Acta Psychologica 150 (2014) 114–119

Contents lists available at ScienceDirect

Acta Psychologica

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

Imagination perspective affects ratings of the likelihood of occurrence of autobiographical memories

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ARTICLE INFO

Article history:
Received 19 December 2013
Received in revised form 23 April 2014
Accepted 9 May 2014
Available online 25 May 2014

PsycInfo classification:
2340: Cognitive Processes
2343: Learning and Memory

Keywords:
Autobiographical memory
False memory
Imagination
Imagination inflation
Visual perspective
Imagery perspective

ABSTRACT

Two experiments tested and confirmed the hypothesis that when the phenomenological characteristics of imagined events are more similar to those of related autobiographical memories, the imagined event is more likely to be considered to have occurred. At Time 1 and 2-weeks later, individuals rated the likelihood of occurrence for 20 life events. In Experiment 1, 1-week after Time 1, individuals imagined 3 childhood events from a first-person or third-person perspective. There was a no-imagination control. An increase in likelihood ratings from Time 1 to Time 2 resulted when imagination was from the third-person but not first-person perspective. In Experiment 2, childhood and recent events were imagined from a third- or first-person perspective. A significant interaction resulted. For childhood events, likelihood change scores were greater for third-person than first-person perspective; for recent adult events, likelihood change scores were greater for first-person than third-person perspective, although this latter trend was not significant.

1. Introduction

Since 1994, an abundance of research in cognitive psychology has assessed the conditions under which false events are more or less likely to be planted in memory. Among these studies, one manipulation reported to increase the probability of planting false events in memory is the process of imagining the event. Mazzoni and Memon (2003), for example, reported that after imagining a target event, 40% of subjects reported having a memory for the event, compared to only 23% of those in the exposure-only condition (see Garry & Polaschek, 2000, for a review of the research on what has become known as imagination inflation, however see Pezdek & Eddy, 2001, for a discussion of when this effect simply reflects regression toward the mean).

Pezdek, Finger, and Hodge (1997) have suggested one model of how this process occurs. According to this model, if a suggested autobiographical event is judged to be plausible, that is, it is perceived to have a high base-rate probability of occurrence, a memory for this event can be constructed from details of the generic event script, as well as from details of related episodes of the event. Memory for the event thus becomes constructed from this related information in memory. Imagining an autobiographical event then would encourage individuals to activate relevant generic information and specific details already in memory and to use this information to construct the memory for the suggested event. Based on this interpretation, imagining an event is more likely to inflate an individual's belief that the event actually occurred if that event is imagined from a visual perspective more similar to how the event-related information is retained in memory. Our study tests this hypothesis.

It is well documented that whereas older memories are more likely to be recalled from a third-person than a first-person visual perspective, more recent memories are more likely to be recalled from a first-person than a third-person perspective (for a review see Rice, 2010). In the first empirical study of visual perspective, Nigro and Neisser (1983) had undergraduate subjects recall memories for eight specific life events. After recalling each memory, they decided whether the recalled memory was mentally viewed from a first-person or third-person perspective or both alternating. They then estimated the date of the described event. Memories reported to have been recalled from the first-person perspective were significantly more recent ($M = 15$ months ago) than those recalled from the third-person perspective ($M = 35$ months ago). Similar results were reported by Robinson and Swanson (1993) and Sutin and Robins (2007).

Together, these results suggest that over time there is a shift from using the first-person perspective to the third-person perspective to retrieve autobiographical memories. This shift has been accounted for by (a) a decrease over time in accessible visual details in the memory

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http://dx.doi.org/10.1016/j.actpsy.2014.05.006
0001-6918/

trace (Piolino et al., 2006; Rubin, Burt, & Fifield, 2003; Talarico & Rubin, 2003), and, as detailed memory fades, (b) an increase in dependency on reconstructive processes during recall (Nigro & Neisser, 1983; Robinson & Swanson, 1993). Hence, unlike memories for recently experienced events, reconstructed memories for remote events are more likely to be from the third-person perspective. This suggests that the phenomenological characteristics of childhood events imagined from the third-person perspective are more likely to match the phenomenological characteristics of reconstructed true childhood memories than those imagined from the first-person perspective. This study tests the hypothesis that when the phenomenological characteristics of an imagined event – specifically those that relate to visual perspective – are more similar to those of related events in memory, the imagined event is more likely to be considered to have occurred.

Specifically, Experiment 1 tests whether imagination inflation for childhood events is modulated by imaging the event from the first-person versus third-person perspective. At Time 1 and then two weeks later at Time 2, adult subjects rated each of the 20 events on the Life Events Inventory (LEI), as to whether the event had occurred to them in childhood. The LEI is simply a list of 20 life events, each of which is rated in terms of the likelihood of occurrence in one's past (see Appendix A). One week after Time 1, subjects were directed to imagine two of three LEI target events from either the first-person or the third-person perspective. Given that childhood events are more likely to be retained in a third-person than a first-person perspective, childhood events imagined from a third-person perspective are likely to share more phenomenological properties with remembered childhood events than those imagined from a first-person perspective. It is thus predicted that greater increases in ratings of the likelihood of occurrence from Time 1 to Time 2 will result for childhood events imagined from the third-person than the first-person perspective.

