

PSYCHOGENIC AMNESIAS: FUNCTIONAL MEMORY LOSS

Michael Kopelman and John Morton

INTRODUCTION

Our intention is to report on a case of functional amnesia and examine a range of accounts of functional amnesia in the framework of a particular model of event memory. Headed Records (Morton, Hammersley & Bekarian, 1985; Morton & Bekarian, 1986; Morton, Abeles & Morton, 1999; Barreau & Morton, in press; Newcombe & Siegal, 1996; Smith, Morton & Oakley, in press; Wilkinson, 1998a, 1998b). In addition, we will draw some parallels between the properties of functional amnesia and those of recovered and false memory.

HEADED RECORDS

The Headed Records model of memory, in common with many other models, proposes that memory is made up of individual *Records* each corresponding to an event. Both Tulving's encoding specificity principle (Tulving, 1983) and the principle of state-dependent learning were essential foundation blocks for the model, and were implemented in it through the operation of *Headings*, attached to each record, within which the modality of

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environment. The interpreter processes the contents of the interpreter buffer according to some principles which are fixed and other principles which comprise the current *Task Specification*. The task specification can be seen as a list of current processing goals. When the current task-demands require the retrieval of further information, the process of retrieval is initiated by the interpreter which prompts the formulation of a new description (see Morton et al., 1985, for a discussion of this process). Use of the new description leads to the retrieval of a record which might include the required information. If the current task specification still cannot be satisfied, the cyclical retrieval process continues as indicated above.

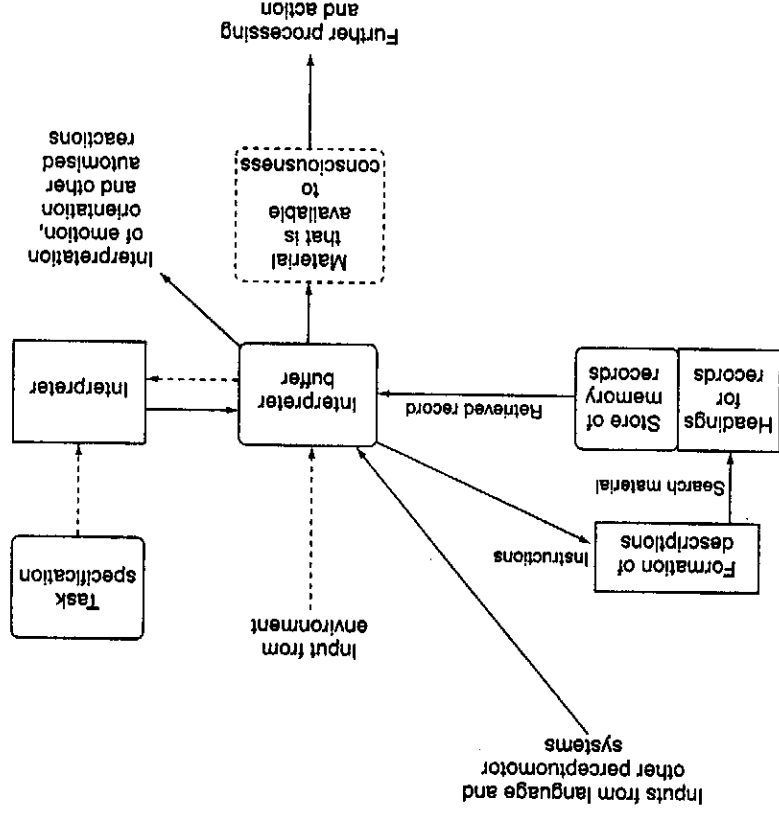


Figure 11.1: A partial sketch of the system of retrieval of event records. Event records are retrieved into the *interpreter buffer* which also receives information from the environment. The contents of the *interpreter buffer* are interpreted and modified by the *interpreter*, whose operation is partially controlled by a set of goals in the *task specification*. Included in this control is whether or not particular information is made available to consciousness.

stimuli are preserved, and where contextual cues are encoded. Encoding specificity is actually not so much a theory as a hypothesis about behaviour, predicting that more will be recalled when the conditions of testing match the conditions of recall. The hypothesis is neutral as to why this happens or what mechanisms are employed. Tulving (1983) puts forward the concept of "synergistic ecphory" as an explanatory principle. Headed Records uses "headings" in the same way. This would include state information.

The information used in retrieval is termed the *Description* (Norman & Bobrow, 1979) and is formed from both internal and external information sources. For the successful retrieval of a particular record, the attached heading must be matched to some extent by the description. If a description fails to match a heading, or if the retrieved record does not contain the information which is sought, then the process recycles using a modified description. Well-worked-out examples of this cyclical process have been provided by Williams and Hollan (1981).

Within the model there are two categories of record distinguished by the type of information in their headings. They are called *primary records* and *secondary records*. Primary records are the result of normal activity in the interpretation of the perceptual world. As a result, the internal and external contexts at the time of the record's creation become incorporated into the heading. Examples of internal context are mood and current goal, and examples of external contexts are location and companions. This contextual information, due to its presence in the heading, plays an important role in retrieval of the record. If the same contextual information is present at the time of retrieval, it will form part of the description used in the search process. The more overlap there is between heading and description, the more likely it is that there will be a successful match, and the more likely that the target record will be retrieved. An experimental way of determining the components of headings is through a comparison of the relative effectiveness of variables on recognition memory compared with recall. It has been established that recall, unlike recognition memory, is sensitive to state variables, such as emotion, as well as being sensitive to the reinstatement of the original environmental context (Bower, 1981; Eich, 1980; Godden & Baddeley, 1975, 1980). This indicates that such variables are to be found in headings. (See Morton et al., 1985, for a more detailed account.) Primary records contrast with secondary records which result from the retrieval of a primary record during reminiscence or as part of a narrative. The secondary record will thus tend to have verbal rather than perceptual information in its heading.

