

## The Developing Transference in Amnesia: Changes in Interpersonal Relationship, Despite Profound Episodic-Memory Loss

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Recently there has been revived interest in the ability to learn emotion-related material—even material of great complexity—despite profound episodic amnesia. In psychoanalysis, this finding is especially important due to the possible role of such a dissociation in infantile amnesia and as a possible account of the neurobiological basis of the transference relationship. However, there have been few investigations of neurological patients with amnesia in psychoanalysis, and we are not aware of any published accounts of the development of the transference relationship in profound amnesia. In this paper, we briefly review the content of a series of psychoanalytic psychotherapy sessions of a profoundly amnesic patient, Mr. N, reported in unpublished form by Kaplan (1994). This patient showed changes in the content of his associations that appeared to be emotion-related, and he appeared able to learn from the dynamic interaction with the analyst, despite his inability to consciously recall previous encounters with the analyst or even to recognize her when they met for subsequent sessions. Such findings offer the opportunity for a better understanding of the neurological underpinnings of the transference relationship, including linking clinical psychoanalytic findings with a developing neuroscientific literature on this topic.

There has long been an interest in the preserved abilities of amnesics. Some of the early work involved, for example, preserved abilities in the domain of procedural learning (Schachter, 1987; Squire & Zola, 1996, 1997). Recently there has been revived interest in the ability to learn *emotion*-related material despite severe amnesia. Early examples date back to Claparède (1911), where a severely amnesic patient developed a dislike for her physician after a negative encounter with him, despite not recalling having met him before. More recently, Tranel and Damasio (1993) and Johnson, Kim, and Risse (1985) have investigated this topic systematically, showing that amnesics are able to acquire feelings of emotional valence in relation to people they do not consciously recall, not only for negative but also for positive emotions (for a more general review on this topic in relation to psychoanalysis, see Yovell, 2000).

The neurobiological basis for this remarkable dissociation in memory performance appears to relate to an anatomical separation between two memory systems. Notably, conscious episodic recall appears to be mediated by the hippocampus and related structures (see Eichenbaum & Cohen, 2001), whereas emotion-related memory has a separate neurobiological substrate from upper brainstem to medial-frontal lobes (e.g., Bechara, Damasio, Damasio, & Anderson, 1994; Damasio, 1994; Panksepp, 1998).

This finding of preservation of emotion-related memory in amnesia may even extend to the learning of complex emotion-related material (Turnbull & Evans, 2006). For example, the profoundly amnesic patient SL was never able to consciously recall, or even identify as familiar, the experimenters he regularly visited for his assessments (Turnbull & Evans, 2006). However, his emotional responses to the experimenters changed

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systematically over time. He showed (appropriate levels of) uncertainty in his initial meetings and regularly inquired about the identity and motives of the experimenters. However, in the later sessions such repeated questioning and uncertainty disappeared, and he was relaxed and confident in the presence of the investigators, despite having no conscious recollection of having met them before.

In psychoanalysis, this finding of preserved emotional learning is especially important because of what we know about learning in the early years of life. Here, the infant has poor, or nonexistent, episodic memory, most strikingly demonstrated by the presence of later infantile amnesia (Freud, 1905). Modern neuroscientific accounts of the phenomenon stress especially the late development of hippocampal (conscious) memory systems (for further discussion, see Yovell, 2000; see also Jacobs & Nadel, 1985; Turnbull & Evans, 2006). However, it has long been clear that infants possess a well-developed capacity for learning emotional valence in relation to objects—for example, in the quality of attachment relationships with specific adults (Ainsworth, 1985; Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969; Fonagy, Steele, Moran, Steele, & Higgitt, 1991; Fonagy, Steele, & Steele, 1991; Winnicott, 1960). This issue is also important in clinical psychoanalysis, because many aspects of the analytic interaction—for example, the transference relationship—may be mediated by emotion-based nonepisodic memory systems.

