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FALSE MEMORY REPORTS IN HYPNOTIC AND NONHYPNOTIC SUBJECTS

by

Melissa F. Burgess

**A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of Master of Arts**

Department of Psychology

Carleton University

Ottawa, Ontario

September, 1994

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"FALSE MEMORY REPORTS IN HYPNOTIC AND NONHYPNOTIC SUBJECTS"

submitted by Melissa F. Burgess, B.A.
in partial fulfillment of the requirements for
the degree of Master of Arts

Thesis Supervisor

Chair, Department of Psychology

Carleton University

September, 1994

Abstract

This study was designed to assess the role of several antecedent factors on the generation of false memory reports in university students. Hypnotic and nonhypnotic procedures were compared in the elicitation of false memory reports. In addition, subjects rated their degree of confidence in these memory reports. Ninety high, medium and low hypnotizables were recruited and, within hypnotizability levels, were randomly assigned to either the hypnotic, mnemonic (nonhypnotic) or control condition (n=30 per condition). Results indicated that hypnotic and mnemonic subjects generated significantly more false memory reports and placed more confidence in these reports than the control subjects. However, subjects in the experimental conditions failed to differ on these two measures. In addition, hypnotic and mnemonic subjects exhibited an equivalent level of responsiveness to post-regression suggestions. Across experimental conditions, high hypnotizables reported a significantly greater frequency of false memory reports and a significantly higher degree of overconfidence in these reports than did low hypnotizables. Implications are discussed.

This thesis is dedicated to the memory of my advisor, Dr. Nicholas P. Spanos, for whom I shall always be indebted. His insight, enthusiasm, encouragement and tremendous support made this thesis possible. The limitless patience, understanding, generosity and friendship he bestowed on his students will never be forgotten. I feel truly fortunate to have had him as an advisor and, more importantly, to have had him as a friend.

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False Memory Reports in Hypnotic and Nonhypnotic Subjects

Recently, much controversy has centered around the notion of therapy-induced recovered memories (Blume, 1990; Fredrickson, 1992; Loftus, 1993; Spanos, Burgess & Burgess, 1994). Therapists who employ procedures aimed at recovering forgotten (i.e. "hidden") memories of childhood sexual abuse argue that the resultant memory reports are accurate (Blume, 1990; Fredrickson, 1992). Other investigators have suggested instead that the memory enhancing procedures employed in such therapies may at times create false memories (Lindsay & Read, in press; Loftus, 1993; Spanos, 1994). According to this hypothesis, these procedures provide patients with the expectation that they have been abused, encourage them to generate imaginings that are consistent with this idea, and then legitimate these imaginings as actual memories of early abuse.

The little data available suggest that, in most cases of recovered memories of childhood sexual abuse, the accuser is usually a woman in her 20's or 30's, well educated and intelligent, who has sought therapy because of depression and dissatisfaction with life (Makin, 1993; Wakefield & Underwager, 1992). Many state that prior to their therapy, they had no idea that they were abused as children.

Legal action

The rising number of recovered memory cases has led to a corresponding change in legislation. For instance, the Supreme Court of Canada recently disposed of the statute of limitations on civil suits

of incest and sexual abuse (Mullens & Reich, 1992). Recently, many U.S. states also extended the statute of limitations for civil suits. For example, in the state of Washington (1989):

legislation went into effect that permitted people to sue for recovery of damages for injury suffered as a result of childhood sexual abuse at any time within 3 years of the time they "remembered" the abuse...within three years of the Washington statute, 18 other states enacted similar legislation allowing for the tolling of the statute of limitations" (Loftus, 1993, p. 520).

It is extremely difficult to obtain evidence of sexual abuse that may have occurred decades before the allegations are made. For this reason, "victims" typically sue for damages instead of laying criminal charges. However, an increasing number of states are allowing charges to be brought against alleged perpetrators on the basis of recovered memories (Loftus, 1993; Wakefield & Underwager, 1992).

The rising number of lawsuits and criminal charges can partly be attributed to the use of "therapeutic" techniques that encourage people to seek legal recourse in order to start the "healing process" (Ofshe, 1993). Wakefield and Underwager (1993) cite the very popular book The Courage to Heal (Bass & Davis, 1989) as a probable catalyst for the taking of legal action. This book not only explains to its readers that lawsuits bring about psychological healing, it also comes equipped with "how-to" instructions on how to file suit as well as a list of attorneys who handle such cases.

The False Memory Syndrome Foundation

The increase in the number of people who claim to have been falsely accused on the basis of recovered memories has led to the formation of a formal organization called the False Memory Synurome Foundation (FMSF). This organization was founded in 1992 in Philadelphia, and a branch in Canada was recently opened (Makin, 1993). Currently there are an estimated 4600 families who belong to the FMSF; 300 of these families are from Canada (Bayin, 1993).

Critics of the FMS Foundation argue that this organization enables real abusers to collectively deny their guilt, is aimed at stemming societal awareness of the magnitude of the child sexual abuse problem, and more generally, constitutes a backlash against the gains achieved by the women's movement by branding the memory and testimony of women as unreliable (Fredrickson, 1992; Kristiansen, 1994).

At the heart of the controversy over recovered memories are differing views concerning the fate of childhood memories of abuse, the veracity of long delayed recall and the role of expectations and suggestions in distorting such recall.

The Fate of Traumatic Childhood Memories

Psychoanalysis popularized the idea that traumatic events which occur during childhood are actively forgotten or "repressed" and that effective therapy must involve recovering these repressed memories (MacMillan, 1991). However, the efficacy of psychoanalytically-based therapies at uncovering so-called "hidden" memories has never been empirically demonstrated (Esterson, 1993).

Nevertheless, the assumption that such therapies are useful is common and this assumption guides the types of therapeutic procedures that are commonly associated with reports of recovered memories.

The notion that traumatic childhood events are particularly likely to be forgotten was commonly accepted until recently. According to Spanos (1994), studies examining the fate of childhood memories have suffered from a number of methodological difficulties. For example, Briere and Conte (1993) questioned 450 psychiatric patients who reported having been sexually abused as children. The questionnaire administered to these patients simply asked if there was ever a time between the first time they were abused and their 18th birthday when they could not remember the abuse. Findings indicated that 59% of these patients answered "yes" to this question. As pointed out by Loftus (1993) and Spanos (1994), these results may be misleading due to the fact that all of the subjects questioned were in psychotherapy at the time. As no corroborative evidence was obtained, it is quite possible that some of these abuse remembrances were actually therapy-induced false memories.

In addition, the wording of the question is ambiguous. As Loftus (1993) and Spanos (1994) argue, the question asked could be interpreted different ways. Perhaps it was interpreted to mean that the patient could not think about the abuse as it was too painful or perhaps it was interpreted to mean that the patient actually had forgotten the abuse. In other words, perhaps a "yes" response

indicated an unwillingness to remember instead of an inability to remember.

