

Cognitive Perspectives on Memory Recovery

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SUMMARY

There are strong parallels between recovered memories and multiple personality disorder. Both are associated with child sexual abuse and both involve dense amnesia of one kind or another. Recovered memory is inherently unstable. Since it is relatively stable, the properties of multiple personality disorder have been investigated experimentally in one or two cases. This enables psychology modelling to be carried out with more confidence. The Headed Records Model (Morton, Hammersley and Bekerian, 1985) is used to develop a concept of self which provides leverage in understanding, M.P.D. Recovered memories can be understood in a similar way. False memories are only slightly, though significantly different. There is no bar to this coexistence.

First I would like to say how much I admire the exhaustiveness and the balance of thinking in Lindsay and Read's article. They have set standards for the rest of us to aim for. In a debate that has become increasingly polarized, Lindsay and Read manage to impute the best of motives even to what they see as the most mistaken of ideas. In addition, we find none of the sense of outrage against individual events that has tarnished much of the public debate.

Lindsay and Read have produced a comprehensive view of the psychological issues related to recovered memories. I am going to focus on the topic of multiple personality disorder (MPD). The reason I am going to discuss MPD is that it is an example of a memory deficit arising in people with a history of child sexual abuse. The relation of MPD and child sexual abuse was strongly suspected long before the current controversies emerged. Furthermore, MPD was suspected to have iatrogenic components, that is, to be influenced by the therapist. Thus there are strong parallels between recovered memories and MPD. However, while I know of no direct experimental studies of the recovered memories phenomenon, there are studies of MPD which help us to understand some of the cognitive implications.

MULTIPLE PERSONALITY DISORDER AND CHILD SEXUAL ABUSE

In a brief discussion of the consequences of abuse, Lindsay and Read cite Beitchman, Zucker, Hood, daCosta, Akman, and Cassavia (1992) as not finding support for a 'strong link' between child sexual abuse (CSA) and MPD. In fact, Beitchman

I am grateful to Guinevere Tufnell for detailed comments on earlier drafts.

et al. refer to several studies establishing such a linkage. The first is by Coons and Milstein (1986) who found that 15 of 20 patients (75 per cent) who met DSM-III requirements for MPD had a positive history of child sexual abuse, compared with only one of the twenty non-schizophrenic inpatient controls. However, 11 of the MPD patients had also suffered physical abuse. Beitchman *et al.* also refer to an unpublished study of a series of 100 MPD patients by Putnam, Post and Guroff who found an 83 per cent incidence of child sexual abuse and a 75 per cent incidence of child physical abuse. (This series is also reported in Putnam, Guroff, Silberman, Barban and Post, 1986.) Beitchman *et al.* comment that the high occurrence of child physical abuse in these populations 'weakens any specific association between CSA and MPD'. (p. 109) But the logic here is curious. The possibility that both sexual and physical abuse are required before MPD becomes a risk does not remove the relationship between child sexual abuse and MPD, it just complicates it. The conclusion by Beitchman *et al.* seems unjustified; there is still a specific causal association between the two.

The importance of establishing a relationship between child sexual abuse and MPD for our present concerns is that MPD is one condition in which forgetting is extremely common. In the survey by Putnam *et al.* (1986), episodes of amnesia were reported in 98 per cent of the patients. Indeed, 72 per cent of patients had one or more personalities who actually denied the existence of any other personalities.

Now, let us consider what some of the properties might be of a memory system which would allow for selective amnesia for abusive events and for their subsequent recovery. If the amnesia for the events is to recover, then we have to assume that some memory trace of the abuse was laid down at the time of its occurrence. If the memory is to be recalled later, and to the extent that it is recalled, then the amnesia cannot involve destroying the memory trace either by erasing it or by overwriting. Either memories of the abuse could not be retrieved, or the memories would be retrieved but 'screened' from awareness by some mechanism. I review here one cognitive model which enables such varieties of memory performance, the Headed Records model (Morton, Hammersley, and Bekerian, 1985).

HEADED RECORDS—A COGNITIVE MODEL OF MEMORY

To explain the Headed Records model we can first take the rough analogy that our memory for events is like a filing cabinet. For each event, there is a folder in which can be found a record of what happened. The point of keeping the records is so that when a similar thing happens again, we can access what happened last time, and use that information to interpret what is going on around us and to help guide our actions. How do we find what we want? It would take too long to search through the contents of every folder until we find what we are looking for. Instead, every record is given a reference number, which is also written on an index card. The index card also contains a heading—information relevant to the contents of the record. The idea is that when we need to find some information, only the index cards are searched. We search with a set of information called a *description*. When we find a heading that matches the description, we can look in the record it points to and copy anything that might be useful to us. It is this copy that we are conscious of.