There have been remarkably few investigations of neurological patients with amnesia in relation to psychoanalysis (e.g. Betlheim & Hartmann, 1924; Fotopoulou, Solms, & Turnbull, 2004), and we are not aware of any published accounts of the development of the transference relationship in amnesia (though see Clarici, 2002). One potential resource is a series of psychoanalytic psychotherapy sessions of two patients with memory disorders reported in Kaplan (1994), but not published with the rest of the material from this source (Kaplan-Solms & Solms, 2000). One of these neurological patients had only moderate memory problems (Kaplan, 1994, pp. 625–643), but the second was profoundly amnesic (pp. 590–624). Kaplan (1994) did not investigate, or comment on, possible emotion-based learning in this patient. However, the session reports from the original therapeutic interactions are still available for investigation (Kaplan, 1994), and we have shown previously that it is possible to extract useful quantitative data from this resource (Turnbull, Jerkins, & Rowley, 2004; Turnbull, Jones, & Reed, 2002).

In this paper, we briefly review the content of the original session reports of the profoundly amnesic patient Mr. N reported by Kaplan (1994, pp. 590–624). We looked especially for evidence that the patient might be able to learn from the dynamic interaction with the analyst, such that it altered the emotion-related material available in the analytic setting, notwithstanding the absence of episodic recall.

## Method

### Case Report

#### *Neuropsychological presentation*

Mr. N, now in his early twenties, had been a gifted pianist and had successfully begun a university education. He developed his initial neurological difficulties following an incident in which he dived into a countryside pool, injuring his cervical spine. This resulted in quadriplegia. However, there was no head injury, and there were no reported neuropsychological deficits from this incident. After a period of several months in which he showed little or no physical recovery, Mr. N then suffered a cardiac arrest. He was successfully resuscitated, but he had spent several minutes without cardiac function, and on recovery of consciousness he had a new neuropsychological deficit—a severe and stable amnesia (for more details see Kaplan, 1994, pp. 590–624).

On formal assessment, Mr. N had a clear pattern of neuropsychological dysfunction. His sole deficit was a dense episodic amnesia—so severe that he would repeatedly ask the examiner's name, and the purpose of her visit, and would apparently forget all events dating back more than a few seconds. There was a brief retrograde amnesia. It was, of course, difficult to assess Mr. N on manual tasks because of his quadriplegia. Nevertheless, it was clear that his memory loss involved both the verbal and non-verbal domains. However, his immediate memory was preserved, such that it was possible to hold a conversation with him. He showed no other neuropsychological deficit apart from this severe memory loss. Most notably, he showed no aphasia, acalculia, or agnosia, no deficit of spatial perception or cognition, and no impairment of executive function.

In sum, the most likely account of Mr. N's presentation appears to be that he suffered an anoxic episode, dam-

aging the hippocampal structures that are especially vulnerable to anoxia and are central to the formation of episodic memories (Squire, 1992; Squire & Zola, 1996, 1997). The sensitivity of some hippocampal structures (notably the CA1 zone) to anoxic damage is the probable basis for the highly selective pattern of deficit: with profound episodic-memory impairment but with apparently complete preservation of other neuropsychological functions (e.g., Adams & Victor, 2000; Walsh, 1985). The CT scan was normal, which is not unusual in such cases.

#### *Psychoanalytic presentation*

Mr N was 26 years old at the time of the referral. His psychoanalytic assessment involved a series of eight sessions of psychoanalytic investigation, spaced at roughly weekly intervals. They began 28 months after the onset of his amnesia. When assessed, Mr. N was quadriplegic, amnesic, and bedridden at home, dependent for care on his devoted parents. In addition, a nurse was employed to take care of Mr. N on a daily basis. Mr. N was the only child in a religious Jewish family and had been religious himself until his disease developed. In general, he presented as an introverted young man, who had made few close friends until he entered university. He was enthusiastic about both music and sports and, when younger, had wanted to pursue a degree in music.

He presented a manner fairly typical for a patient with a dense anterograde amnesia: repeatedly asking the same questions and telling the same stories. Indeed, because of this repetitive questioning, his parents had placed a note on the wall saying: "You have lost your memory and the doctors are trying to help" (Kaplan, 1994, p. 595). However, he was still able to recognize his parents, and he was oriented for both place and person—but not (of course) for time. In contrast to this profound anterograde amnesia, he had a far more limited retrograde memory loss. At the time of the assessment, he could remember his childhood as well as his university years up to the point of his second-year exams. However, his anterograde amnesia meant that he did not recall his stay in hospital or explicitly recall anything beyond that time.