Relatedly, Herman and Schatzow (1987) obtained data from 53 women outpatients who participated in short-term group therapy for incest victims. "All of these patients reported either that they had been sexually abused by a relative or that they strongly suspected that this was the case but could not remember clearly (Herman & Schatzow, 1987, p. 4). The researchers classified 28% as reporting severe memory deficits. These included women who could recall very little from their childhood or women whose previously "repressed memories" were recently "recovered". The patients were encouraged to obtain confirmation of the abuse and it was reported by Herman & Schatzow (1987) that 74% did so. However, there is reason to be skeptical about this substantial percentage. As pointed out by Spanos (1994), the "confirmation" consisted of the patients' verbal reports only. For example, some patients claimed to have found pornographic photographs or diaries in which the "perpetrator" had described the sexual abuse episodes. Spanos (1994) suggests that because all the patients in this study were involved in survivor group therapy, one should be dubious of these results. Spanos (1994) cites relevant research on conformity (e.g. Asch, 1956; Tavris, 1993) to argue that it is possible that these patients constructed "memories" of abuse in order to conform to the norms of the group. There is evidence (Whitley, 1992) that some patients who have participated in therapy groups such as the one used in the Herman and Schatzow (1987) study have recanted and confessed that the "memories" they came up with were fabrications

and admitted that they came up with these in order to win the approval of the therapists and other group members. Since a major issue in this area is the extent to which people construct false memories of abuse, this lack of independent and objective corroboration of abuse found in many of the studies on recovered memories is a serious methodological limitation. Femina, Yeager & Lewis (1990) overcame this limitation by interviewing 69 individuals whose physical abuse during childhood had been documented in the records of social service agencies or the courts. Results indicated that 18 (26%) of these subjects either denied or minimized the abusive incident that was documented. The researchers attempted to recontact all subjects who denied or minimized their abuse in order to conduct a second interview with them. The purpose of this interview was to develop rapport and then clarify the reasons for the discrepancies. Importantly, during the clarification interview, all 11 subjects that were recontacted now acknowledged their abuse. Reasons given for the initial denials included feeling embarrassed, wanting to forget the abuse, wanting to protect the perpetrator etc. For example, one subject stated "My father is doing well now. If I told now, I think he would kill himself".

Williams (1993) interviewed 129 women with documented histories of sexual abuse in childhood. Results indicated that a substantial minority of subjects (38%) were unable to recall the documented abuse, even when the abuse occurred after ages four or five years.

The reasons for the inconsistencies between these studies are unclear. Nevertheless, the Williams' (1993) study provides at least tentative evidence that childhood abuse is sometimes forgotten. In order to avoid misunderstandings, it is worth making two points about the Williams' findings. First, it is important to keep in mind that events of all kinds that occur during childhood, including highly salient ones, are commonly forgotten. Thus, it should not be assumed that the occasional forgetting of childhood abuse requires the positing of unusual memory processes (e.g., repression, dissociation). There simply are no available data comparing the frequency with which children at different ages forget abusive versus salient nonabusive events, and therefore no basis for inferring "special" forgetting mechanisms in the case of abuse. It is also important to keep in mind that subjects in Williams' (1993) study did not recover memories of abuse. Instead, they simply failed to recall abuse that had been documented in social service records. Moreover, as Spanos (1994) points out, subjects were asked to recall a specific incident of abuse. The majority of the women in the Williams' (1993) study, regardless of whether or not they recalled the documented event, reported other incidents of childhood abuse. In fact, only 12% of the women in the study reported not remembering any abuse at all. Nevertheless, the fact that these subjects reported being unable to recall early documented abuse at least makes plausible the contention that such abuse can be later recalled in adulthood, and that reports of recovered memories should not be dismissed out of hand as fantasy constructions.

Validity of Memory Reports

A great deal of evidence suggests that memory is not simply reproductive, but instead, involves reconstructive components (Loftus, 1993; Spanos, 1994). People frequently recall inaccurately and fill in gaps in memory by recalling what they expect happened or what they believed must have happened (Spanos, 1994). Recollections often consist of accurately and inaccurately remembered information that is impossible to disentangle (Loftus, 1993; Spanos, Burgess & Burgess, 1994). On the other hand, it is important to point out that memory, even memory for events long past, is sometimes highly accurate (Spence, 1993). Thus, the issue is not whether memory is accurate or inaccurate, clearly memory is both of these, the issue instead involves attempting to delineate the conditions under which memory reports are inaccurate and then assessing the extent to which these conditions are present in contexts that elicit recovered memories.

Much of the recent research on the variables that influence the accuracy of recall has been conducted on eyewitness testimony. In eyewitness situations, people often make errors in detail (e.g. straight hair as curly; a clean-shaven man as opposed to one with a moustache) (Loftus, 1993). Moreover, novel information introduced after the event (i.e. postevent information) can retrospectively alter the remembrance of the initial event (Loftus, 1979). In a series of experiments conducted by Loftus and associates (for review see Loftus, 1979), the distortion of memory caused by postevent information was clearly demonstrated. In a typical experiment, subjects viewed slides depicting a car accident. The series of slides

contained one that was considered critical. It showed a car going through an intersection clearly marked with a "YIELD" sign. After the slide presentation, the subjects were questioned about what they had seen. One of these questions was critical--half the subjects were asked if they had seen the "STOP" sign and the other half were not asked a question concerning a traffic sign. Subjects were then given a forced-choice recognition test. A short time later, subjects were simultaneously presented with two slides and asked to choose the one that they had seen before. One of these slides was the original "critical" slide (with the "YIELD" sign) and the other was identical except the original "YIELD" sign was replaced with a "STOP" sign. Subjects who had been asked the misleading question about the "STOP" sign chose the "STOP" sign slide on the recognition trial much more frequently than did control subjects.

Proponents of recovered memories (Kristiansen, 1994; Olio, 1994) point out that in experimental settings, contextually induced memory distortions involve errors in detail and rarely involve the generation of complex scenarios that never happened. Contrary to this view however both anecdotal and experimental data demonstrate that it is indeed possible to lead people to "remember" entire events that never actually occurred (Loftus & Coan, in press; Piaget, 1962; Spanos, Menary, Gabora, DuBreuil & Dewhirst, 1991).

One of the best known examples of such anecdotes is that of Piaget's (1962) memory of a childhood kidnapping. To quote Piaget:

...one of my first memories would date, if it were true, from my second year. I can still see, most clearly, the following scene, in which I believed until I was about

fifteen. I was sitting in my pram, which my nurse was pushing in the Champs Elysees, when a man tried to kidnap me. I was held in by the strap fastened round me while my nurse bravely tried to stand between me and the thief. She received various scratches, and I can still see vaguely those on her face...when I was about fifteen, my parent received a letter from my former nurse...She wanted to confess her past faults, and in particular to return the watch she had been given as a reward...she had made up the whole story...I, therefore, must have heard, as a child, the account of this story, which my parents believed, and projected into the past in the form of a visual memory.