The Headed Records model assumes that records are independent of one another. In this respect the model differs from associative net models. Our stream of consciousness experience might lead us to believe in the existence of associations between the records of different events. However, in the Headed Records model the illusion of associations is due to the unconscious, automatic operation of the accompanying processes. The interrogation of memory will normally happen without our conscious intervention. Memory can also be interrogated consciously, and this is the form of memory search with which we are more familiar. Within the model, unconscious and conscious interrogation follow the same course.

Headings are searched in parallel, though there is a precedence for more recent records if more than one heading fits the description (Bekerian and Bowers, 1983). If a match is found, then the linked record is made available for further processing and will be examined to see if it fulfils the current task demands. If the record which has been retrieved does not fulfil these task demands, then a new description is formed and the search cycle is repeated (see Williams and Hollan, 1981). As only the headings are searched, information which is in a record but not in any heading will not be directly addressable. Thus it is that information central to an event memory does not necessarily serve as a cue for the recall of that memory. The converse of this is that information in the heading need not be present in the linked record. The clearest example of this is the name of someone reasonably familiar. If you are asked about such a person by name, you would be able to recall a number of things about him/her. This indicates that the name is a component of the heading to the record concerning this person. However, we all have the experience of being aware of everything we know about an individual (i.e. having retrieved the record), other than his/her name, and not being able to retrieve the name despite some attempts. The simple account of this in terms of headed records is that the name is only in the heading and not in the record at all. Headings have a number of components, and it is not necessary for the match between heading and description to be complete. It would be possible, then, for the record to be accessed by some other cue, such as the place where the individual had last been encountered. Given that the record had been retrieved, all the information contained within it would potentially be available. However, there is no way of retrieving the contents of the heading, and the name would not be retrievable. For another individual, of course, the name could be in the record and the situation would not arise. Such variability in memory organization is as much a burden to the theorist as it is to the owner of the memory. 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 (see Morton *et al.* 1985 for an account of this). 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 and Baddeley, 1975, 1980). This indicates that such variables are to be found in headings.

The content of records depends on the nature of the current processing. There are two broad classes of record, which can be classified as primary and secondary. Primary records are those that result from the normal activity of interpretation of the perceptual world. The context, internal and external, will form a part of the heading and so will play a major role in later retrieval. Secondary records are those that result from the retrieval of primary records in the course of reminiscence or

the retrieval of a primary record which is being used as the basis of a narrative. In the case of the narrative, the form of code will have been changed into a verbal one. For secondary records, the topic of the event is thus more likely to occur as a heading.

Let us see one way in which the nature of the record system would apply to child sexual abuse. A common component of child sexual abuse is that the abused child is told that s/he will be punished if s/he tells, or that no-one will believe her/him. The effect of such instruction would be that the child would avoid reminiscing and no secondary record of the event would be created. This would mean that content-based retrieval would be unlikely. Secondary records of real events are, by their very nature, created after the event by recycling and recording the contents of primary records. Note that, because of this, in relation to a particular event, there will be a tendency for a secondary record to be recalled rather than the primary one. We accept secondary records as genuine for a variety of reasons: the inclusion of images, circumstantial detail, and, above all, because we know (independently of the memory) that the event being recalled took place. Manufactured memories, created by suggestion, imagination, or reconstruction, would have the same format as normal secondary memories. Thomas Hinde, in his novel *The Day the Call Came*, writes about this process:

I was able to invent incidents in my past and elaborate them and after a few weeks become genuinely unsure whether or not I was remembering what had happened or what I had thought about so carefully that I now believed.

Unless one paid particular attention to the source of a record it would be easy to become confused. Lindsay and Read have documented such confusions at length.

Headings and descriptions

Retrieval depends upon a match between the description and the heading. For recall, it is clear that there needs to be a process of description formation which will pick out the most likely descriptors from the given cue. If you are asked 'Could you tell me the address of your best friend, please?', the control processes will guarantee that the variable <best friend> will be filled in before a search for the address is instituted. The reason for this is that <best friend> is not a plausible component for a heading. Clearly, for the search process to be rational, the set of descriptors and the set of headings should overlap. Indeed, the only reasonable state of affairs would be that the creation of headings and descriptions is the responsibility of the same mechanism.

