

## **REMEMBERING AND FORGETTING AUTOBIOGRAPHICAL EVENTS: INSTRUMENTAL USES OF HYPNOSIS**

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### **Abstract**

Although intrinsic hypnosis research focuses on the phenomenon of hypnosis itself, instrumental research uses hypnosis as a tool to investigate phenomena outside its immediate domain. The present paper illustrates the value of instrumental hypnosis research by focusing on the use of hypnosis to explore the remembering and forgetting of autobiographical events. In particular, the paper focuses on a programme of research using post-hypnotic amnesia to develop a laboratory model of functional amnesia. This research highlights some of the theoretical and methodological challenges inherent in instrumental hypnosis research, as well as its interest and value. Finally, other potential uses of hypnosis within the domain of personal memory are discussed, including autobiographical memory in hypnotically elicited delusions.

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**Key words:** hypnosis, intrinsic, instrumental, post-hypnotic amnesia, research

### **Introduction**

Modern hypnosis research focuses on a range of theoretical, methodological and empirical issues. For instance, at the Hypnosis Research Laboratory at the University of New South Wales, Australia, my colleagues and I conduct research to examine:

- Basic hypnotic phenomena.
- Methods of indexing the subjective experience of hypnosis.
- Experimental psychopathology.
- The interaction of hypnosis and memory in experimental and applied contexts (Barnier and McConkey, 1992, 1996, 1998a, 1998b, 1998c, 1999a, 1999b, 2001; McConkey, Barnier, Maccallum, and Bishop, 1996; Wilton, Barnier, and McConkey, 1997; Bryant and Barnier, 1999; Bryant and Barnier, 1999; Bryant, Barnier, Mallard, and Tibbits, 1999; McConkey, Gladstone, and Barnier, 1999; McConkey, Wende and Barnier, 1999; Maccallum, McConkey, Bryant, and Barnier, 2000; Burn, Barnier, and McConkey, 2001; McConkey, Szeps, and Barnier, 2001).

Consistent with the distinction of Reyher (1962), our research may be characterized as ‘intrinsic’ and/or ‘instrumental’. Intrinsic research focuses on the phenomena and nature of hypnosis itself, whereas instrumental research uses hypnosis as a tool to investigate phenomena outside its immediate domain. Despite the long empirical tradition of both research types, discussion and controversy has concentrated more on intrinsic hypnosis research (Kirsch and Lynn, 1995; Nash, 2001) rather than its instrumental value.

Yet hypnosis research has made, and continues to make, important and novel contributions across the spectrum of psychological, psychiatric and medical enquiry (Hilgard, 1971; Barnier and McConkey, 1999c). For instance, over 60 years ago Brickner and Kubie (1936) used post-hypnotic suggestion to induce a 'miniature psychotic storm'. Reflecting the theoretical orientation and language of the time, these authors interpreted their results as indicating that unconscious commands of the superego operate within the human personality. Three decades later, Reyher and colleagues refined this use of post-hypnotic suggestion to create a laboratory analogue of pathological symptom formation, repression and impulse inhibition (Reyher, 1961, 1962, 1969; Reyher and Basch, 1970; Perkins and Reyher, 1971; Sommerschild and Reyher, 1973; Burns and Reyher, 1976). Most recently, investigators have integrated hypnosis research with the latest neuroimaging techniques to explore conversion hysteria, auditory hallucinations, and sensory and affective components of pain (Rainville, Duncan, Price, Carrier and Bushnell, 1997; Szechtman, Woody, Bowers and Nahmias, 1998; Oakley, 1999; Halligan, Athwal, Oakley and Frackowiak, 2000).

The present paper further illustrates the instrumental value of hypnosis with research we are conducting at the University of New South Wales on hypnosis and autobiographical memory. Hypnosis and hypnotic techniques offer a powerful and novel means of examining the operation and interaction of basic psychological processes that are generally considered to lie outside the domain of hypnosis.