Loftus and Coan (in press) developed an interesting paradigm for implanting memories of a fictitious traumatic event. These researchers, aided by family members, attempted to mislead 5 subjects into falsely believing that they had been lost in a shopping mall when they were five years old. For instance, 14-year old "Chris" was told by a family member that he had become separated from them in a shopping mall and, after a frantic search, had been found walking hand-in-hand with a tall, oldish man who was possibly wearing a flannel shirt. The man had supposedly found the crying Chris wandering aimlessly about and was attempting to help him find his parents. Initially Chris stated that he had no recollection of the shopping mall incident. However, as the days went by, Chris' "memory" of the event started to return. Finally, a few weeks later, Chris made the following statement:

I was with you guys for a second, and I think I went over to look at the toy store, the Kay-bee toy and uh, we got lost and I was looking around and I thought, 'uh-oh. I'm in trouble now.' You know. And then I...I thought I was never going to see my family again. I was really scared

you know. And then this old man, I think he was wearing a blue flannel, came up to me...he was kind of old. He was kind of bald on top...he had like a ring of gray hair...and he had glasses.

When Chris was finally debriefed, he expressed amazement and disbelief that he had, in fact, never been lost in a shopping mall and therefore his detailed, vivid "memory" of this traumatic event was entirely false.

Spanos, Menary, Gabora, DuBreuil and Dewhirst (1991) conducted three experiments in which college students were given suggestions to regress back beyond their birth and "remember" the events of past lives. Results indicated that subjects frequently incorporated into their past-life memories information acquired prehypnotically from the experimenter. For instance, subjects informed that their past life might be of a different race and sex than themselves incorporated these characteristics into their past-life memories much more frequently than subjects not given this information. Relatedly, subjects informed prehypnotically that people in previous eras were commonly abused more frequently reported past life memories involving abuse than did subjects given no prehypnotic abuse information.

Spanos et al. (1991) found that prehypnotic information from the experimenter influenced the extent to which past-life experiences were interpreted as memories. Subjects who were told prehypnotically that past-life experiences were simply vivid fantasies were less likely to define these experiences as memories than were subjects who had been told that past life experiences were

evidence of real past incarnations. In other words, the Spanos et al. (1991) study suggests that people will treat imaginings as real memories if they possess a cognitive framework, or implicit set of expectations and understandings, that allows those imaginings to be classified as memories. Moreover, this study further suggests that information provided by an authority figure (in this case the experimenter) can influence the extent to which subjects classify experiences as memories rather than imaginings.

In another study, Spanos, Cross, Dickson and DuBreuil (1993) interviewed people who believed they remembered having had close contact with alien beings from UFO's. These people did not differ from comparison subjects (who had no memories of contact with aliens) on indices of mental health. However, the UFO reporters believed more strongly in the existence of UFO's than did the comparison subjects. Moreover, UFO reporters also frequently described vivid but ambiguous experiences (night dreams, sleep paralysis experiences, hypnagogic imagery) that they interpreted in terms of alien contact. Assuming of course that these subjects did not actually have contact with extraterrestrial beings, their reports of alien contact constitute expectancy-guided false memories of complex events that never happened.

It is sometimes argued that experimental demonstrations of contextually induced false memories are irrelevant to the issue of memory recovery in the clinical context because the false memories suggested in experimental settings are nontraumatic (Kristiansen, 1994; Olio, 1994). According to this argument, false traumatic memories are extremely difficult, if not impossible, to inculcate with

suggestion whereas nontraumatic memories may be inculcated much more easily. Empirical data concerning the relative difficulty of inculcating traumatic and nontraumatic memories are simply nonexistent. However, a substantial body of clinical evidence clearly demonstrates that it is not difficult to inculcate memories of traumatic abuse.

VanHusen (1988) described 48 psychotherapy patients who, as fetuses, allegedly survived abortion attempts. These subjects were hypnotically age-regressed back to the abortion attempts in order to "remember" what had taken place. The resultant "memories" ranged from pressing themselves against the uterine wall for safety to feeling fear and grief when their twin sibling was aborted. These remembrances were described with great emotion and were treated as real memories by the therapist.

As Spanos (1994) argues, there is simply no evidence suggesting that people can remember events that took place while they were fetuses. Furthermore, fetuses do not have the physiological nor cognitive capability to know what an abortion attempt is, to experience fear at the thought of dying nor grief over the death of their twin sibling.

Similarly, individuals who believe that they might have been abducted by alien beings but are unable to recall the abductions, or individuals who experience gaps in memory or certain physical/psychological symptoms (e.g. muscle pain and headaches) often undergo interviews (hypnotic or nonhypnotic) aimed at "uncovering" purported memories of their abductions (Spanos, 1994). Jacobs (1992) described 60 patients who hypnotically recovered

"memories" of having been abducted and sexually abused by space aliens and Mack (1994) reported the recovery of traumatic alien abduction memories in over 70% of 100 patients. Fiore (1987) also reported the hypnotic recovery of alien abduction "memories" and like Jacobs (1992) and Mack (1994), described cases in which patients "remembered" repeated abductions which extended back to childhood.

Shaffer and Cozolino (1992) describe 20 patients who recovered "memories" of bizarre childhood sexual abuse involving ritual torture, cannibalism and human sacrifice at the hands of satanic cultists. Similarly, Young, Sachs, Braun and Watkins (1991) described similar memory reports elicited during therapy from 37 dissociative disorder patients. Similar reports of so-called satanic ritual abuse issuing from the therapeutic setting have sky-rocketed within the last 15 years (Hicks, 1991; Richardson, Best & Bromley, 1991). Bottoms, Shaver and Goodman (1991) conducted a survey of 18,512 psychologists, psychiatrists and social workers throughout the United States concerning the frequency with which they had treated patients who claimed satanic ritual abuse. Seventy of the respondents reported never treating such a patient and 2% of the sample were responsible for reporting the majority of the cases. Each of the therapists in this 2% had seen at least 100 ritual abuse victims and one such therapist reported having seen 2000 such cases. Importantly, substantial evidence indicates that a large scale organization of satanic cultists that tortures children and engages in ritual sacrifice and cannibalism exists only in the imaginations of believers (Lanning, 1989; Mulhern, 1991).

Fetal memories, past-life regression memories and UFO abduction memories, like satanic ritual abuse memories, are not memories at all--they are fantasies that the clients experience and describe as memories (Baker, 1992; Spanos, 1994). The finding that some therapists are much more likely than others to encounter patients who report particular classes of false memories suggests that the memory recovery procedures employed by these therapists may be important determinants of the "memories" that their patients generate. In summary, there is abundant evidence that complex and detailed false memories of sexual and other traumatic abuse are elicited routinely during some types of psychotherapy.

Recovered Memories in Clinical Practice

Some psychotherapists argue that certain symptoms (low self-esteem, depression, bulimia etc.) are indicative of childhood sexual abuse. Some of these therapists argue that it is their moral duty and obligation to convince clients displaying these symptoms that they were abused as children, even if the clients initially deny such allegations (Lindsay & Read, in press). For instance, clients stating that they have no memory of the suggested abuse may be told that they are in denial and that they must "uncover" the early traumatic memories in order to deal with them (Loftus, 1993). Lindsay & Read (in press) argue that suggestive probing of this type, coupled with the patient's vulnerable state, facilitates the production of false memories.