The basic architecture of the model is shown in Figure 11.1. The central device is the *interpreter buffer*, into which is passed (partially processed) information from the environment. Memory records are also retrieved into the interpreter buffer in order to guide the process of interpreting the

It should be noted that some other models of event memory equate *retrieval* with *consciousness*. However, it should also be noted that these models mostly equate *retrieval* with *response*. Accordingly, we should explicitly stress that by the term *retrieval* we mean retrieval into the interpreter buffer. In some other models this might be equivalent to what is called *access*, though use of all these terms is variable. Material in the buffer is not automatically available to consciousness, and the operation of the interpreter buffer is not equivalent to the operation of consciousness. While we do not intend here to define consciousness, what we need to do, in the context of functional amnesia, is to indicate something of the scope of consciousness. We have indicated in Figure 11.1 that information in the interpreter buffer can be made available to consciousness.¹ Whether or not this would be the case for any particular piece of information in the interpreter buffer would depend on the current task specification. For example, if you were asked for the address of your best friend, there would be an entry in the task specification to that end. As long as that goal was dominant, the material in the interpreter buffer would be screened such that only the address or information deemed relevant to the determination of the address would be available to consciousness. There are other outputs from the interpreter buffer which have not been well specified. These include the automatic processing of emotional material which would not be under the control of the task specification.

Smith et al. (in press) have recently used the Headed Records model to analyse alternative explanations for post-hypnotic amnesia. They point out that within the model there are three basic mechanisms by which an attempted retrieval of a record to consciousness may be unsuccessful. Firstly, the description may contain insufficient information to match the heading, leading to retrieval failure. If post-hypnotic amnesia reflects an inability to retrieve dissociated memories (Hilgard, 1977; Kihlstrom, 1978), the Headed Records model would account for the failure in terms of critical mismatch of the information in the description with that in the heading (cf. Morton, 1991). This could be because the task description includes goals which preclude the efficient formulation of an appropriate description. These goals would be formulated as a result of the interaction between the subject and the experimenter. In effect, the task specification would contain the information which controlled the dissociation between records that could be retrieved and those that could not. Thus, if the post-hypnotic suggestion was that the subject would not be able to recall a particular word list, a goal could be

¹ Indeed, within the present form of the model, the only information that can be made accessible to consciousness is autobiographical information plus other, related, information within the interpreter buffer.

set up in the task specification which operated to prevent certain elements from being formulated in the description. A second sequence whereby post-hypnotic suggestion could lead to failure of retrieval would be if hypnosis represents a *state*. In that case, information pertaining to that state would be contained within the heading. As with other states such as mood (Bower, 1981; Teasdale, 1983; Teasdale & Fogarty, 1979; Lloyd & Lishman, 1975), alcohol (Goodwin, Powell, Brenner, Hoine & Stern, 1969) and location (Godden & Baddeley, 1975), access to records will be improved when the relevant state information is also in the description. Note, however, that such state-dependency effects are never all-or-nothing.

A third possible account of post-hypnotic amnesia in the Headed Records model hinges on the specification in the model that retrieved records are evaluated in the interpreter buffer, prior to their reaching conscious awareness, with respect to their relevance to current task specifications. If the information in the record is not congruent with the higher order goals of the recalling individual, as listed in the task specification, the record will not reach awareness. Equally, as already discussed, if a record does contain the required information, the associated irrelevant information will usually be screened out in a similar way. In relation to hypnosis, within a socio-cognitive theory, the task evaluation mechanisms (task specification plus the operation of the interpreter) would screen out from conscious awareness those records which were incongruent with the goal of maintaining a particular self-presentation, induced by the situation. The self-presentation is that of someone who is hypnotised, and the goal would be to maintain that self-presentation by not being able to recall the material in question. Smith et al. (in press) have shown that the subject's behaviour depends, in effect, on their theory of cognitive functioning. Thus, subjects who are given a set of words to free associate should produce the same responses the next time they have to do this task and should respond faster. In fact, this depends on the priming of perceptuo-motor structures rather than on event memory. However, for the non-psychologist this distinction has rarely been made, and the typical behaviour of hypnotised subjects who have been asked to forget the first set of associations is to avoid the previous response, even if it was a common one. In consequence, their response times are much greater than on the first trial. This can only be explained if there is a post-retrieval block on responding. It is generally accepted that at least some of these subjects are not behaving in this way deliberately (Spanos, Radtke & Dubreuil, 1982; Bertrand, Spanos & Radtke, 1990).

It can be seen that the Headed Records framework is neutral with respect to the major alternative accounts of hypnotic amnesia but allows them all to be formulated in a way which makes reference to other cognitive phenomena.