How might such a system develop from infancy? The nature of perceptual and conceptual categories will change with age. In particular, when a person develops language, s/he gets a whole new set of language-based elements for the headings. Consider, then, what would be happening to you as a 3-year-old. Your conceptual system is just beginning to set up useful cognitive categories, and your language system is still rudimentary. You have a particular set of descriptions that seem to work. You create new headed records of your current experience. Then, suppose that right now, as an adult, you try to access one of the records you laid down as a 3-year-old. You form a description, but it is a description based on your current

way of conceptualizing the world. This will fail if you are trying to search for something set up using the organizing system you used at the age of three.

This failure of retrieval is very severe. Possibly the only categories that have survived over the years are our basic emotions. Only under very special circumstances will we be able to retrieve the original records. The exceptions will include episodes that we have repeated to ourselves over the years or heard other people repeating at a time when our heading–description system was close enough to the adult form to be compatible. These would be secondary records. Apart from these episodes we will, to all intents and purposes, be amnesic for our infant and early childhood experiences. We do not need repression as an explanatory concept for infantile amnesia (see also Neisser, 1967, 1988). Within this framework, then, we can see how abuse which takes place before the age of four or thereabouts might not be retrievable in adulthood. Even if a record which had been created in the first few years was retrievable, there is an additional problem that it would not be in a form that would be interpretable. An example of this is given by Terr (1991):

Three and a half years after experiencing a series of traumatic events, a 5-year-old child was discovered (through pornographic photographs confiscated by U.S. Customs agents) to have been sexually misused in a day-care home between the ages of 15 and 18 months. The girl's parents did not dare to speak to her about what they had learned from the investigators. They, in retrospect, realized that she had been sketching hundreds of nude adults beginning from the time when she had first begun to draw.

While playing in my office, this child told me that a baby she had just drawn was 'all naked' and 'a bad girl'. Unknowingly, she had just depicted herself. Despite the fact that the little girl's only verbal memory of the events was 'I think there was grave danger at a lady—MaryBeth's—house', her volumes of drawings represented strongly visualized elements that she had retained and had needed to recreate from these very early, nonverbal experiences. (Terr, 1991: p. 12)

Of course, in this case, the memory seems to have been intruding in a way typical of post-traumatic stress disorder, but we have no reason to suppose that a very early memory intentionally recovered by an adult would be any more intelligible. It would remain fragmentary. What could happen is that the adult could get a story frame within which the fragments could be fitted, and a new record would be created with all the imported material from the story frame. The existence of the fragments, including affect and imagery, could make the whole newly created record seem real.

Specialist memory enhancement techniques, such as are used in the Cognitive Interview (Bekerian and Dennett, 1993; Fisher and Geiselman, 1992), work by changing the components of the description that is being used for retrieval. Thus, a witness may be asked to imagine her- or himself back at the scene of the incident or to mentally retrace her or his steps prior to the event in question. Such techniques serve to reinstate the set of descriptors originally used in the heading when a record was created and thus, increase the possibility of retrieval of the original memory. As Lindsay and Read point out, the Cognitive Interview technique very carefully avoids suggestive questioning. The memory recovery methods castigated by Lindsay

and Read, on the other hand, could be characterized as encouraging the creation of new, secondary records with all the dangers of confusing fiction with reality.

What distinguishes one's own past?

We can now turn to the application of the Headed Records model to recovered memories. Our way through to this will involve discussion of other, similar memory phenomena, and some thought about how we know what memories apply to our own history.

Our memory includes records of a number of kinds. Some of these reflect our own experience and, in effect, contain plans for action. In this respect, my records are (at least, in principle) appropriate for me to use. They reflect my age, size, weight, strength, degree of expertness, acceptable level of risk, experience, abilities, and a host of other personal factors. These records contrast not only with the records for the equivalent situation in someone else's memory—which would reflect their own particular characteristics—but also with the records in my own memory system of other people's experience. Such records could arise through my witnessing events in which others were the main characters, through witnessing events in which I was the recipient of a particular behaviour or through hearing or reading about real or imaginary events. While on occasions one might try to incorporate someone else's behaviour into one's own routines, this is normally done with circumspection.

In headed records terms, one component of the description normally indexes <self> and this is matched by a component of the headings of appropriate records. The idea of <self> as a heading has provided the basis of a cognitive account of multiple personality disorder (Morton, 1991). Before enlarging on this account, we can briefly examine a case of functional amnesia which can be accounted for in a similar way. The advantage of starting with the functional amnesia is that the case is simpler in structure and solely involves forgetting. Such a non-contentious case might serve to validate the theoretical method to be used in the case of multiple personality disorder.