Numerous investigators (Lindsay & Read, in press; Loftus, 1993; Mulhern, 1991; Spanos, 1994; Spanos et al., 1994) have

suggested that the generation of false memory reports is likely when subjects are provided with a credible rationale from an authoritative source that makes the occurrence of such memories plausible; when they are given information that leads them to expect that they possess such memories and when they are administered procedures which they believe will facilitate the recovery of their hidden memories. It is important to note that all of these conditions frequently occur together during abuse resolution therapy aimed at uncovering "hidden" memories. Furthermore, as Spanos (1994) argues, patients commonly become emotionally dependent on their therapists and, as a result, may reconstruct their memories to make them consistent with those "memories" that will ultimately win the therapists' attention, approval and/or sympathy. As Spence (1982) states:

Under the press of a strong transference--either positive or negative--what the patient is saying about the past must be translated into what he is demanding of the present. If he needs to be pitied, for example, he might exaggerate the misery of his childhood; if he wants to be praised for being an exceptional analytic patient, he may generate a crystal-clear memory of an infantile event. These reports have nothing much to do with the past as experienced or with other reports of the same event at different times in the analysis. Rather, they are tokens in a conversational exchange designed to win some kind of response from the analyst. As in any bargaining session, truth takes the back seat; to treat these reports as faithful accounts of some earlier time is to overemphasize the historical side of the analytic process and to underplay its conversational overtones (p. 95).

As Spanos (1994) suggests, when patients initially confabulate memory reports and then realize that therapists are treating these

reports as authentic memories, it often becomes extremely difficult for them to recant and admit they did not initially tell the truth. As a result, it is possible that patients may try to reorganize their thinking in order to convince themselves that the events really had taken place.

In summary, there is general agreement among memory researchers that memory is expectancy driven and reconstructive in nature. These reconstructive components of memory and the factors implicated in this reconstruction are relevant to the issue of hypnotic procedures commonly used to increase the accuracy of recall.

Hypnosis and Hypnotizability

There is a popular belief in our society that hypnotic procedures enhance the accuracy of a person's recall to the extent that she or he may remember events that are otherwise unavailable to conscious awareness (McConkey, 1986). Contrary to this belief, however, the bulk of research on hypnotic memory enhancement suggests that hypnotic procedures are no more effective than nonhypnotic procedures in increasing the accuracy of recall or recognition (for reviews see Smith, 1983; Wagstaff, 1989). Although a few studies (for review see McConkey, 1992) have shown that hypnotic subjects recall more correct information than nonhypnotic subjects, these same studies typically found that the hypnotic subjects also recalled more incorrect information. These results do not indicate that hypnosis improves recall accuracy. Instead, they may simply indicate that hypnotic procedures sometimes bias subjects to lower their recall criterion, i.e. to

increase their willingness to recall things they are not quite sure about.

The correlation between accuracy of recall and the confidence placed in that recall is typically low and often nonsignificant, and both hypnotic and nonhypnotic subjects are frequently overconfident in their inaccurate recall (Loftus, 1979; Spanos, 1994). Current controversy exists over whether or not hypnotic procedures facilitate overconfidence in inaccurate recall. While some studies have reported higher overconfidence in hypnotic subjects (e.g. Sanders & Simmons, 1983; Wagstaff, Traverse & Milner, 1982), others have reported hypnotic and nonhypnotic subjects equivalent in their overconfidence (Putnam, 1979; Spanos, Gwynn, Comer, Baltruweit & de Groh, 1989).

Highly hypnotizable subjects are no more accurate in their recall than low hypnotizable subjects (Spanos, Gwynn et al., 1989; Spanos, Quigley, Gwynn, Glatt & Perlini, 1991). On the other hand, some researchers (McConkey, 1992; Wagstaff, 1989) argue that, in eyewitness recall situations, hypnotizability often correlates significantly with the degree of confidence that subjects place in their recall, even when that recall is inaccurate.

In summary, the available evidence indicates that hypnotic procedures do not enhance accurate recall for relatively recent events, and there is no reason to assume that these procedures enhance the accuracy of recall for earlier memories. However, abuse resolution therapists frequently employ hypnotic age regression procedures to facilitate the recovery of hidden memories of abuse

that allegedly occurred decades before the individual sought therapy (Lindsay & Read, in press; Spanos, 1994).

Hypnotic Age Regression

In hypnotic age regression, the hypnotist suggests to subjects that they are going back in time. Subjects are told that they will "re-live" whatever past age the hypnotist suggests exactly the way it originally happened (Nash, 1987). Some subjects (especially high hypnotizables) do exhibit marked behavioral/personality changes. These changes were once thought to indicate authentic regression to a past psychological or physiological state (for example, see Weitzenhoffer, 1957). However, contemporary research now strongly suggests that hypnotic subjects are simply "role-playing" and the extent to which these subjects accurately portray being the suggested age depends upon the understandings and expectations they hold about persons who are that age. As Nash (1987) argues, if age-regressed subjects hold accurate understandings and expectations about what people are like at that age, they will accurately portray that age. If, on the other hand, subjects holds inaccurate understandings and expectations, their portrayals will also be inaccurate. O'Connell, Shor & Orne (1970) demonstrated this in a study involving 3-year old children and adults who had been regressed to age 3. Both groups were encouraged to make mud pies and did so with equivalent enthusiasm and felicity. In the middle of the mud-pie extravaganza, while the subjects' hands were covered with mud, the experimenter handed each child and age regressed adult a lollipop--intentionally holding it out candy-first so that the

subjects would have to reach around the experimenter's hand in order to grasp hold of the stick. The 3-year old children reached around the researchers hand and grasped the lollipop by its stick thus enabling them to put the clean candy in their mouths. The age-regressed adults, in direct contrast, grabbed the candy-portion of the lollipop first and proceeded to put the mud-covered candy in their mouths. This finding provides amusing evidence of how beliefs and expectations about how children behave affect adults' behavior when attempting to act that specific age.

A large number of studies (for review see Nash, 1987) have also compared the cognitive, perceptual and intellectual abilities of age-regressed subjects with standardized norms for children of that age. The results indicate that there are substantial differences between these groups (for example, on IQ tests, age-regressed subjects attain much higher IQ scores than actual children who are that age indicating that adults usually over-estimate children's IQ's).

In summary, a substantial amount of research has established that age-regressed subjects do not develop the psychological or physiological states of earlier ages and they cannot accurately 'relive' earlier experiences in just the way they originally happened. Therefore, it cannot be assumed that their recall of earlier events is accurate (Spanos, 1994).

The Present Study

The present study was designed to assess the role of several antecedent factors on the creation of false memories in normal university students.