FUGUE STATES

Many aspects of functional or psychogenic amnesia bear interesting resemblances to what has been described in organic brain disease. There may be islands or fragments of preserved memory within an amnesic gap. For example, Wang, Tuivang and Freedman (1982) described a young man, who slipped into a fugue state following his grandfather's funeral, and who recalled a cluster of details from a short period during that year which he described (after recovery) as having been the happiest of his life. The subject may often adopt a detached attitude to these memory fragments, describing them as "strange and unfamiliar" (Coriat, 1907). In many cases, semantic knowledge remains intact (e.g. foreign languages, and the names of streets, towns, and famous people; Kanzer, 1939; Schacter et al., 1982). In other cases, there is some impairment of semantic memory, although other aspects of semantic knowledge are largely spared (Coriat, 1907; Ables & Schilder, 1935; Kanzer, 1939), and this also seems to be the case in at least some cases of so-called "isolated retrograde amnesia" (Stracciari, Chidoni, Guarino, Poletti & Pazzaglia, 1994; De Renzi, Lucchelli, Muggia & Spinler, 1995). Performance at verbal learning tests has been reported as unaffected (Ables & Schilder, 1935; Kopelman, Christensen, Puffett & Stanhope, 1994a), but in other cases it has been mildly impaired (Schacter et al., 1982), or more severely impaired (Gudjonsson & Taylor, 1985). It can also be compromised by concomitant brain disorder (Kopelman, Green, Guinan, Lewis & Stanhope, 1994b). Memory for skills is often preserved (e.g. Coriat, 1907), consistent with evidence demonstrating preserved procedural memory in organic amnesia. Sometimes, memory retrieval may be facilitated by chance cues in the environment (e.g. Ables & Schilder, 1935; Schacter et al., 1982; Kopelman, 1995), but deliberate cueing is often unsuccessful (Coriat, 1907; Kanzer, 1939) and the results of interview under sodium amytobarbitone are very variable.

Some recent publications have elucidated the nature of this form of amnesia in more detail. As already mentioned, Schacter et al. (1982) described a young man who developed a "fugue" episode (functional retrograde amnesia) after attending the funeral of his grandfather, to whom he had been very close. Relative to his performance after recovery, there was a mild impairment of anterograde memory as indicated on the memory quotient from the 1945 Wechsler Memory Scale. On the Crovitz test (Crovitz & Schiffrman, 1974), the median age of retrieved autobiographical memories to cue words was very brief, relative to both healthy controls and his own subsequent (post-recovery) performance. However, a "constrained" cueing procedure revealed some preserved 'islets' of autobiographical memory from a time period that the subject later described (on recovery) as one of the happiest of his life.

Kopelman et al. (1994a) reported a reversed temporal gradient in a patient, AT, with psychogenic amnesia. This patient showed a severe impairment for early time periods and pronounced recency effect, both on measures of autobiographical memory and public events. On the latter task, this performance could not be attributed to the patient simply remembering things since the onset of her amnesia, because the most recent items had occurred six years before the onset. The pattern was very similar to that described in patients with "focal retrograde amnesia". In addition, the patient failed to show word-completion priming for the names of people and places preceding the onset of her amnesia, whereas she showed normal word-completion for the names of people and places that she had known only since the onset of her disorder. Despite the latter finding, there was some clinical evidence that she could show familiarity with (recognise) or 'know' items from her past that she could not explicitly recollect. O'Connell (1960) reported statements in offenders claiming amnesia for their offence which are consistent with the notion that there are varying levels of awareness in such psychologically based forms of amnesia. Some offenders, who did not claim amnesia, described the memory of their offence as being allowed to "drift into the background ... like putting something into ... a safe and locking it away". Subjects reporting amnesia described having "buried everything about (the) case" and feeling that recollection would be "so (horrifying) that I just can't remember anything" or that "there is something in my mind it seems to be forming a picture and then ... my mind hurts ... (and) it gets all jumbled up again".

Campodonico and Redies (1996) explored this issue in more detail using measures of semantic knowledge in another patient who was reported to have "profound psychogenic retrograde amnesia". On a measure of indirect remote memory, their patient, LJ, showed more rapid learning in associating the names of famous people to their faces, relative to novel faces and names, despite having been unable to name the famous faces at baseline. She also learned the occupations of famous people better than she did those for novel items. The authors interpreted these findings as evidence for preserved "implicit" remote semantic knowledge, despite impaired "explicit" recall for the same material.

Markowitsch, Fink, Thöne, Kessler and Heiss (1997) reported a 37-year-old man, NN, who appeared to experience a "fugue" episode lasting five days when out bicycling, and who then had a persistent loss of autobiographical memory, lasting eight months or more. Like the Kopelman et al. (1994a) patient, NN showed a 'reverse' temporal gradient on measures of autobiographical incident recall and personal semantic memory, although he appeared normal in recalling famous faces and events. Kritchevsky, Zouounis and Squire (1997) also obtained a pronounced recency effect

On their arrival, HP did not appear to recognise either of them at first, nor could he remember his wife's or children's names. From his relatives, we learned that HP had disappeared some eight days earlier. He had been separated from his wife during the previous six weeks, because she had commenced an affair. There had been an altercation between them the night before his disappearance and, on the morning of his disappearance, a lawyer had told HP that his wife was trying to block access to their children. In addition, there had been difficulties at work. HP had to move from a previously well paid job to another employment, and then to a third job, in different parts of the country and at progressively lower rates of pay. HP lived approximately 200 miles from London, and had evidently travelled this distance during his fugue episode.

There was a past history of two or three episodes of "blackout" lasting a few minutes each, which had occurred some years earlier and were investigated in another general hospital. A current EEG showed a few brief bursts of sharpened theta and faster components over both hemispheres with a left mid-temporal preponderance, particularly during and after hyperventilation. A CT brain scan was normal.