### **Remembering and forgetting autobiographical events**

Autobiographical memories are recollections of specific episodes from our past. We experience such memories as a 'reliving', believe strongly that the remembered events actually happened and generally recall highly detailed, sensory information about place, actions, persons, objects, thoughts and affect (Tulving, 1972, 1985; Brewer, 1996). Normal autobiographical remembering involves shifts in our conscious awareness of memories. That is, we remember some events and forget others, and what is remembered versus forgotten can change across time and circumstances. This fact may be understood in terms of the basic principle that memories that are potentially available to consciousness may not always be accessible (Tulving and Pearlstone, 1966; Kihlstrom and Barnhardt, 1993). However, some clinical disorders, such as functional amnesia (American Psychiatric Association, 1994), involve dramatic shifts in accessibility and extreme levels of forgetting. For instance, Schacter (1996; see also Christianson and Nilsson, 1989; Schacter and Kihlstrom, 1989; Kopelman, Christensen, Puffett and Stanhope, 1994; Bryant, 1995; Kihlstrom and Schacter, 1995) described the case of a young man found wandering the Toronto streets who could not remember his name, where he lived, and most of his personal past. All he could remember was that he had once worked as a courier and been called by the nickname 'Lumberjack'. His IQ was in the normal range, he could remember ongoing experiences, recognize famous faces and use vocabulary normally. Yet, he could remember almost nothing of the events of his life. Lumberjack's amnesia resolved a few days later as he watched a television movie depicting an elaborate funeral and cremation. His amnesia had apparently been triggered by the death of his grandfather and the subsequent trauma of the funeral. Lumberjack then remembered his real name and within a short time, the rest of his past.

Functional amnesia is characterized by the individual's inability to consciously access personal memories. Notably, however, the 'forgotten' memories can still influence their behaviour, thoughts or emotions. In other words, there are major discrepancies between

explicit and implicit memory (Schacter, 1987). Further, functional amnesia often resolves spontaneously. This reversibility marks it as a phenomenon of memory accessibility rather than normal forgetting (that is, memory decay over time; Kihlstrom and Schacter, 1995). Functional amnesia is labelled 'functional' for two reasons:

- To differentiate it from amnesia associated with identifiable medical or organic conditions.
- To recognize that at some level the loss of memory serves a psychological goal.

Despite being goal-directed, the forgetting appears outside the control of the individual and is maintained in the face of attempts to breach it (Christianson and Nilsson, 1989; Kopelman et al., 1994; Kihlstrom and Schacter, 1995).

### **Post-hypnotic amnesia as a model of functional amnesia**

Hypnosis also involves variations in the awareness and accessibility of information (Hilgard, 1974; Kihlstrom, 1984). A large body of empirical work has demonstrated that a suggestion for post-hypnotic amnesia can alter an individual's access to memories (Kihlstrom, 1980; Bryant et al., 1999; Barnier et al., 2001). Post-hypnotic amnesia involves suggesting to an hypnotized individual that he or she will be unable to recall particular information or events after hypnosis until he or she receives a reversibility cue that cancels the suggested effect. In response to this, high hypnotizable but not low-hypnotizable individuals show a pattern of memory impairment similar to functional amnesia, including:

- A disruption of conscious retrieval of the target material as indexed by explicit memory measures.
- A continuing influence of the targeted material as indexed by implicit memory measures.
- Reversibility of the effect.

For instance, following an hypnotic induction procedure, Barnier et al. (2001) gave high and low hypnotizable individuals a post-hypnotic amnesia suggestion that targeted a word list they had learnt either before or after the induction. Barnier et al. (2001) found recall impairments for high but not for low hypnotizable individuals, equivalent levels of perceptual and semantic priming across high hypnotizable and low hypnotizable individuals, and reversibility.