2. Experiment 1

2.1. Method

2.1.1. Subjects and design

Subjects were recruited from psychology classes at colleges in the Los Angeles metropolitan area. G*Power analysis confirmed that at least 36 subjects were required to detect effects with an effect size of $d = .35$, alpha = .05 and power = .80 (Faul, Erdfelder, Lang, & Buchner, 2007). Consistent with our previous research (Pezdek, Blandón-Gitlin, & Gabbay, 2006) we specified two exclusion criteria in both experiments: (a) producing LEI ratings that were either all 1's or 8's at either T1 or T2, or (b) providing a rating other than 1 at either Time 1 or Time 2 on one of the three unrealistic LEI events ("won a million dollars", "shook hands with the President", "played for the LA Lakers"). These three events were included to monitor whether subjects were paying attention and providing credible answers. Seven subjects met the first exclusion criterion and were not included in the analyses. No subjects met the second exclusion criterion. Multivariate outliers were analyzed on the dataset utilizing the Mahalanobis distance statistic as recommended by Tabachnick and Fidell (2007). The Mahalanobis distance statistic averages the means and variances of all dependent measures into a centroid point to which each individual subject is compared. If a subject's Mahalanobis distance score is greater than the cutoff (determined by a chi-square distribution where *df* is the number of dependent measures, and alpha is .01) it is considered a multivariate outlier. Following the examination of Mahalanobis distances compared to the critical cutoff value 11.34, no subjects were identified as multivariate outliers. A total of 47 subjects was included in all subsequent analyses (M age = 20.15 years, $SD = 3.52$; 19 males and 28 females). The study was a within-subjects design with 3 perspective conditions (first-person perspective, third-person perspective, and no-imagination control).

2.1.2. Procedure and materials

The study included three phases. In the first phase at Time 1, subjects completed the 20-item LEI similar to that used by Pezdek et al. (2006); see Appendix A. Three of these 20 LEI items served as target events: "found a $10 bill in a parking lot," "broke a window with your hand," and "were almost hit by a car." Subjects rated the likelihood of occurrence for each LEI event on a scale from 1 ("definitely did not happen to me prior to age 10") to 8 ("definitely did happen to me prior to age 10"). No time limit was imposed to complete this task.

One week later, subjects returned for the intervention phase. Each participant was given a packet to complete self-paced. Each packet contained imagination instructions and two of the three target events from the LEI. Subjects were given directions and guided to imagine one childhood target event from the first-person perspective and one from the third-person perspective. Similar to the procedures of Garry, Manning, Loftus, and Sherman (1996) and Pezdek et al. (2006), a no-imagination control condition was used in which the third target event was simply not presented in the intervention phase. The information about each of the two imagined target events was presented on a separate page. The assignment of the three target items to the three within-subjects perspective conditions, and the order of presenting those conditions were counterbalanced across subjects. Each of the three target events served equally often in each of the three perspective conditions.

The imagining instructions given to subjects for the two imagined target events were similar to those used by Pezdek et al. (2006) with the addition of specific instructions guiding subjects to use either the first-person or third-person perspective during imagination. Imagination instructions from the first-person perspective were the following:

> I want you to take a few minutes and focus on generating a clear image in your mind of yourself as a 7-year-old child, finding a $10 bill in a parking lot. *Imagine this as if you are re-experiencing the event. Visualize what is happening through your own eyes. In other words, you see things happening from your own perspective.*

In the third-person perspective condition, the italicized text above was replaced with the following text:

> *Imagine this as if you are a spectator of the event. Visualize what is happening through the eyes of another person watching you. In other words, you see things happening from someone else's perspective.*

After each event was imagined, subjects were instructed to write a detailed description of their image of the event. In the no-imagination control condition, the third target event was simply not presented in the intervention phase.

Next subjects completed the six-item questionnaire used by McIsaac and Eich (2002) to assess self-reported qualitative ratings of the two imagined events. Subjects first rated the total amount of time they were able to imagine each event using a scale ranging from 0% ("never") to 100% ("always"), in 10% increments. The following five additional questions were then rated on a 7-point scale: How strongly was the perspective maintained, how difficult was it to maintain the perspective, to what degree did the perspective influence imagining of the event, how rich in detail was their image, and how rich in emotion was their image.

One week after the intervention phase, at Time 2, subjects completed the test phase in which they filled out the LEI a second time, again providing likelihood of occurrence ratings for each of the 20 events just as they had done at Time 1.

2.2. Results and discussion

2.2.1. LEI scores

First, the mean LEI scores for target items at Time 1, presented in the left half of Table 1, did not significantly differ across the three perspective conditions, $F(2, 45) = 0.735$, $p = .485$, $\eta_p^2 = .032$ (Hotelling's Trace).