#### *Changes in the therapeutic relationship*

Despite this episodic-memory loss, it appeared that Mr. N was able to act in accordance with *some*

form of memory representation. His ability to retain emotion-related material across time, despite his amnesia, is suggested by changes in the content of his associations in sessions and, perhaps, in the analytic relationship. In particular, while he had no conscious recall of having previously met his analyst, his interaction with her appears to have gradually modified over time, in a manner similar to (though less consistent than) that reported in other amnesic patients (Tranel & Damasio, 1993; Turnbull & Evans, 2006).

*Session 1* (28 months post-onset, and 2 weeks after the neuropsychological assessment: Kaplan, 1994, pp. 597–600)

Mr. N showed no recognition of the analyst when they were reacquainted, but he consented to the meeting and seemed relaxed and comfortable in her presence. He spent much of the earlier phase of the session discussing the nature of his memory loss—of which he had full awareness. The affective tone of this early period was positive, as he described a range of pleasant experiences at university. He also described the regular frustrations that accompanied his failure to remember, though his mood did not become overly low when talking about his amnesia. If anything, he seemed slightly embarrassed by his memory failures when he lost his train of thought. Notably, he never referred back to earlier moments in the session, a phenomenon that was also true of all of the later sessions and points to the profound nature of his amnesia. However, he also made an interesting observation about his nursing sister, who was a daily visitor. He reported that he could "recall" her last visit, in a way that was not true of other visitors.

The emotional tone of the session changed following the intervention of his father partway through the session. His father intruded in order to perform a suction procedure on Mr. N—an event that may well have been justified given Mr. N's medical condition, but it clearly disrupted his emotional state. On his father's departure, Mr. N became anxious and depressed, an affective pattern that continued for the remainder of the session. He described the hopelessness of his life and the lack of any prospect for the future. Indeed, he reported that he often tried to stop himself from thinking at all. Notably, this period in the session was the only time in which he did not lose track of his train of thought, and he presented

a coherent thematic account across several minutes of discussion.

*Session 2* (7 days later: pp. 600–603)

Mr. N again showed the sort of presentation that one might expect from someone with a dense amnesia. On meeting the analyst, he could remember nothing of her face, voice, person, or purpose, or that she had visited previously. He also had no recollection of content that was repeated from the last session, such that continuity was achieved only by the *analyst* referring back to the previous session. Much of the content was similar in theme to the initial session, as Mr. N again discussed the difficult life situation and limited prospects. This led again to periods of depression, as he described, for example, what a “relief” it would be, both for himself and for his parents, when he finally died.

However, the session differed in that Mr. N was less anxious than in Session 1, and he began to describe periods in which his mind went blank. He ended the session appearing more relaxed and, at times, rather sleepy.

*Session 3* (7 days later: pp. 604–608)

As in the previous two sessions, it was clear that Mr. N had no recognition of the analyst’s face nor understood the reason for her presence. However, the interaction at the beginning of the session did suggest a remarkable degree of familiarity that was not present before. When the analyst arrived, Mr. N gave “a rare smile and a wink” and exclaimed, in a warm and lively tone, “Welcome!” (p. 604). However, after this initial period of positive emotion, Mr. N was again faced by the periods of mental blankness. These were punctuated by periods when mental content became available; this was usually of a positive sort, such as an account of his sister, of whom he was fond and who visited regularly. Indeed, he described how he had not properly “known” his sister before his accident, but now he had grown much more attached to her—a surprising observation, in the context of his dense amnesia.

*Session 4* (7 days later: pp. 608–610).

As before, Mr. N had no recollection of the analyst or of her previous visits. This session was, however, far more positive, in the sense that Mr. N did not have the “blanks of thought” that had been a feature of earlier sessions. However, he readily returned to

the themes of the hopelessness of his life—though this time in a more religious context, as he discussed the fact that his current state might be a punishment for his previous sins.