The effect of post-hypnotic amnesia on memory has been explained as a temporary, retrieval-based dissociation between episodic and semantic memory (Kihlstrom, 1985; Kihlstrom and Barnhardt, 1993), as a strategic, socially motivated response withholding (Coe, 1978; Spanos, 1986), as output inhibition based on the selective tagging of targeted information as 'forbidden' (Husemann, Gruder and Dorst, 1987; Smith, Morton and Oakley, 1998) and as involving executive control processes that prematurely terminate the retrieval cycle to meet the goal of a genuine amnesia experience. Laying aside these interpretations, commentators have focused on the parallels between (pathological) functional amnesia and (non-pathological) post-hypnotic amnesia, and have argued that post-hypnotic amnesia is the laboratory analogue of functional amnesia (Neisser, 1967; Schacter and Kihlstrom, 1989; Kihlstrom and Schacter, 1995; Barnier and McConkey, 1999c). Unfortunately, investigations of post-hypnotic amnesia have tar-

ged predominantly relatively simple, non-personal material rather than autobiographical memories. We have recently extended previous work to address three major questions:

- Can post-hypnotic amnesia create forgetting of autobiographical episodes?
- Does post-hypnotic amnesia share core features with functional amnesia?
- Is post-hypnotic amnesia a useful laboratory model of functional amnesia?

This research is now reviewed in brief.

### **Post-hypnotic autobiographical amnesia**

Our investigations of the effect of post-hypnotic amnesia on autobiographical memory typically involve a comparison of high hypnotizable and low hypnotizable subjects, because high hypnotizable individuals but not low hypnotizable individuals can experience post-hypnotic amnesia (Kihlstrom, 1980; Bryant et al., 1999; Barnier et al., 2001). Subjects were asked to generate (before or during hypnosis) autobiographical information (such as names of friends or schools, Barnier, 2002; Barnier et al., in press), memorable incidents from particular episodes (first day of high school, last birthday) or specific past events in response to a cued recall task (Cox and Barnier, in press). A post-hypnotic amnesia suggestion that targeted some or all of these memories was then given. For instance, in one experiment subjects were asked to recall their first day at high school and their first day at university and suggested amnesia for one of these episodes. In a second experiment, subjects were asked to recall specific events from their first romantic relationship in response to cue phrases (for example, going to the movies) and suggested amnesia either for these specific events or the entire relationship (Cox and Barnier, in press).

After hypnosis, we asked subjects to recall the autobiographical information both before and after the amnesia suggestion was cancelled. Across the experiments, virtually all high hypnotizable and low hypnotizable subjects initially generated the requested memories. Following the amnesia suggestion, however, high hypnotizable but not low hypnotizable subjects showed a significant decline in recall. For instance, of the high hypnotizable and low hypnotizable subjects who generated the most memorable incident from their first day at high school, all the low hypnotizable but only 20% of the high hypnotizable subjects recalled their incident after it was targeted by the amnesia suggestion (Barnier, 2002). This impairment in high hypnotizable subjects' recall was reversed after cancellation of the suggestion, so that high hypnotizable individuals (as well as low hypnotizable individuals) again recalled at near ceiling level. Notably, across all our experiments high hypnotizable subjects' recall was consistently poorer for information or episodes targeted by an amnesia suggestion than for material not targeted. For example, when it was not targeted by the suggestion, 80% of the high hypnotizable individuals recalled their most memorable incident from the first day of high school (Barnier, 2002). In other words, post-hypnotic amnesia can have quite selective effects on personal memory (see also Cox and Barnier in press).

### **Indexing implicit autobiographical memory**

Our findings indicate that post-hypnotic amnesia shares at least two core features with functional amnesia:

- Impaired explicit memory of autobiographical events.
- Reversibility.

But what about the third feature — spared implicit memory? Implicit memory refers to the effect of past events or material on task performance in the absence of conscious recollection (Schacter, 1987). Implicit effects are a key aspect of clinical reports of functional amnesia. For instance, McConkey and Sheehan (1995) reported the case of JD, a victim of ‘hypnotic seduction’, who developed functional amnesia after being sexually assaulted by a lay hypnotist during a hypnosis session. During a subsequent hypnosis session with the authors (requested by the police to help JD recover her memories), she adopted an idiosyncratic body posture (arms held above her head) consistent with suggestions made originally by the lay hypnotist, even though she remained amnesic for the assault.