HP appeared rather drawn, tense and anxious, perplexed but only mildly depressed. Over the ensuing four weeks, HP's memory steadily improved, although he continued to have great difficulty retrieving memories which involved his wife or his workplace, particularly for events or incidents during the previous two to three years. He had an 'islet' of memory of visiting London a few months earlier, together with his wife, but he could not remember any details or describe any emotional response to this. However, he knew that he had been immensely distressed that his marriage had broken up and that, during the period of separation, he had not been seeing his children. During his four-week admission, an interview was conducted after administration of sodium amobarbitone: this appeared to help HP to recover at least some memories, although there was still not total recollection. At the end of his period of hospital admission, HP spent a weekend leave staying with a friend. During this visit, he met some other old friends, and he reported that he was "aware" of them from his past, although he could not remember much about them. Because of this, he felt anxious and distressed, and he burst into tears at one point. HP's memories appeared to return in a patchy fashion from the most remote towards the recent, and some retrieved memories appeared to have been cued from things that HP read in the newspapers or heard on television. He emphasised that, as memories returned, no emotions appeared to be "attached" to them. On occasion, he would ask in a rhetorical fashion "Do I really want to remember what I have forgotten?" At the time of his discharge, HP remained totally amnesic for the period of one week, in which he had disappeared, and his memory appeared somewhat 'clouded' for a period of five or six months before that.

on an autobiographical memory measure (the Crovitz test) in nine patients with functional retrograde amnesia.

Markowitsch et al. (1997) carried out a ^{15}O -PET scan, in which their patient was required to listen to sentences containing information about his past, either preceding or following the fugue episode. The authors found reduced right hemisphere activation relative to healthy controls who performed a similar task. Costello, Fletcher, Dolan, Frith and Shallice (1998) also carried out a PET activation study in a similar patient. Their subject was a man in his forties who, following a left superior dorsolateral prefrontal haemorrhage, developed a dense retrograde amnesia for the 19 years preceding the stroke. The authors considered that "a purely organic account of the condition does not seem very plausible". During their PET study, the subject attempted to recall events from family snapshots in one of three conditions — events for which he was amnesic but at which he had been present, events from the amnesic period but at which he was not present, and events outside the amnesic period. In the "amnesic-present" condition, activation was increased in the precuneus, but diminished in both the right posterior ventro-lateral frontal cortex and a region close to the site of haemorrhage. This finding of reduced right ventro-lateral frontal activation is broadly consistent with Markowitsch et al.'s (1997) finding of diminished right hemisphere activation.

Case description

Patient HP was a 40-year-old man who came to the Accident and Emergency Department of a central London hospital complaining of feeling "unwell, exhausted, with sore feet and loss of memory". He had "come round" on a park bench. He did not know who he was, and he could not remember anything about himself. It was early summer, and his hands and face appeared sunburnt. He was wearing a clean shirt.

HP asked a passer-by where the nearest hospital or police station was, and he was directed to the Accident and Emergency Department. On arrival, he appeared confused about his age, name, and where he was. He could not remember any details about himself. He complained of exhaustion and said that it felt as if he had been walking for weeks. He had blisters on his feet. Later, he said that he thought that he was from the north of the country. While still in the Accident and Emergency Department, a casualty officer had called out his first name (referring to somebody else), and HP recognised this, after which his surname "popped" into his head as if he were performing a word-completion task.

HP was transferred to a medical ward for exclusion of any underlying brain disease. Local police stations were contacted, and his brother and sister soon arrived, as HP had already been reported to the police as a missing person.

out of 50 (92nd percentile) and for faces 46 out of 50 (75th percentile). On the Doors and People (Badddeley, Emslie & Nimmo-Smith, 1994), HP performed consistently well, and his overall scaled memory score was 12 (75th percentile). In brief, HP performed satisfactorily or well on all these tasks. At the time that these tests were carried out, he scored 11 on the Beck Depression Inventory and 13 on the Beck Anxiety Inventory (Beck & Steer, 1993), indicating only mild levels of depression and anxiety. Moreover, HP "passed" two tests of simulation — Coin-in-hand (Kaput, 1994) and Modified Key (Kaput, personal communication) — i.e. he did not give any evidence of simulation.

On a measure of recall for famous news events from the 1960s, 1970s and 1980s (Kopelman, Stanhope & Kingsley, 1999), HP scored 55%, 65% and 85% for each decade respectively, and on the recognition memory equivalent of this test, he scored 60%, 100% and 100% for each decade respectively — all of which are "normal" scores. HP was first tested on the Autobiographical Memory Interview (AMI; Kopelman, Wilson & Badddeley, 1990) seven days after his hospital admission (14 days after his original disappearance). By this time, his scores for childhood personal semantic facts (21) and autobiographical incidents (7) were normal. Likewise, his scores for early adult facts (17) and incidents (8) were also normal. However, his score for recent facts (16) was "definitely abnormal" and for recent incidents (6) was "borderline", consistent with HP's continuing complaint of impaired memory for several months preceding his disappearance. When re-tested six months later, HP's score for recent facts (18) had improved to "borderline", but his incidents score (6) remained unchanged.

We also administered the Crovitz test of autobiographical retrieval after HP's hospital admission, and the second nearly five months later. This was performed in a manner analogous to that used by Schacter et al. (1982) in an "unconstrained" condition to a "fugue" patient before and after recovery from his amnesia as well as to a healthy control. There were 24 cue words, consisting of 8 object words, 8 action words and 8 affect words, randomly distributed among one another. HP was requested to describe an episode, relating to each cue word, and to date and place each memory as well as he could. Scoring was on a 3-point scale, according to the descriptive richness and specificity in time and place of each memory (Badddeley & Wilson, 1986). Reaction times were also recorded.