Unfortunately, there are no clear cut criteria for differentiating between actual memories of real past events and false memories of events that never occurred. These two kinds of experience involve a great deal of overlap in terms of intrinsic psychological characteristics (e.g. vividness, degree of emotionality, amount of sensory detail). This limitation makes the issue of distortion in long delayed recall difficult to study. For practical reasons it is difficult to follow experimental subjects for 10 or more years to determine the accuracy of their delayed recall for laboratory generated events. On the other hand, examining delayed recall for naturalistically occurring events usually means a lack of objective information about the to-be-recalled events against which to assess the accuracy of recall. In the present study we circumvented these problems by assessing recall for events that we can be reasonably certain did not occur and that could not be accurately recalled even if they had occurred. We generated in subjects the belief that they held and could retrieve specific memories of an event that occurred the day after their birth. The day after birth was chosen because the bulk of research on childhood amnesia suggests that people rarely recall events before the age of three or four years and uniformly fail to recall events before their first year (Howe & Courage, 1993). Therefore, any day-after-birth memory reports that subjects generate can confidently be classified as confabulations.

As previously discussed, despite the lack of empirical support, there are many clinicians who appear to believe that hypnotic procedures lead to authentic and accurate remembrances of early memories (Spanos, 1994; Yapko, 1994). For example, Yapko (1994)

surveyed therapists and found that 54% of those surveyed agreed with the statement: "Hypnosis can be used to recover memories of actual events as far back as birth" ; 47% agreed with the statement: "Therapists can have greater faith in details of a traumatic event when obtained hypnotically than otherwise" (p. 57) and a substantial number (nearly 33%) agreed that "when someone has a memory of a trauma while in hypnosis, it objectively must actually have occurred". In contrast to this, it is now generally accepted among contemporary researchers that hypnosis does not act as a "truth serum" (Wagstaff, 1989). In fact, many investigators (e.g. Orne, 1979; Laurence & Perry, 1983) argue that hypnotic procedures may actually encourage the production of false memories (Diamond, 1980; Orne, 1979). According to this hypothesis, hypnotic subjects incorporate suggestions of misinformation into their memory of an event and therefore cannot disentangle what is real from what is not. Contrary to this hypothesis, however, recent research (Spanos & Bures, 1994; Weekes, Lynn, Green & Brentar, 1992) suggests that hypnotic and nonhypnotic subjects are equally likely to generate false memories. These studies support Barber's (1969) results indicating that hypnotic and nonhypnotic subjects exhibit equivalent responding to a wide range of suggestions.

One purpose of the present study was to compare the effects of hypnotic and nonhypnotic procedures at leading subjects to describe their regression-induced infancy experiences as memories as opposed to fantasies. It was hypothesized that the hypnotic and nonhypnotic procedures would be equivalent in eliciting the suggested false memory reports. Both the hypnotic and nonhypnotic

subjects were administered extensive rationales concerning why their respective regression procedures were likely to elicit accurate infancy memories. The extent to which subjects in both of these conditions rated their infancy experiences as memories was compared to ratings made by controls. Control subjects were simply instructed to think back to a day after their birth. They were provided with no expectation information to indicate that such recall was likely or even possible.

Relatedly, a few studies have shown that hypnotic subjects recalled more correct information than nonhypnotic subjects. Importantly however, in most of these studies the hypnotic subjects also recalled more inaccurate information. This suggests that hypnotic subjects are more willing to recall information that they are uncertain about (For reviews see McConkey, 1992; Smith, 1983). This issue was examined in the present study and we expected to find more elaboration among hypnotic subjects with respect to their memory reports. Also examined in the present study was whether or not hypnotic procedures facilitate overconfidence in false memory reports.

Subjects' responsiveness to suggestions oftentimes correlates with their initial hypnotizability test scores (Spanos, 1982). Two recent studies (Spanos & Bures, 1994; Weekes et al., 1992) found that nonhypnotic high hypnotizables were just as likely to generate false memory reports as hypnotic high hypnotizables. In support of these results, research has found that high hypnotizables are prone to higher levels of fantasy absorption and imagery vividness than low hypnotizables (Sheehan, 1979). In addition, there is evidence

suggesting that imagining fictitious events makes memories of them similar to memories of real events (for review see Johnson, Hashtroudi & Lindsay, 1993). Therefore, if high hypnotizables have a superior ability to generate imaginings then it is possible that they would exhibit a higher frequency of false memory reports and also place more overconfidence in these reports than low hypnotizables, regardless of what condition they are in (i.e. either hypnotic or nonhypnotic). To examine these ideas, both the hypnotic and nonhypnotic (mnemonic) procedures used in the present study encouraged subjects to actively imagine the suggested infancy event and then, after regression procedures, to rate the extent to which they had become absorbed in their infancy experience and also to rate how vivid the experience was. We hypothesized that the high hypnotizables would exhibit a higher frequency of false memory reports (i.e. mobile-reporting) and also assign greater overconfidence concerning the authenticity of these "memories". We also expected that the high hypnotizables would report a greater degree of absorption and vividness than would low hypnotizables. Furthermore, we hypothesized that the high hypnotizables in the two treatment conditions would perform equivocally.

During abuse resolution therapy, subjects are sometimes informed that they may experience physical sensations or symptoms (i.e. body memories), intrusive thoughts about their abuse or abuser and dreams that directly or indirectly reflect their abuse memories (Smith, 1993; Spanos, 1994). The term "body memories" refers to a wide range of bodily responses that clients and therapists interpret as reflecting unconscious memories of abuse. These responses range

from unverifiable reports of sensations (e.g. pain) to "autonomic responses" (e.g. reddening of the skin) that, in some subjects, can occur as a function of suggestion and expectation. There is no evidence to suggest that such responses, in fact, reflect unconscious abuse memories (Spanos, 1994). The occurrence of body memories, thoughts and dreams were assessed in the present study. Following their recall of infancy experiences, subjects in the hypnotic and nonhypnotic regression conditions were informed that they might experience sensations around the umbilicus (body memories), intrusive thoughts of infancy and direct/indirect dreams of infancy during the following. A week after their regression sessions subjects in these conditions returned to the laboratory and rated the extent to which they had experienced the suggested events during the previous week. During their single session, control subjects also rated the extent they had experienced the umbilical sensations, thoughts and dreams about infancy. It was expected that subjects in the hypnotic and nonhypnotic conditions would have a significantly higher frequency of the aforementioned occurrences but would not differ significantly from each other. We also expected that when collapsing across the two treatments, high hypnotizables would report a significantly higher frequency of these occurrences than low hypnotizables.

Method

Hypnotic Assessment

All subjects were pretested for hypnotizability using the Carleton University Responsiveness to Suggestion Scale (CURSS;

Spanos, Radtke, Hodgins, Stam & Bertrand, 1983). On the objective dimension of this scale (CURSS:O) subjects are conventionally classified as high (scores of 5-7) medium (scores of 3-4) or low (scores 0-2) in hypnotizability.

Subjects

Ninety subjects (30 high, 30 medium and 30 low hypnotizables) were recruited and, within hypnotizability levels, were randomly assigned to the 3 treatment conditions (hypnotic, mnemonic and control) with the restriction of an equal number of subjects per condition (n=30).