Despite its relevance to functional amnesia, ‘implicit autobiographical memory’ is conceptually problematic and methodologically challenging. For example, most theoretical accounts view autobiographical memory in terms of the conscious recollection of past events (Conway and Pleydell-Pearce, 2000). Also, most measures of implicit memory were designed with simple stimuli (such as word lists) and repetition (rather than conceptual/semantic) priming in mind (Barnier et al., 2001). We developed new tasks or adapted existing tasks to index implicit autobiographical memory appropriately. For instance, in the experiment described above, category generation and social judgement tasks were used to tap features of the ‘forgotten’ autobiographical episodes (Barnier, 2002). Before hypnosis, high hypnotizable and low hypnotizable subjects were asked to recall personal semantic information (names of female and male friends) and a memorable incident from the first day at high school and the first day at university. During hypnosis, a post-hypnotic amnesia suggestion that targeted one of the episodes was given. For the category generation task, after hypnosis subjects were asked to generate ten girl’s names and ten boy’s names as quickly as possible. The focus of interest was whether, despite being unable to recall their friends’ names explicitly (from the episode targeted by amnesia), they might use those names as instances. This is precisely what happened. High hypnotizable individuals (explicitly) recalled fewer of their friends’ names than low hypnotizable individuals, but (implicitly) generated the same number as instances.

For the social judgement task, after hypnosis I asked subjects to rate the likelihood of a set of 20 life events and to recall whether or not those events had ever happened to them. Subjects’ own memorable incidents were included in the list. As expected, although high hypnotizable but not low hypnotizable subjects indicated that they were unsure whether the targeted incident had happened to them, high hypnotizable individuals rated their ‘forgotten’ incident as equally likely as those of low hypnotizable. These results represent a single dissociation between explicit and implicit memory (see also Barnier et al., 2001). More importantly, they suggest that post-hypnotic amnesia for autobiographical events is characterized by an ongoing implicit influence of the forgotten information.

### **Modelling patterns of memory loss: accessibility versus quality**

Our research indicates that post-hypnotic amnesia can create forgetting of autobiographical events and shares core features with functional amnesia. Thus, post-hypnotic amnesia appears to be a useful laboratory model of functional amnesia. But the real test is whether

post-hypnotic amnesia can model the finer details of memory dysfunction. For instance, case reports of amnesia patients highlight that, although some individuals have difficulty retrieving personal memories at even the most abstract level, others can retrieve memories, but their recollections are mundane and qualitatively poor (Conway, 1996). Relatedly, studies of experimentally induced and clinically associated forgetting indicate that attempts to forget may be more likely to impair the quality of memories (for example, clarity, vividness, detail, narrative sequence) rather than create complete memory loss (Koss, Figueredo, Bell, Tharan and Tromp, 1996; Wegner, Quillian and Houston, 1996; Rassin, Merckelbach, and Muris, 2000).

Based on these findings, in a recent experiment we explored the effect of post-hypnotic amnesia on the accessibility versus quality of autobiographical memory (Barnier et al., in press). Before hypnosis, high hypnotizable, medium and low hypnotizable subjects were asked to recall their last birthday and their last Christmas. During hypnosis, subjects were given a post-hypnotic suggestion that targeted one of these episodes. After hypnosis, subjects were asked to recall the episodes again. Post-hypnotic amnesia was found to influence temporarily both the accessibility and quality of high hypnotizable individuals' memory of the targeted episode, as well as the quality of their memory of the non-targeted episode. They were less likely to recall the targeted episode, their recall of both episodes was general (rather than specific) and lacked an identifiable narrative and they rated memories of both episodes as less clear overall and less detailed in terms of sound, spatial information, and thoughts and feelings. Post-hypnotic amnesia influenced the quality, but not the accessibility, of medium hypnotizable individuals' memory of the targeted episode and influenced neither the accessibility nor quality of low hypnotizable individuals' memory of either episode.