Figure 11.2 shows that, on the first occasion of testing, HP's scores were worse for affect and action words than for object words. Moreover, Table 11.1 shows that his response latencies were slowest for affect words, intermediate for action words and fastest for object words. On

HP was seen regularly in the outpatient clinic during the following seven months. During that period, further details returned, HP listed for us cues which had triggered memory retrieval. These included photographs, television programmes, talking with friends, talking with his children, going to familiar places, going out walking or running, bus and billboard advertisements, newspapers, meeting people, and going shopping. He commented that "Things can often be unrelated but will seem to trip thoughts, and often sometime later, something will be seen, said or done, that will build with other things and bring (memories) back." For example, an advertisement for swimming pools was said to have triggered a memory for a mosaic of a small animal, which HP could not place. Gradually, he started to recall details about his employment, and the fact that his original firm had been taken over leading to his being made redundant. He also started to recall details of the difficulties that had occurred in his relationship with his wife, since she had had a "breakdown" some time earlier. In particular, he recalled how he had been depressed during the period of enforced separation, in which he had had to live in a rented flat a little distance away from the family home. After six months, HP obtained a job and, when last seen seven months after his fugue episode, HP appeared much more settled and relaxed. He stopped attending the clinic after this.

Cognitive assessment was carried out at intervals during the six months following HP's admission to hospital.

COGNITIVE TESTING

The NART-R reading test (Nelson & Willison, 1991) gave an estimated premorbid IQ of 102. Compared with this, the WAIS-R (Wechsler, 1981) gave a full-scale IQ of 91 (Verbal 92; Performance 92). On the Logical Memory test (Wechsler, 1987) for immediate recall, HP scored 30 out of 50 (75th percentile) and for delayed recall 23 out of 50 (56th percentile). On the Recognition Memory Test (Warrington, 1984) for words, HP scored 49

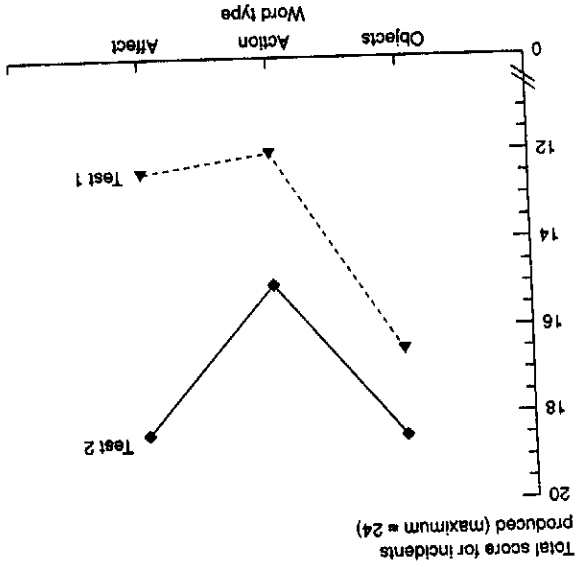


Figure 11.2: Scores on Crovitz test two weeks after hospital admission and five months later.

the other hand, comparison with Schacter et al.'s (1982) data (Table 11.1), indicates that HP's latency for affect words was much closer to Schacter's control than to his patient, even during the latter's recovery phase. Five months later, HP's scores for affect words had substantially improved, and were now identical with his scores for object words (Figure 11.2).

In summary, HP performed well at measures of anterograde memory. He also scored highly on a test of remote news events. During the weeks and months following his fugue episode, he showed impairment in the recall of recent autobiographical facts and incidents (AMI), consistent with his clinical complaint of clouded memory for the months preceding the onset of his amnesia. In the retrieval of autobiographical memories to

Table 11.1: Reaction times (median in seconds) at Test 1

	Affect	Actions	Objects
HP	12.0	9.0	5.0
PN (during amnesia)*	35.6	22.5	18.8
PN (post amnesia)*	22.9	6.2	7.2
Control (mean)	11.8	10.4	6.9

* From Schacter et al. (1982).

DISCUSSION

In discussing this case, we shall consider somewhat separately the period of the fugue itself, for which no memories returned (as is characteristic in this disorder), and the preceding period of several months, for which memories were patchy and "clouded". Presumably the memories from this latter period were originally normal, and they have returned, albeit with reduced affect.

During the period of the fugue itself, it is conceivable that HP was in such an abnormal mental state and cognitive processing was so altered that either no event records were laid down at all or, at least, encoding was severely compromised. Kopelman (1987, p. 439) commented:

What mechanisms underlie psychogenic amnesia? One possibility is that many instances of psychogenic amnesia may result from faulty encoding of information at initial input and that deficits in retrieval may arise in consequence of this. In support of this view, it should be noted that psychogenic amnesia commonly occurs in states of abnormal mood or extreme arousal, in which normal cognitive processing might well be compromised. Fugues arise in the context of depressed mood and severe stress; amnesia for offences in situations of extreme emotional arousal, severe intoxication, or florid psychosis; and memory disorder in depression in association with impaired attention and motivation. This view, emphasising a disturbance in memory 'acquisition', suggests that the impairment in psychogenic amnesia mimics that in organic amnesia — of which there is so often an earlier history.