Procedure

Subjects in the two experimental groups were asked to complete the following questionnaires: Fantasy Proneness (Wilson & Barber, 1981); Dissociative Experiences Scale (Bernstein & Putnam, 1986); and the temporal lobe lability, paranormal belief and liberal belief subscales of the Personal Philosophy Inventory (Persinger & Makarec, 1987) (See appendices D, E and F respectively).

The completed questionnaires were taken to another room and the subjects were led to believe that their answers were computer analyzed and that the computer generated a personality profile based on their scores (see appendix G). However, unbeknownst to subjects, the same personality profile was used for everyone. Subjects were told that they had been classified as "High Positive Cognitive Monitors", a personality configuration characterized by an intuitive, insightful personality style that was formed by visual experiences that occurred during a critical period shortly after their

birth. More specifically, subjects were told that, in the first few days after birth, they were probably exposed to a swinging colored mobile hung several inches over their hospital crib that was designed to help stimulate coordinated eye movements and visual exploration. Subjects were then administered either the hypnotic or mnemonic restructuring condition (see appendices H and I respectively).

Hypnotic regression treatment. Subjects were tested individually by a female experimenter. Subjects were told that the main purpose of the experiment was to confirm that they were born in one of the hospitals that hung mobiles over the cribs of newborns. It was also explained to subjects that hypnosis was an effective procedure for uncovering even the earliest childhood memories and that, through hypnotic age regression, they would be "taken back" to several earlier ages. They were told that hypnotic age regression enables people to "relive" early experiences and, as a result, they would be able to uncover their early 'hidden' memories of infancy. The wording of the instructions given to these subjects implied that hypnotic age regression was something that "happened" to them rather than something that they actively did.

Following these preliminaries, and after answering any questions about hypnosis, subjects were orally administered a 5-minute hypnotic induction procedure adapted from Barber (1969) followed by passively worded suggestions (e.g. you are going back, getting younger and younger) to regress back and "relive" sitting in a classroom at the ages of 15, 10 and 5 years. Since most people can easily recall information about school experiences from each of these ages, the purpose of these recall exercises was to develop a set

toward recalling increasingly earlier information and to enhance expectations that such recall was easy and likely to be accurate. Finally, subjects were regressed to one day of age and asked to describe their experiences. They were explicitly asked to look up and describe what they saw above their heads. They were also instructed to look at themselves as infants from "outside" on a mental TV screen. All subjects' responses were audio-taped, with the subjects' knowledge and consent, and then transcribed.

Following termination of the regression procedures, subjects were "returned" to their adult age and instructed to awaken from hypnosis. They were then administered a series of 5-point likert-type scales (see appendix J). One of these assessed the extent to which subjects believed that their infancy experiences were real memories. Items ranged from definitely a real memory (scored 4) through unsure (scored 2) to definitely a fantasy (scored 0). Subjects also rated the degree to which their adult self faded during their infancy experience, their absorption in the infancy experience and the vividness of the infancy experience. High scores indicated more complete fading and greater absorption and vividness.

Subjects were scheduled to return to the laboratory a week after their first session. However, before completion of their first session they were informed that because neural networks underlying infancy memories had been primed by their regression experience, they might experience an itching sensation around the umbilicus during the following week. They were informed further that they might experience thoughts of infants and/or infancy, dreams about

infants and/or infancy and indirect (i.e. symbolic) dreams about birth and/or infancy (see appendix K).

Upon their return to the laboratory the following week, subjects once again rated the extent to which they believed their infancy experiences of the previous week had been real memories as opposed to fantasies. They also rated on 5-point likert-type scales the frequency with which they experienced umbilical itchiness, thoughts, direct dreams and indirect dreams (i.e. symbolic) of birth/infancy (see appendix L).

Mnemonic restructuring treatment. This condition was identical to the hypnotic condition except that subjects were told that the researcher would be using "mnemonic cognitive restructuring" to help them recall even the earliest childhood memories. It was explained that this "tool" was developed by psychologists to replace hypnosis because hypnosis is ineffective for many people. The subjects were encouraged to actively imagine themselves at each of the suggested earlier ages. Specifically, they were asked to use their imagery and other cognitive skills to actively recreate the experiences that they had at those younger ages in order to recall the hidden "memories". In contrast to the "passive" nature of the hypnotic condition, subjects in the mnemonic condition were encouraged to be "active" participants.

Control condition. The 30 controls were seen only once. They were not administered any memory-enhancing procedure and were told nothing about memory or early recall. The controls simply were instructed to complete session 2 questionnaires that inquired about their thoughts, dreams and memories of bodily sensations from the

week before. In addition, they were instructed to think back to when they were one day of age and then to rate the extent of their belief in the reality of the resultant memories (see appendix M).

After the 60 subjects in the hypnotic and nonhypnotic treatments have completed sessions 1 and 2, all subjects (including the 30 controls) were fully debriefed.

Tape Transcripts

For the two experimental groups, the audio-tapes were content analyzed in order to code specific aspects of the reported experience for comparison. First of all, the total number of words the subject used to describe her or his infancy experience was obtained. Secondly, the total number of "descriptors" the subject used in her or his infancy experience narrative was calculated. These descriptors were any words that described the experience in more detail, e.g. if subject said "there's a red (1-pt.) and green (1-pt.) mobile (1 pt.) that's hanging above me (1-pt) by a string (1-pt) and it's turning (1-pt.). Finally, a "qualifier score" that reflected the degree the subject qualified her or his experience was calculated for each subject such that 0=subject experienced nothing; 1=subject qualified her or his whole statement; 2=subject qualified part of her or his statement and 3=no qualification (i.e. subject described experience as a real event).

Two raters independently scored transcribed narratives. Inter-rater reliability for these measures were as follows: Total words: $r=1.00$; Qualifier Score: $r=.97$; Total descriptors: $r=.97$.

Results

Personality Questionnaires

A Hotellings T Squared test was performed to assess treatment group (hypnotic and mnemonic) differences in subjects' responses on the personality questionnaires (Fantasy Proneness, Dissociative Experiences Scale and the subscales of the Personal Philosophy Inventory) administered in session one. The treatment effect failed to attain significance indicating that subjects in the two treatment groups responded equivocally on the personality attributes.

Between Group Differences

A 3 X 3 (hypnotic/mnemonic/control X low/medium/high hypnotizability) Multivariate Analysis of Variance (MANOVA) compared the groups on thoughts about infants/infancy; direct dreams about infants/infancy; indirect dreams about birth/infancy; body memories from infancy and belief in the authenticity of the infancy "memories". The two-way multivariate interaction failed to attain significance.

Main Effect For Hypnotizability.