Indexing the effect of post-hypnotic amnesia on both memory accessibility and memory quality revealed strong individual differences, which are often overlooked by the traditional, accessibility-based criterion of post-hypnotic amnesia. This focus also highlighted that post-hypnotic amnesia can capture the details as well as the overall pattern of functional amnesia. In related research, we:

- Compared the effect of a general versus specific suggestion on personal memory.
- Evaluated attempts to breach amnesia.
- Compared post-hypnotic amnesia with directed, faked and normal forgetting.
- Considered role of personality style in autobiographical forgetting.

This work may clarify the extent, maintenance, mechanisms and individual differences involved in clinical disorders of memory.

### **Autobiographical memory in hypnotically elicited delusions**

I have argued that hypnosis helps us to understand normal and abnormal shifts in the accessibility of personal memory. It can also help us to understand normal and abnormal relationships between autobiographical memory and self-identity. Delusional beliefs, although inconsistent with objective reality and sometimes bizarre, are strongly believed in narrative accounts of (possibly distorted or confabulated) autobiographical events. A comparison of deluded and non-deluded schizophrenic patients by Baddeley, Thornton, Chua and McKenna (1996) indicated that when asked to recollect autobiographical events from their lives, the deluded patients actually performed significantly better than the non-deluded patients. Thus,

rather than reflecting a simple breakdown in autobiographical memory function, deluded individuals may reinterpret or recall past experiences in the service of their delusion. For instance, Baddeley et al. (1996) described the case of EN, a 34-year-old woman who believed that she had a (non-existent) identical twin sister. Recalling the last time they met, she described her sister arriving in a car whilst EN was sunbathing in the garden, walking in with a suitcase and staying for a week. The important question is whether this 'memory' is a complete confabulation or a mostly accurate representation of a past event that EN genuinely experienced, but with one of the main participants transposed.

Hypnosis may be used to address this question. Just as post-hypnotic amnesia shares features with functional amnesia, hypnotic experience and clinical delusions correspond in a number of ways. Both involve experiences that have no basis in objective reality, both involve beliefs that are held with conviction and maintained in the face of contradictory evidence, and both involve a tendency to process information in a way that is consistent with the delusional experience (Sutcliffe, 1961; Kihlstrom and Hoyt, 1988). Drawing on previous research, which focused on information processing of relatively non-personal material during a hypnotic sex change (Noble and McConkey, 1995; Burn et al., 2001), we recently examined autobiographical remembering during hypnotic identity delusion. Following a hypnotic induction procedure, high hypnotizable and low hypnotizable subjects were given a suggestion either to become one of their siblings ('self-delusion') or to believe that they had a non-existent or extra sibling ('other-delusion'). After a series of questions about their identity (name, age, what they look like, likes and dislikes), subjects were asked to generate relevant autobiographical memories. High hypnotizable individuals more than those of low hypnotizable were found to experience a compelling, transient delusion about their identity. Most importantly, the memories they generated to support their delusion appeared to be reinterpretations of their own experiences or remembered experiences of others (such as siblings), rather than entire confabulations. For instance, one high hypnotizable individual who was instructed to become her older sister recalled memories (as the sister) of her first year at university. During a post-experimental enquiry, she indicated that those memories reflected a combination of her own personal experience of university and comments that her mother had made about the older sister's (lazy) attitude towards university. These findings highlight that hypnosis offers a unique and potentially powerful way of exploring the influence of delusional experiences on information processing, including autobiographical remembering.

## **Conclusion**

At least since William James (1890), commentators have emphasized that hypnosis is not only intrinsically interesting but can shed light on phenomena and problems outside its immediate domain (see also Hilgard, 1971; Barnier and McConkey, 1999c; Nash, 2001). Of course, in turn, instrumental research has considerable intrinsic value. Our investigations of post-hypnotic amnesia, which allow us to create and index functional amnesia in the laboratory as well as to learn more about the interaction of hypnosis and memory, is just one example of the contribution of instrumental research. There are many others. As researchers and practitioners of hypnosis, it is important that we continue to communicate its potential and value to the broadest possible audience. In this way, hypnosis may receive the recognition that it deserves.

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