*Session 5* (7 days later: pp. 611–613)

Again, Mr. N did not recall the analyst. Again the session was dominated by discussions of his amnesia, and its negative consequences, such that the analyst felt that little or no progress was being made. However, Mr. N did describe his feelings towards the analyst in much more positive terms, saying that he felt “very much at ease at the moment . . . and he felt comfortable with the analyst, in that one-to-one situation” (p. 612), gesturing towards the analyst and to himself as he said this.

*Sessions 6, 7, and 8* (3, 10, and 17 days later: pp. 614–619).

Mr. N remained entirely unable to consciously recall the analyst. Again, the sessions were dominated by low mood states, related to accounts of his memory loss and paralysis, and the general hopelessness of his state. However, a sense of safety with the analyst was strongly evident.

## Discussion

Mr. N’s behaviour across sessions is, in many respects, entirely consistent with his medical state, which was dominated by severe quadriplegia and profound episodic amnesia. He is, quite understandably, deeply distressed by the inability to influence the world and by his dependence on others for even the most basic personal care. As a consequence of his amnesia, he also appears to have great difficulty in establishing sufficient continuity of thought to begin to work through his situation and mourn his losses. It is possible that the analyst might somehow act as an external aid to compensate for his absence of episodic memory. However, the brief nature of the assessment period in this case (eight sessions) means that we are unable to evaluate whether there might have been any substantial gains from this—especially because any progress would be likely to be slow as a consequence of his amnesia.

Nevertheless, there does appear to be *some* capacity in Mr. N to retain memorial information in the domain of emotion-related memory. These suggest learning of two general types. One class of such changes are fluc-

tuations in content *during* sessions. The most prominent example described above was when (in Session 1) Mr. N's father's intrusion produced a prolonged episode of negative content, lasting tens of minutes. This striking affective change in the session is a response that would normally be thought *entirely* appropriate, given that his father's intervention not only intruded on a private interaction, but its intimately physical nature would have been a stark reminder of Mr. N's extraordinarily dependent state.

However, it is notable that the change in content is so entirely normal *despite* Mr. N's profound amnesia. It is worthwhile recalling that the typical presentation in profound amnesia is one of great *stability* in content—with the patient repeatedly asking the same questions of the examiner and recounting the same stories (cf. Turnbull & Evans, 2006; for more on such stability in the classic case of HM, see Ogden, 1996, chap. 3). While Mr. N has a profound episodic amnesia, his memory impairment appears to have no effect on (at least some of) the aspects of memory process that underpin memorial continuity across a psychoanalytic session. It seems clear to us that modifications in the content of thought in amnesia (especially as regards affect) is a topic of some interest, which we feel has been under-investigated in the neuroscientific literature but is of *especial* interest to the neuropsychanalytic community.

An additional class of change, also of interest, is that of modifications in the interaction *across* sessions in the interaction with the analyst. The most notable of these are the greater feelings of familiarity, and level of comfort, that the patient felt in the presence of the analyst. Related issues are Mr. N's growing capacity to discuss the terrible consequences of his medical condition and also a gradual admission of his mental absences. It may also be that Mr. N's reports of a developing interaction related to his nurse and his sister have a similar basis. It is clear that the brief period of intervention in the present setting does not permit us to draw firm conclusions on this issue, but there is at least the possibility that Mr. N was showing the beginnings of a transference relationship of the sort that is entirely conventional in a psychoanalytic setting. Of course, this would be remarkable were the transference relationship preserved in the context of profound episodic amnesia (cf. Clarici, 2002), but it is also a *plausible* suggestion, consistent with previous investigations of this phenomenon (Johnson, Kim, & Risse, 1985; Tranel & Damasio, 1993; Turnbull & Evans, 2006).

In sum, these findings are consistent with the large body of developing neuroscientific evidence of mul-

iple memory systems in the brain (Eichenbaum & Cohen, 2001; Johnson, Kim, & Risse, 1985; Squire, 1992; Squire & Zola, 1996, 1997; Turnbull & Evans, 2006). This work emphasizes the fact that the interpersonal properties of the transference relationship seem to be mediated by classes of memory system that are entirely different to those of conscious episodic recall. Laypersons may regard conscious episodic recall as synonymous with "memory", but it is clear that the episodic system is but one of several parallel streams of memorial encoding, producing a richness of lived experience that is far more complex than had been anticipated and that awaits more detailed scientific investigation.

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