Results indicated a significant main effect for hypnotizability, $F(10,156)=2.21$, $p < .05$. The univariate F-tests were significant for thoughts about infants/infancy, $F(2,81)=4.02$, $p < .05$ (eta squared=.09) and belief ratings, $F(2,81)=8.54$, $p < .001$ (eta squared=.17) (see Table 1). Post hoc comparisons (Newman Keuls) on thoughts about infants/infancy revealed that the medium hypnotizables ($M=1.73$, $SD=1.05$) scored significantly higher than low hypnotizables ($M=1.00$, $SD=0.95$). In other words, the medium hypnotizables reported having had a higher frequency of thoughts

Table 1

MANOVA on thoughts about infants/infancy; direct dreams; indirect dreams; body memories and belief ratings by Condition (hypnotic/mnemonic/control) and Hypnotizability (low/medium/high)

Multivariate tests of Significance (Pillais)					
Multiple F	Value	F	Hypothesized DF	Error DF	p
Hypnotizability	.25	2.21	10.00	156.00	.020*
Condition	.52	5.44	10.00	156.00	.000*
Hyp by Cond	.26	1.13	20.00	320.00	.313

Univariate F-Tests for Hypnotizability

Variable	SS	DF	MS	MSerror	F	p
Thoughts	8.27	2	2.63	1.03	4.02	.022*
Direct Dreams	2.60	2	4.30	.72	1.82	.169
Indirect Dreams	2.16	2	1.38	.56	1.94	.150
Body Memories	2.87	2	.43	.53	2.69	.074
Beliefs	14.16	2	26.14	.83	8.54	.000*

Univariate F-Tests for Condition

Variable	SS	DF	MS	MSerror	F	p
Thoughts	5.27	2	2.63	1.03	2.56	.083
Direct Dreams	8.60	2	4.30	.72	6.01	.004*
Indirect Dreams	2.76	2	1.38	.56	2.48	.090
Body Memories	.87	2	.43	.53	.81	.497
Beliefs	52.29	2	26.14	.83	31.56	.000*

about infants/infancy during the previous week than did the low hypnotizables. The high hypnotizables ($M=1.47$, $SD=1.20$) did not differ significantly from either the medium or low hypnotizables. Post Hoc comparisons (Newman Keuls) on the belief ratings indicated that both the high hypnotizables ($M=2.27$, $SD=1.14$) and medium hypnotizables ($M=2.03$, $SD=1.22$) scored significantly higher than the low hypnotizables ($M=1.33$, $SD=1.18$) on belief ratings (i.e. confidence).

Main Effect For Condition.

The significant main effect for condition also attained significance $F(10, 156)=5.44$, $p < .001$. The univariate effects indicated a significant difference between treatment conditions on both direct dreams about infants/infancy, $F(2,81)=6.01$, $p < .01$, (eta squared=.13) and belief ratings, $F(2,81)=31.56$, $p < .001$, (eta squared=.44) (see Table 1). Post hoc comparisons (Newman Keuls) on direct dreams about infants/infancy revealed that both the hypnotic ($M=.93$, $SD=.91$) and mnemonic ($M=.83$, $SD=1.09$) subjects reported a significantly higher frequency than did controls ($M=.23$, $SD=.43$) but did not differ significantly from each other. Post hoc comparisons (Newman Keuls) on belief ratings indicated that both the hypnotic ($M=2.40$, $SD=.97$) and mnemonic ($M=2.43$, $SD=1.17$) subjects reported significantly stronger belief in the authenticity of their infancy "memories" than control subjects ($M=.80$, $SD=.76$). The mnemonic and hypnotic subjects did not differ significantly from each other. Specifically, in the hypnotic condition, 47% of the subjects rated their infancy experience as definitely or probably a real memory,

43% reported being unsure and 10% reported that their infancy experience was probably or definitely a fantasy (see Table 2). In the mnemonic condition, 47% rated their experience as probably/definitely a real memory, 30% were not sure and 23% rated it as definitely/probably a fantasy. In contrast, none of the controls rated their experience as probably or definitely a real memory, 20% were unsure and 80% rated their infancy experience as definitely or probably a fantasy.

As the hypnotic and mnemonic subjects did not differ with respect to the frequency of "thoughts about infants/infancy"; "indirect dreams about birth/infancy" or on the frequency of "body memories", they were combined and compared with control subjects (using dichotomous scoring such that 0=none at all and 1=one time or more) on each of these dimensions. A Chi Square on indirect dreams yielded significant results, χ^2 (df=1) = 5.10, χ^2 critical (.05) = 3.84 (see Table 3). In other words, a significantly higher number of experimental subjects reported having experienced indirect (symbolic) dreams of birth/infancy during the previous week than did control subjects. The Chi square on body memories yielded nonsignificant results, χ^2 (df=1)=.58, χ^2 critical (.05) = 3.84 (see Table 4) as did the Chi Square on thoughts about infants/infancy (see Table 5) indicating there were no differences between subjects across sessions with respect to the occurrence of an "itchiness" around the umbilicus (i.e. body memories) or on the frequency of infancy thoughts for the past week.

Post-Regression Differences

Table 2

Belief Ratings by Condition

	Definitely/Probably Memory	Unsure	Definitely/Probably Fantasy
Hypnotic	47%	43%	10%
Mnemonic	47%	30%	23%
Control	0%	20%	80%

Table 3

2 x 2 Contingency table of number of subjects in experimental and control groups who either reported at least one indirect dream or no indirect dream

	At least one	None	Total
Experimental	19 (14.67)	41 (45.33)	60
Control	3 (7.33)	27 (22.67)	30
Total	22	68	

* Expected frequencies are within parentheses

Table 4

2 x 2 Contingency table of number of subjects in experimental and control groups who either reported at least one body memory or no body memory

	At least one	None	Total
Experimental	23 (24.67)	37 (35.33)	60
Control	14 (12.33)	16 (17.67)	30
Total	37	53	

* Expected frequencies are in parentheses

Table 5

2 x 2 Contingency table of the number of subjects in
experimental and control groups who reported at least one
thought or no thought

	At least one	None	Total
Experimental	49(46)	11(14)	60
Control	20(23)	10(7)	30
Total	69	21	

* Expected frequencies are within parentheses

A 2 X 3 (hypnotic/mnemonic X high/medium/low hypnotizables) Multivariate Analysis of Variance (MANOVA) compared the treatment conditions on session 1 (post-regression) ratings of: (1) degree of adult self fading into background (2) degree of absorption in infancy experience (3) vividness of the infancy experience (4) belief in the authenticity of recalled infancy events. The two-way multivariate interaction of hypnotizability and condition did not attain significance nor did either the main effect of condition (see Table 6). There was a trend towards significance for the main effect of hypnotizability however on all the dependent measures (Pillais=1.87, $p=.076$). This trend was examined further using post hoc comparisons (see Table 7 for means and standard deviations). Newman Keuls conducted on the degree of their adult self fading into the background revealed that both the high hypnotizables and the medium hypnotizables scored significantly higher than the low hypnotizables. On the degree they had felt absorbed in their infancy experience, Newman Keuls indicated the high hypnotizables scored significantly higher than the low hypnotizables. The medium hypnotizables did not differ significantly from either the high or low hypnotizables. On the reported vividness of the infancy experience, the high hypnotizables scored significantly higher than the low hypnotizables. Again, the medium hypnotizables did not differ from the low nor high hypnotizables. Finally, on the reported belief in the authenticity of the recalled infancy experience, both the high hypnotizables and the medium hypnotizables scored significantly higher than the low hypnotizables.