'Lumberjack'—The role of <self> in recall

P.N. was a patient who was studied by Schacter, Wang, Tulving, and Freedman (1982). He was 21 at the time of the investigation, and had left school 5 years earlier. He had approached a policeman in downtown Toronto complaining of excruciating back pains. When questioned at the hospital, P.N. could not remember his name, address or scarcely anything else personal apart from a nickname, 'Lumberjack', and that he had worked for a courier service in town a year earlier. The courier service later confirmed that the patient had worked for them and had been given the nickname 'Lumberjack' by his fellow workers. P.N. knew the city he was in and could name many downtown streets as well as the names of the local baseball and ice hockey teams. He knew the name of the Prime Minister of Canada and 'possessed some information about recent political events'.

The amnesia cleared shortly afterwards while P.N. was watching an elaborate cremation and funeral in the final episode of *Shogun*. P.N. reported that as he watched the scene, an image of his grandfather gradually appeared in his mind. He then remembered his grandfather's death as well as the funeral that followed. No further clinical diagnosis is reported.

A number of experimental tests were given during and subsequent to the amnesic episode. One of these was the Famous Faces test, where the subject is asked to provide names to faces from the present and the past. In this task there was no difference in P.N.'s performance during the amnesic episode and after it. A more revealing test was that of Episode Cuing. In this task, the subject is given a word and requested to retrieve a specific personal memory associated with it. Retrieval was either constrained or not. In the constrained conditions the instructions were to recall something from before the onset of amnesia. In the unconstrained condition there were no restrictions. In the constrained condition, P.N. failed to retrieve anything to seven of the 24 cues. In addition, the median response time was 40 s, more than twice the unconstrained mean. Most of these memories were drawn from the relatively intact 'island' of episodic memories from the 'lumberjack' period. The median unconstrained age of the memories was 1.5 days for P.N. compared with 5 months for a control. After recovery, the figure for P.N. went up to 60 months.

The period of his life that P.N. managed to recall during the amnesic episode was characterized by the nickname 'Lumberjack' that was specific to that period. By his reports, both during and after the amnesia, this period was a very happy one. In Headed Records terms, P.N., in his amnesic state, can be characterized as lacking one element of his set of possible descriptions. This is the descriptor <self> corresponding to his normal personality—the self <PN>, as it were. The result of the descriptor <PN> being missing is that records with <PN> in the headings could not be retrieved because the headings could not be matched. Such records would contain personal memories. The fact that he could recall episodes from the time when he was known as 'Lumberjack' would lead us to suppose that, during this time, personal records were headed with a <lumberjack> feature and that <lumberjack> was available as a descriptor at the time of testing. In contrast, the retrieval of non-personal records, which contain general knowledge, would be completely unaffected because, for such retrieval, usually from secondary records, there would be no requirement to specify the <self> component.

In the case of P.N., then, I have been able to use the concept of a <self> marker in giving an economical account of the memory phenomena. We can now look at multiple personality disorder using the same theoretical techniques.

Multiple personality—multiple <self>

According to DSM-III-R (American Psychiatric Association, 1987), Multiple Personality Disorder (MPD) is characterized by 'the existence within the person of two or more distinct personalities or personality states ...' where 'At least two of these personalities or personality states recurrently take full control of the person's behavior' (American Psychiatric Association, 1987: p. 272). There are many differences between such cases and that of P.N., described above, but the existence of amnesia associated with different personalities might encourage us to look for parallels based on the notion of <self> markers. That is, we could imagine each personality having its own set of records, headed by individual <self> markers.

One of the few cases of MPD to be studied experimentally, and a case which seems immune from suspicion of influence by the therapist, was reported by Ludwig, Brandsma, Wilber, Benfeldt, and Jameson (1972; Brandsma and Ludwig, 1974). The patient was a 27-year-old man called Jonah. When he was first admitted to hospital he had had a long history of episodes in which he had lost his memory. During

one such incident he had attacked his wife with a butcher's knife, running both her and their daughter out of the house. At such times, his wife had informed him, he referred to himself as Usoffa Abdulla, Son of Omega. While in the hospital he experienced variable periods of memory lapse during which he would undergo a personality change. Three additional personalities were identified, each with separate identities and different names. Communication with these personalities was facilitated by means of hypnosis, although they did all emerge spontaneously for varying periods.