As an alternative to such problems of encoding, it is possible that, with HP, memory records were laid down, but the headings were structured in such a way that normal methods of memory search — i.e. the usual content of the descriptions in the theory expounded above — could not access these records (Morton, 1991). The latter case could be thought of as an extreme example of encoding specificity (Tulving & Thomson, 1973). One aspect of this encoding specificity may be state-dependency: memories encoded following the intense personal crisis, which always precedes the fugue episode, are impossible to retrieve when the subject has returned to

It should be noted that most of us, at one time or another, try to forget something. Our success usually lies only in not thinking about the event in question. If we are reminded about it, however, we would recall it. HP, like other fugue cases, was very difficult to remind by deliberate (as opposed to incidental) cueing. Here, again, we find a similarity to people who have forgotten information under post-hypnotic instruction. There have been experiments in which subjects have viewed video recordings of hypnotic procedures involving themselves in an attempt to breach their amnesia: in these studies, approximately half of the highly hypnotisable subjects continue to show a degree of recognition failure even after viewing the videos (Coe & Sluis, 1989; McConkey & Sheehan, 1981). However, it is only the highly susceptible hypnotic subjects who exhibit this phenomenon. We have to consider what distinguishes HP and other fugue patients from other people who have gone through personal crises without developing amnesia. One factor may be the extreme emotion of the personal crisis, perhaps in combination with pre-existing depression, which resulted in the rule-like block on material of a particular kind passing from the interpreter buffer into conscious processing.

COMPARISON OF PSYCHOGENIC AMNESIA AND RECOVERED MEMORIES

In previous reviews of the literature, it has been suggested that fugue episodes occur following a severe and extreme precipitating stress, usually in the context of a depressed mood and often suicidal ideas, and there is frequently a past history of a transient organic amnesia (Kopelman, 1987, 1995, 1997). In HP's case, a marital crisis was the immediate precipitant to fugue, as in earlier examples (Abeles & Schilder, 1935; Kopelman et al., 1994a). HP was also extremely distressed and depressed by the marital separation, his wife's affair and, in particular, by the enforced separation from his children. Furthermore, he had had a past history of transient blackouts, lasting a few minutes, which were investigated at another hospital, and which might have been epileptic: a current EEG did show some abnormalities, which could have been consistent with this. A past history of transient organic memory loss may act as a 'learning experience' predisposing to the later development of fugue in times of crisis (Kopelman, 1987, 1995, 1997): this presumably works by resetting the threshold for change within the components (task specifications, interpretation buffer, formation of descriptions) of the model sketched in Figure 11.1.

By analogy, child sexual abuse is certainly an extreme stress, and it is very commonly associated with various forms of affective disturbance

a more normal and relaxed state. In addition, there may be a further retrieval component to the memory loss, as indicated in the discussion of post-hypnotic suggestion above. HP's description that it felt as if his memories were "locked away" in a box resembles the statements quoted by O'Connell (1960) from amnesic offenders and, indeed, from other fugue patients we have seen. Such statements suggest that some kind of memory record exists, however compromised, but, after evaluation in the interpreter buffer, is prevented from reaching conscious awareness in the manner postulated above in our account of post-hypnotic amnesia.

Those memories for the period of several months preceding the fugue which were initially lost returned in a progression from the more remote to the more recent, sometimes in response to cues and sometimes as associations to other memories or thoughts — as evident in HP's remark that "something will be seen, said or done, that will build with other things and bring (memories) back". This phenomenon is somewhat analogous to recovery from head injury. It is also subject to the same range of interpretation as the effects of post-hypnotic amnesia. In post-hypnotic amnesia and in the present instance, a resident entry in the task specification is postulated to the effect that certain information is not to be allowed into consciousness. In principle, there are two possible consequences of this.

1. A failure to create descriptions involving that information. In the case of HP, this would mean not formulating descriptions characteristic of the prohibited period in his life. As a result of this, there would be reduced access to the relevant records. In principle, however, it would still be possible in some cases to address the records by content rather than by period. Note that it would not be possible within the current Headed Records framework to directly inhibit *en bloc* all the records from the critical period. Retrieval inhibition has to occur through the descriptions.

2. There is retrieval of the relevant record, but nothing is let out of the interpreter buffer into consciousness. In this case, there might be affective consequences of the retrieval of emotional incidents, since the control of the processing by the task specification only extends to the propositional content of the information in the interpreter buffer.

While the original setting-up of the task description might have been deliberate, it is no more necessary within this framework to think of post-hypnotic amnesia in terms of conscious taking than it would be for the case of post-hypnotic amnesia.

started to reverse after the patient saw a funeral scene on television. In other cases the amnesia seems to have reversed without there being any particular cue which triggered the reversal. Recovered memories show a similar variability. They have been reported as being triggered by single events, such as seeing a baby or a small child, but also have been reported as having emerged slowly, without any triggering event and without any suggestion from friend, family or therapist.

There are some differences between recovered memories and functional amnesia. For example, RM amnesia tends to be restricted to the abusive events and is not in general extended to other events of the same period (but see Parks & Balon, 1995). This lack of generalisation also occurs in amnesia for offences and in memory loss in PTSD, but in fugue states, subjects are amnesic for all aspects of a particular time period. A second example of differences between the two states is that functional amnesia, in the initial stages, tends to be extremely dense. RM amnesia is much more variable, some people recovering memories reporting a dense amnesia and others reporting that they always knew that a particular person had abused them but could not remember any details, or being able to recall some instances of abuse but not others (Andrews et al., 1999; Andrews et al., 2000).

FALSE MEMORIES

For an example of a false memory, we can quote from Gudjonsson (1997, p. 4):

A typical case involves a well-educated female in her thirties who has attended therapy for some psychological problem, such as depression or an eating disorder. During therapy the patient reveals that she was sexually abused by her father many years previously, but the memory for the abuse was "repressed" until it was "recovered" during the therapy.

