Short Communication

Positive involuntary autobiographical memories: You first have to live them

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A B S T R A C T

Involuntary autobiographical memories (IAMs) are typically discussed in the context of negative memories such as trauma 'flashbacks'. However, IAMs occur frequently in every-day life and are predominantly *positive*. In spite of this, surprisingly little is known about how such positive IAMs arise. The trauma film paradigm is often used to generate negative IAMs. Recently an equivalent positive film was developed inducing positive IAMs (Davies, Malik, Pictet, Blackwell, & Holmes, 2012). The current study is the first to investigate which variables (emotional reaction to the film; recognition memory of the film; participant characteristics) would best predict the frequency of positive IAMs. Higher levels of positive mood change to the film were significantly associated with the number of positive IAMs recorded in the subsequent week. Results demonstrate the importance of positive emotional reaction at the time of an event for subsequent positive IAMs.

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1. Introduction

Autobiographical memory is the area of memory related to the recollection of past personal events (Conway & Pleydell-Pearce, 2000). In some cases autobiographical memory occurs via a voluntary or deliberate process – actively recalling past events to remember a particular detail or to relive an experience. In contrast, involuntary memories are those which are spontaneously brought to consciousness without preceding attempts to retrieve them (Berntsen, 1996; Mace, 2007). A recent study using a mechanical counter found that involuntary autobiographical memories (IAMs) occurred three times as frequently as voluntary memories over the course of a normal day in everyday life (Rasmussen & Berntsen, 2011). Additionally, a telephone survey of 1500 Danes identified that approximately 60% of IAMs reported were positive in nature (Berntsen & Rubin, 2008). Such IAMs may help us spontaneously relive our past positive experiences in the texture of everyday life and can improve our mood in the process.

We know surprisingly little about how or why such positive IAMs arise, although more is known about negative IAMs. Negative IAMs have been well researched in the form of 'flashbacks'; a common and distressing symptom of Posttraumatic Stress Disorder (PTSD; American Psychiatric Association, 2000). Most commonly, flashbacks occur as image based negative involuntary autobiographical memories of traumatic events which hijack attention (Clark, Holmes, & Mackay, in press). Hence, in this form they are similar to that of positive IAMs, differing only in their emotional valence.

To our knowledge, there has only been one previous study examining involuntary memories of potentially positive rather than negative film material. This study from 1973 compared stressful films with 'erotic' films and studied participants

'mental content' while performing a signal detection task (Horowitz & Becker, 1973). They reported no difference in the frequency of intrusive mental content (partially related to IAMs) to the two films, and this frequency was inversely correlated with negative, but not positive, emotional reactions to the erotic film. Thus, it is not clear whether the intrusive mental content of the erotic film was emotionally positive for participants. It would therefore be of interest to test a film with overtly positive material and to measure positive IAMs directly.

Research into flashback development may be able to inform our understanding of positive IAMs. Emerging research suggests that flashback processes are similar to general memory formation (Berntsen & Rubin, 2008; Krans, Näring, & Becker, 2009). An individual's emotional response during and immediately after a traumatic event is one of the strongest predictors of PTSD (Ozer, Best, Lipsey, & Weiss, 2003). Individual characteristics, (e.g. gender, history of depression, anxiety) have also been found to predict PTSD but to a lesser extent (Brewin, Andrews, & Valentine, 2000; Ozer et al., 2003). Additionally, patients with bipolar disorder frequently report flashback memories (Gregory, Brewin, Mansell, & Donaldson, 2010). Emotional reaction during an event and some participant characteristics may therefore also be important for the formation of positive IAMs.

A commonly used methodology to investigate flashback development is the trauma film paradigm (Holmes & Bourne, 2008). The trauma film paradigm involves participants watching traumatic film footage (e.g. car crashes and surgery) as an analogue of real trauma in the laboratory (Bourne, Mackay, & Holmes, in press). Participants then keep a diary to monitor any subsequent IAMs of the film footage over the following week (Holmes, Brewin, & Hennessy, 2004) – a widely used methodology in IAM literature (e.g. Berntsen, 2001; Laposa & Alden, 2008). Additionally, Schlagman and Kvavilashvili (2008) found no differences between IAMs reported in a written diary and IAMs reported during an undemanding vigilance task conducted in the laboratory. As a method of self-report, the written diary could be argued to have distorting effects, however, the diary method offers a unique window to understand phenomenology, in this case IAMs, in the context of everyday life (see Bolger, Davis, & Rafaeli, 2003 for a detailed review on the strengths and limitations of the diary methodology).

Recently, an equivalent 'positive' film paradigm was developed successfully eliciting positive IAMs (Davies et al., 2012). Here we used a positive film, including, for example, scenes that encompassed the jubilation of being enthusiastically greeted after finishing university final exams, the excitement of a rollercoaster ride and extreme sports, the pride of graduating, and the thrill of gambling. The current experiment investigated the influence of state and trait variables on the frequency of positive IAMs, predicting that film viewing variables (emotional reaction to the film, recognition memory of the film), would have a greater effect than participant characteristics (age, gender, history of hypomania, depression, anxiety).

2. Method

2.1. Participants and procedure

The sample consisted of 95 participants (53 female) with a mean age of 23.45 years (*SD* = 7.0). On arrival, participants were asked to complete questionnaires concerning their current mood and baseline characteristics (Section 2.2). Participants were then asked to watch the positive film, imagining that the events being depicted were happening to them right now. After film viewing, participants' mood was reassessed and they were asked to record any IAMs of the film in a 1-week diary (Holmes et al., 2004). Participants returned after one week and completed a recognition memory test of the film (Fig. 1).

2.2. Measures

2.2.1. Participant characteristics
History of hypomania was measured using the Mood Disorders Questionnaire (MDQ; Hirschfield et al., 2000). The self-report questionnaire is split into three sections; Section 1 consists of 13 yes/no items looking at lifetime (hypo)manic symptoms, Section 2 asks about symptom co-occurrence, and Section 3 asks about symptom severity on a four point scale (no problem, minor problem, moderate problem, serious problem). Total scores range from 0 to 17, with severity scored from 0 to 3, respectively. Higher scores represent higher levels of hypomanic history.

Current depression levels were measured using the Beck Depression Inventory Second Edition (BDI-II; Beck, Steer, & Brown, 1996). Participants respond to 21 questions on a scale of 0 to 3, asking about their mood over the last 2 weeks. Higher total scores represent higher levels of current depression.

Trait anxiety was measured using the State-Trait Anxiety Inventory-Trait version (STAI-T; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The STAI-T contains 20 anxiety related items which participants' rate on a four point scale as to how they generally feel. Higher total scores represent higher levels of trait anxiety.

2.2.2. Film viewing variables
Emotional reaction to the film was assessed by the positive subscale of the Positive and Negative Affect Schedule 10 (PANAS-10; Watson, Clark, & Tellegen, 1988) before and after film viewing. Scores on the positive subscale can range from 10 to 50, with higher scores representing higher positive affect. Emotional reaction to the film (residual PANAS mood change) was determined from the standardised residuals of the PANAS-10 change scores to take into account mood before the film (as in Laposa & Alden, 2008).