A variety of tests were administered to the four alter personalities. On three intelligence scales all four came within the low normal range. Apparently the four gave exactly the same answers to content questions (equivalent to a context free 'semantic' memory). Experiments were carried out to test transfer of learning between personalities. The experiment involved paired associate learning. One of the personalities was presented with a list of ten words, each paired with a response word. The list was learned to the criterion of three successive perfect trials. Then the other three personalities were called in turn and were required to respond to each stimulus word with 'the one word that goes best with it'. This procedure was repeated for all four personalities. The data showed that the other personalities appear to know something about Jonah's list. Apart from that, there is no transfer. So it seems that each personality can have experiences which are unretrievable unless searched for by that personality.

In another cued recall experiment, a list of ten paired associates was presented to one personality. After it had been learned, the same list was then presented for learning to the other personalities in turn. There was massive savings in learning in spite of each personality claiming not to remember engaging in the task previously in contrast with the very poor transfer in the memory task. Similar data were obtained from a case studied by Nissen, Ross, Willingham, Mackenzie, and Schacter (1988) (see Morton, 1991, 1992 for a more detailed treatment of these cases).

To account for these data, I assume that Jonah's event records are headed differently for the four personalities. These headings will differentiate the four specifications of <self>. In brief, the task specification in the cued recall task would demand <self> verification. For the learning task this would not be the case, and the contents of the records from personality A could be transferred to another record labelled as . In general, we would predict that transfer will be possible where the personality being tested is irrelevant to the task. This fits with other data reported by Ludwig *et al.* (1972). Thus, transfer was also reported on the blocks subtest of the WAIS. However, transfer was not observed in a galvanic skin response test for emotionally laden words that had strong personal significance only for one of the personalities. The simple assumption is that the information leading to an emotional response is found in a record which is headed by the word and by the particular <self> component. Such records would not be accessible to the other personalities.

The mechanism of setting up the multiple <self> markers characteristic of MPD remains to be established. The detail of this would depend on what account we accepted for the normal development of <self>. The assumption would be that the process of consolidation of <self> and its use in the organization and retrieval of event memory would have been disrupted by the severe early abuse that seems characteristic of MPD.

MPD and recovered memories

The Headed Records account of MPD given here is that retrieval of event records is restricted by the specification of <self> in the descriptions. Invariably, for MPD patients, this means that memory for abuse is blocked from the 'core' personality. An alternative mechanism of forgetting within the Headed Records model is one where a record is retrieved but is not available to consciousness. The mechanism of this is a normal one—that of task evaluation. Whenever a record is retrieved it is subjected to task evaluation to check that it contains information relevant to current goals. It would be a small change to have as a resident goal the requirement to prevent conscious access to information of a particular kind. The blocking out of abusive memories by such a device would resemble the classical Freudian notion of 'repression'. It is possible that the affective component of such records would disturb normal information processing.

One other point should be made about the Putnam *et al.* (1986) analysis of MPD patients, which was mentioned at the beginning of this commentary. A wide variety of psychiatric symptoms was noted by or reported to clinicians during their first contact with the patients. Among these symptoms, nearly 90 per cent showed depression, 70 per cent suicidality, and over 50 per cent showed each of sexual dysfunction, conversion symptoms, and panic attacks; just less than this showed substance abuse. There was a mean number of 18.5 psychiatric symptoms per patient. Ninety five per cent of the patients had received one or more psychiatric and/or neurological diagnoses prior to the diagnosis of MPD (mean = 3.6 diagnoses). If it is the case, then, that there can be severe child sexual abuse with dense amnesia without severe symptomology prior to diagnosis and without the more florid components associated with MPD, then it would have to be accounted for in other ways. It is certainly different from anything described before.

Over the past few years, diagnosis of MPD has become increasingly criticized. Currently, there are accusations that the multiple personality condition, as with memories of child sexual abuse, can be created through suggestion on the part of therapists. It may become established that such accusations are true in some cases. However, if they are, it should not influence our assessment of the additional possibility of MPD produced in early childhood by extreme child sexual and physical abuse. Indeed, we may come to distinguish between developmental MPD on the one hand (created by sexual abuse in childhood) and acquired or functional MPD on the other (created in adulthood), each with their distinctive characteristics. It is possible that dense amnesia for events between the personalities might be a defining feature of true development MPD.

CONCLUSION

In their paper, Lindsay and Read accept that some recovered memories are false but that some are likely to be genuine. This means accepting both that memories can be manufactured and that memories for real events can be repressed and then recovered. I have tried to indicate how the Headed Records model can give a structured account of such phenomena. Of course, the existence of the model does not guarantee the existence of all the phenomena it could explain, but it is at least not possible to claim that repression and recovered memories are impossible by

all current information processing theories. Alas, if we decide that the phenomena are real, that will not guarantee the correctness of the model. But these are the kinds of insecurity we live by.

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