As far as we are aware, there are no cases of proven false memory which have arisen without the participation of some kind of therapist, support group or other influence. The closest one can get to this outside CSA is the area of false confessions. There are numerous documented examples of innocent persons confessing to crimes they could not have conceivably committed, sometimes accompanied by otherwise convincing detail (Gudjonsson, 1992; Gudjonsson, Kopelman & McKeith, 1999). Is there a parallel here with "false memories"? The answer seems to be if there is any parallel, it is a very imperfect one.

According to Gudjonsson (1992), many confessions are coerced — that is, the individuals are encouraged to make confessions through threats or

both at the time (Browne & Hamilton, 1997) and subsequently (Mullen, Martin, Anderson, Romans & Herbison, 1993; Romans, Martin, Anderson, O'Shea & Mullen, 1995; Briere, 1997). Others have documented the evidence that highly emotional or traumatic experiences can enhance memory storage transiently but in a fragmented form, in which 'free floating' memory fragments are poorly located in temporal and spatial context: such memory fragments would be especially vulnerable both to forgetting and to distortions and augmentations such that, if memory were reinstated, it might be partial, incomplete, or contain inaccuracies (Shimamura, 1997). Somewhat similarly, Schacter (1996; Schacter, Norman & Koutstaal, 1997) has argued that, in some subjects, memories for abuse are never completely forgotten, but they are retained in a vague, unlabelled form, because they have seldom or never been rehearsed. Such memories would be vulnerable to the normal processes of decay and interference, as well as conscious avoidance or suppression. Appropriate cueing might result in re-retrieval of these memories, although the 'weak trace' might also make them vulnerable to distortion. The specific nature of memory recovery in such circumstances has been studied by Andrews et al. (2000).

As we have already pointed out, child sexual abuse is an extreme stress. We would also suppose that repeated abuse would create an increasing level of stress. In addition, it is supposed by some authors that high levels of stress early in life can lead to substantive changes in brain anatomy and physiology (Bremner, Krystal, Southwick & Charney, 1995; Stein, Koverola, Hanna, Torchia & McClarty, 1997). If this were accepted, we could point to these two similarities — stress and putative brain dysfunction — between the pre-conditions for memory loss in functional amnesia and in the recovered memory situation. At the moment, however, we have no firm evidence to link the nature or location of the brain dysfunction in the two cases.

Recovered memories and functional amnesia have in common that they often operate as much for recognition as for recall. This is established formally in the case of functional amnesics who sometimes even fail to recognise their wives and children. As far as we are aware, no experiments have been carried out on the recognition memory of people who are in the amnesic state prior to recovering memories of childhood sexual abuse. However, they subsequently report that, during the amnesia, they had not been reminded of the abuse in the presence of the alleged abuser or other cues.

Functional amnesia and RM amnesia have in common the extreme variability of the recovery process. Functional amnesia can be reversed by a single event. For example, in the case reported by Schacter et al. (1982), where the amnesia was caused by the death of a grandparent, the amnesia

inducements offered by the interrogator; they make a confession in order to try to escape from the situation they find themselves in. There is no suggestion that they actually believe themselves guilty of the crime to which they confess. Perhaps a closer parallel is the voluntary confession: suspects on occasion will come to believe that they must have committed a crime despite their initial denials. Such voluntary confessions are frequently the result of a long period of interrogation when accusations are repeatedly put to a suspect that he or she is guilty. There may also be a contribution from source memory deficits (the individual not knowing whether a "memory" has been generated by what he has read or been told), and people who are depressed or have low self-esteem seem to be excited by the sense of importance an interrogation gives them and are particularly vulnerable to making false confessions (Gudjonsson, 1992; Gudjonsson et al., 1999). Such individuals may confess under the belief that they must have been responsible, even though they were unaware of the event.²

However, even with voluntary confessions the analogy with "false memory" is very inexact. Both groups will show belief in their stories and display often quite convincing details. Both may arise from prolonged interviewing in which certain themes are repeated over and over again. Moreover, false confessions are often abandoned in the face of contradictory evidence — Carole Richards rapidly came to the conclusion that the events she had described could not have happened — or may be held for longer but with fluctuating levels of conviction (Gudjonsson et al., 1999) whereas "false memories" are persistent and, with the exception of a few "retractors", survive repeated denials by others of the reality of the events victims describe.

RECOVERED MEMORIES

The accounts that are available in the literature for the amnesia and subsequent recovery of memories are limited by the theoretical frameworks employed. Two terms predominate: "dissociation" and "repression". However, there is no consistent usage in the literature of the two terms and, indeed, some authors regard them as interchangeable (e.g. Erdelyi, 1990). The reason for this confusion is that the retrieval of a memory

² An example, of this was Carole Richardson's 'confession' of involvement in the Guildford bombings where she eventually concluded she must have been present but so far under the influence of drink and drugs as not to recollect the event clearly. Another case was AB who spent 25 years in prison following a false confession, triggered in part by inappropriate use of sodium amytal as "truth drug" (Gudjonsson et al., 1999).

record is conceptualised as a unitary process with just two states: either you retrieve or you do not retrieve. As an example of authors who do make a distinction between two terms, we can quote from Brewin and Andrews (1998, p. 965):

Ordinarily, autobiographical memories are more or less accessible to being retrieved into "working memory", a short-term, limited-capacity store in which memories can be readily rehearsed and edited. A memory that has been repressed may be thought of as being subject to active inhibitory processes that work to prevent it from entering working memory ... In contrast, retrieval of a dissociated memory will reflect the mental state present at encoding and the fact that there has been little integration of the traumatic experience with ordinary autobiographical memory. Dissociated states, whether consisting of flash backs, depersonalisation, de-realisation, out-of-body experiences, absences, or more complex alternative personality states, may be conceptualised as modular, informationally encapsulated processes that are spontaneously triggered by internal or external stimuli. Retrieval is therefore likely to be accompanied by changes in consciousness that disrupt working memory and will not guarantee the possibility of interaction with the rest of the autobiographical memory system. In these respects the retrieval of dissociated memory has many of the characteristics of an informationally encapsulated, modular process being run off.

