predictions, Lehigh students had enhanced metacognitive and autobiographical memory phenomenology relative to the Lafayette students. For vividness, this effect increased over time with Lafayette students' vividness ratings decreasing, whereas Lehigh students' remained high and stable. This is a similar pattern to Duke students' memories for the 11 September terrorist attacks when compared with everyday memories (Talarico & Rubin, 2003, 2007) and with claims that vividness is a hallmark of FBM (Rubin & Kozin, 1984). We had also predicted that Lehigh students would demonstrate increased reliving and confidence in the accuracy of their memories. However, this was not the case. For both reliving and confidence, both groups were not different from one another and both groups' ratings decreased equally over time.

For autobiographical memory consistency, both groups remembered the personal details of the event with some inconsistencies but without major contradictions. The relative specificity of the questions asked and the restricted range of possible responses may have artificially inflated consistency rates for both groups and reduced our ability to detect differences if they were present. Future investigators should either broaden the questions asked when examining consistency or, if possible, obtain objective accuracy measures for specific personal details (e.g., from available documentary sources or by confirming participants' reports with other people).

In contrast, there were reliable differences in how each group remembered the factual details of the game. Although past research has shown that positive events are not necessarily remembered more accurately than are events that are interpreted negatively (Baker-Ward et al., 2005; Bohn & Berntsen, 2007; Kensinger & Schacter, 2006), we found Lehigh students outperformed Lafayette students in event memory. Many specific questions portrayed Lehigh in a more positive light than Lafayette, thereby allowing social identify to enhance accuracy for that group. Support for this explanation comes from Breslin and Safer's (2011) study of fan memories for two recent American League championship baseball games played by the Yankees versus the Red Sox where they, too, found that fans remembered the game their team won more accurately than the game that their team lost. Previous FBM

research shows that the influence of social identity on factual event memory is highly variable. Er (2003) found no differences in accuracy between victims and non-victims of the Marmara earthquake. For memories of the 11 September terrorist attacks, Hirst and Meksin (2009) showed that New York City residents had more accurate recall than non-New York City residents, but Pezdek (2003) found that the influence of physical proximity on accuracy depended on the specific question being asked. Our data suggest that accuracy rates for individual questions may be more informative than global accuracy measures, as the influence of subjective reinterpretation may differ depending on the specific facts under investigation.

The desire to maintain positive self and social group identities has been suggested as to why other memories of personally significant, emotional events show inaccuracies. Neisser's (1982) erroneous FBM of listening to a baseball game [and not a football game as suggested by Thompson & Cowan (1986)] when he learned of the Japanese attack on Pearl Harbor is one such example. Neisser (1986) explained that, to a boy conscious of his immigrant status, the change 'made the memory more congruent with my own self-image [as a baseball fan] but also converted it into a personal symbol of 'Pearl Harbor Day'; when my country was attacked, I was doing the quintessentially American thing' (p. 286). Both Neisser's self and social identities were resonant with the FBM event, ensuring its quality and durability. On a population level, memories of Danes who lived through WWII were biased such that they tended to remember the day of the German invasion of Denmark as more cloudy, rainy, and cold than it really was and the day of Danish liberation as more sunny, dry, and warm than it really was (Berntsen & Thomsen, 2005). This is consistent with Baumeister and Hasting's (1997) claim that 'social groups ... will sometimes gradually distort their memories in systematic ways' (p. 277) in order to maintain a positive image of the group.

Baumeister and Hasting (1997) argued that 'perhaps the easiest and most obvious way to distort collective memory involves the selective omission of disagreeable facts. Events that make one's social group look bad can often be ignored or expunged from its memory' (p. 280). This tendency to omit unfavorable information may be especially prevalent in a sports context where one can easily look forward to next year or reminisce about past victories. Sporting events by nature are highly scripted, and therefore, we might expect less variability here than in memories for other autobiographical events (Shank & Abelson, 1977). In addition, the types of sub-events (e.g., particular plays and likely scores), their timeline (e.g., point-after-touchdown attempts and the progression from first to second to third down), and relative importance (e.g., a touchdown is better than a field goal and a rare fumble is more exciting than a common punt) are all significantly constrained by those same scripts. Within those constraints, we saw evidence of a positivity bias in that Lafayette fans were more likely to forget details of the game over time and to criticize the officiating of the game, thereby providing an external attribution for the cause of their team's defeat. Memory for the safety that was scored by Lafayette in this game also demonstrated evidence of the positivity bias. Lafayette students were more likely to maintain an accurate memory for that event, whereas Lehigh students not only failed to remember that Lafayette scored the safety, they also were more likely to say that Lehigh had done so instead of selecting the more common (though still incorrect) option that neither team had scored a safety.

The relative decrease we found in event memory accuracy over time may also be attributable to the idiosyncratic character of sports. Although rivalry games (or championship games) are incredibly important to teams and their fans, these games necessarily recur every year. For the winners, cherishing past victories is respectable, as it demonstrates an appropriate respect of team history. Similarly, one can look forward to reinforcing a favorable outcome by continuing to win the following season. For the losers, one can look forward to the next opportunity to win; 'waiting 'til next year' is a long-standing tradition for consoling oneself after a loss. Therefore, the pain felt in response to any one loss is necessarily time limited by the fact that redemption may be right around the corner. There are also examples of reframing dedication to a team with a losing record as a sign of loyalty and a refutation of 'fair-weather fan' or 'bandwagon jumping' status. Importantly, long-standing rivalries persist even in times of great inequity between the teams. Sports teams' fans are reliable, long-lasting, and influential social groups that have emotional, behavioral, and mnemonic consequences for their members.

Sports provide a potent context for examining the influences of social identity on memory processing for all of the reasons outlined earlier. As this study demonstrated, questions about semantic memory, autobiographical memory, and the metacognitive and phenomenological experience of remembering are all amenable to study with this paradigm. Furthermore, college students can become more than just a convenience sample for academic investigators, but instead their membership in stable social groups can provide a purposive sample for social-cognitive research.

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APPENDIX

The 144th meeting of the two teams followed a four-year Rivalry winning streak for Lafayette. While Lafayette (7–3) had a better season record heading into the game and had the home field advantage, they had faltered in their previous game, whereas Lehigh (4–6) was coming off a strong win.

On Lafayette's first possession, Lehigh linebacker Heath Brickner intercepted a pass by backup Lafayette quarterback Marc Quilling, and the resulting drive led to a 40-yard field goal by Jason Leo to give Lehigh the lead. With Lehigh ahead 10–0 later in the first quarter, Lafayette scored on a 62-yard touchdown rush by wide receiver Shaun Adair on a reverse play. Early in the second quarter, an errant Lehigh snap to quarterback J. B. Clark led to a Lafayette safety. The Leopards took their only lead of the afternoon on a 34-yard field goal by Davis Rodriguez before Lehigh scored again. The halftime score was Lehigh Mountain Hawks17, Lafayette Leopards12.

At the start of the second half, Lafayette's star quarterback Rob Curley (who had suffered a concussion three weeks earlier and was questionable as to whether he could play that week) entered the game and began to close the gap with a field goal in the third quarter. However, Lehigh scored another touchdown and had a 9-point lead with 7:11 remaining on the clock. The stage was set for an exciting race to the finish as Curley drove the Leopards down the field. But, with less than 4 minutes to play, Curley threw his first interception in 97 passes to Lehigh cornerback John Kennedy who returned it 94 yards for a touchdown, essentially sealing Lehigh's 31–15 victory. (Game summary based on original reporting at 'Lafayette football loses final', 2008 and 'Lehigh topples Leopards', 2008.)