We are largely in agreement with these authors in the way they distinguish between repression and dissociation. Within the Headed Records framework we would want to elaborate their account along the lines that we have already used in offering different possible accounts of functional amnesia. We would first want to specify how the "active inhibitory processes" might be implemented. For us, the inhibitory processes would operate through the task specification (see Figure 11.1). This is a list of instructions or goals which controls the operation of the interpreter. The interpreter is the set of computational processes which operate on the contents of the interpreter buffer. There are two ways in which the task specification can produce effects which could be characterised by the term *repression*. The first of these would involve restricting the search process. In the introduction to this chapter we outlined how in the Headed Records framework, following Norman and Bobrow (1979), the process of searching for an autobiographical memory record starts with the creation of a "description". The description is the material that is used during the search process and, for retrieval to be successful, the description must match, to some criterion, the heading of the relevant record. The heading includes information concerning time, place, mood, and the protagonists.

It would be possible, then, for the task specification to include instructions to the effect that the description should not include kinds of information which characterised headings of a particular set of memories. These restrictions would apply equally to both deliberate and automatic memory retrieval and mean that the particular set of memories would never be addressed and, therefore, could not be retrieved.

The second way in which the task specification can have the effect of repression depends upon our characterisation of the interpreter buffer. As we have already pointed out, in most other theories, all autobiographical material which has been retrieved is available for conscious processing. Within the framework we are presenting this is not the case, and whether or not particular material within the interpreter buffer is allowed into consciousness is under the control of the interpreter. In turn, the interpreter follows the instructions laid down in the task specification.³ We have already discussed post-hypnotic amnesia in these terms, proposing that the effect of the hypnotic suggestion that a particular episode should be forgotten is to lay down a task specification such that no information relevant to that particular episode is allowed through to consciousness. One possible account of HP is similar. It requires no extra theoretical apparatus to extend the principle to autobiographical memories of childhood sexual abuse.

The account we give of dissociation is very different and is, more or less, an implementation, within the Headed Records framework, of the account given by Brewin and Andrews. Of course, this account may not be the equivalent of what some authors mean when they use the term *dissociation* but, as we have already remarked, there is no universal agreement about the use of these terms. What makes sense for us is to contrast dissociation and repression. Dissociation, then, is a problem of addressing which is not a function of the operation of the interpreter and task specification. Rather, we would use the term to refer to the operation of perfectly normal context sensitive processes. We have already outlined how recall is sensitive to location, mood and other contextual variables. The operation of dissociation within childhood sexual abuse would be similar. During the abusive episodes, the specificity of location, protagonist and, especially, the emotions engendered by the abuse, would constitute a unique context for the memory record. Within the framework we

³ Note that we are not trying to explain consciousness in terms of the interpreter. Our use of the interpreter and the task specification is a step we take on the road to de-mystifying consciousness. We believe that whether or not autobiographical material is available to consciousness is sometimes subject to control processes. In time we will have to both specify these control processes in more detail, and propose an anatomical substrate. In Figure 11.1, the boxes labelled Task specification and Interpreter are place markers for these future steps.

use, this context would be within the heading, though this is merely the way we implement a universally accepted principle of autobiographical memory retrieval.

We should note, in passing, a further possibility in relation to memory records of traumatic experience. This is the idea that, in traumatic circumstances, encoding is impaired. This could mean that only certain details (perhaps idiosyncratic) might be encoded, or that the record of the event might be fragmented, with the component parts (such as sight, sound and smell) being disconnected. The result of this would be that the memory record, even if it were accessed, would be impoverished or even uninterpretable. If the encoding impoverishment were extended to the heading, the result may be that the record would remain inaccessible in any circumstances.

The usual account of false memories is that memory records are laid down including information from outside sources together with some information from previous autobiographical records. These outside sources could include other people's experiences or the suggestions of an authority figure such as a therapist who has a particularly strong theory about the origins of an ongoing problem such as depression or eating disorder. If this record is going to be retrieved and interpreted as though it were a true autobiographical record, then it is essential that the original source information be missing. In the absence of any detailed theory concerning the nature of source information it would not seem profitable to speculate on this further. However, loss of source information in everyday memory seems to be sufficiently common for it to be an acceptable explanatory principle in the case of false memories.

The equivalent to this in the case of functional memory loss is paradoxical. Some people with functional amnesia claim not to remember their wives or children. However, they (usually) accept the personal histories that are given to them even though they have no initial feeling of familiarity with these histories. A closer analogy might be with confabulation states, where patients either fabricate or incorporate from outside whole events which they then accept as true autobiographical records (Burgess & Shallice, 1996).

In summary, we have shown that psychological forms of memory loss, as occur in fugue episodes, can be accounted for within psychological theories such as Headed Records. While we cannot say whether any particular case of "recovered memory" for child sexual abuse is true, partially accurate, distorted, or false, the same psychological mechanisms can be postulated to account for these phenomena as we have discussed in considering our case of "fugue". No special theory within mainstream cognitive psychology is required to account for 'functional memory loss' or for subsequent re-retrieval.

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