Table 6

MANOVA on adult self fading; degree of absorption; vividness and belief ratings by Condition (hypnotic/mnemonic/control) and Hypnotizability (low/medium/high)

Multivariate Tests of Significance (Pillais)						
Multiple F	Value	F	Hypothesized DF	Error DF		p
Hypnotizability	.25	1.87	8.00	104.00		.073
Condition	.28	.37	4.00	51.00		.826
Hypnotizability by Condition	.09	.60	8.00	104.00		.778
Univariate F-Tests for Hypnotizability						
Variable	SS	DF	MS	MSerror	F	p
Fading Adult	10.03	2	5.02	1.33	3.78	.029
Absorption	11.10	2	5.55	1.40	3.96	.025
Vividness	9.10	2	4.55	1.32	3.44	.039
Belief	12.63	2	6.32	.98	6.47	.003
Univariate F-Tests for Condition						
Variable	SS	DF	MS	MSerror	F	p
Fading Adult	1.07	1	1.07	1.33	.80	.374
Absorption	.82	1	.82	1.40	.58	.449
Vividness	1.67	1	1.67	1.32	1.26	.267
Belief	.02	1	.02	.98	.02	.897

Table 7

Means and standard deviations of Session 1 scores as a function of hypnotizability

Hypnotiz- ability	Fading Adult	Absorption	Vividness	Belief
High	<u>M</u> =2.25	<u>M</u> =2.25	<u>M</u> =2.05	<u>M</u> =2.90
	<u>SD</u> =1.16	<u>SD</u> =1.25	<u>SD</u> =1.15	<u>SD</u> = .72
Medium	<u>M</u> =2.05	<u>M</u> =1.80	<u>M</u> =1.65	<u>M</u> =2.55
	<u>SD</u> =1.10	<u>SD</u> =1.24	<u>SD</u> =1.23	<u>SD</u> =1.05
Low	<u>M</u> =1.30	<u>M</u> =1.20	<u>M</u> =1.10	<u>M</u> =1.80
	<u>SD</u> =1.13	<u>SD</u> =1.01	<u>SD</u> =1.02	<u>SD</u> =1.11

Belief Ratings for Sessions 1 and 2

Recall that subjects in the hypnotic and mnemonic conditions rated their belief in the authenticity of their infancy experiences (i.e. confidence) on two separate occasions. A 2 X 3 X 2 (hypnotic/mnemonic X high/medium/low hypnotizability X session 1/session 2) mixed ANOVA was conducted on belief ratings in sessions 1 and 2. Only the main effect of hypnotizability attained significance, $F(2,54)=5.77$, $p < .01$ (see Table 8). Post hoc comparisons (Newman Keuls) revealed that the high hypnotizables reported significantly higher belief ratings (i.e. greater overconfidence) ($M=3.00$, $SD=.71$) than the low hypnotizables ($M=2.03$, $SD=.99$). The medium hypnotizables ($M=2.48$, $SD=.98$) did not differ significantly from either the low hypnotizables or high hypnotizables.

Mobile Reports

To assess the effects of treatment group and level of hypnotizability on mobile reports, a 2 X 3 (hypnotic/mnemonic X low/medium/high hypnotizability) ANOVA was performed on the "saw mobile" (scored 0) and "did not see mobile" (scored 1) variable (see Table 9). No significant interaction between condition and hypnotizability was found and there was no significant main effect for condition. The main effect of hypnotizability, although not significant, did show a trend towards significance ($F=2.57$, $p=.086$). Because the medium and high hypnotizables did not differ with respect to their "yes" or "no" answers, they were combined and then compared with the low hypnotizables. A Chi square was

Table 8

ANOVA Summary Table for Belief Ratings by Condition
(hypnotic/mnemonic), Hypnotizability (low/medium/high),
and Session (one and two)

Tests of Between-Subjects Effects					
	<u>SS</u>	<u>DF</u>	<u>MS</u>	<u>F</u>	<u>Sig. of F</u>
Condition	.03	1	.03	.02	.888
Hypnotizability	19.05	2	9.53	5.77	.005*
Condition by Hypnotizability	3.82	2	1.91	1.16	.322
Within Cells	89.10	54	1.65		
Tests of Within-Subjects Effects					
	<u>SS</u>	<u>DF</u>	<u>MS</u>	<u>F</u>	<u>Sig. of F</u>
Session	.83	1	.83	1.56	.22
Condition by Session	.00	1	.00	.00	1.00
Hypnotizability by Session	1.82	2	.91	1.70	.19
Condition by Hypnotizability by Session	.45	2	.22	.42	.66
Within Cells	28.90	54	.54		

Table 9

ANOVA Summary Table for Mobile Reports by Condition
(hypnotic/mnemonic/control) and Hypnotizability (low/medium/high)

Source of Variation	<u>SS</u>	<u>DF</u>	<u>MS</u>	<u>F</u>	<u>Sig. of F</u>
Main Effects	1.47	3	.49	2.10	.11
Condition	.27	1	.27	1.14	.29
Hypnotizability	1.20	2	.60	2.57	.09
2-Way Interactions					
Condition by Hypnotizability	.93	2	.47	2.00	.15
Explained	2.40	5	.48	2.06	.09
Residual	12.60	54	.23		
Total	15.00	59	.25		

performed and attained significance, χ^2 (df=1) = 4.80, χ^2 critical = 3.84 (see table 10) indicating that the medium and high hypnotizables reported seeing the mobile substantially more than the low hypnotizables.

Although the main effect of condition was not significant, it is interesting to note that subjects in the mnemonic condition reported the mobile substantially more than subjects in the hypnotic condition. Specifically, 17 (57%) of the mnemonic subjects (7 high hypnotizables, 8 medium and 2 low hypnotizables) reported the mobile while 13 (43%) of the hypnotic subjects (5 high hypnotizables, 4 medium hypnotizables and 4 low hypnotizables) reported it.

Of the 17 subjects in the mnemonic condition who reported the mobile, 7 (5 high and 2 medium hypnotizables) reported that their infancy experiences were probably/definitely real memories; 6 (2 high, 3 medium and 1 low hypnotizable) reported being unsure about authenticity and 4 (3 medium and 1 low hypnotizables) reported experiences were probably/definitely fantasies. Of the 13 hypnotic subjects, 6 (3 high, 2 medium and 1 low hypnotizable) reported that their infancy experiences were probably/definitely real memories; 6 (2 high, 2 medium and 2 low hypnotizables) reported being unsure and 1 (low hypnotizable) reported that the experiences were definitely/probably fantasies.

Tape Transcripts

A 2 X 3(hypnotic/mnemonic X low/medium/high hypnotizability) Multivariate Analysis of Variance (MANOVA) was conducted on the Total Number of Words; Total Number of Descriptors and Qualifier

Table 10

2 x 2 contingency table of number of high/medium hypnotizables and low hypnotizables who either reported the mobile or did not report the mobile

	Yes Mobile	No Mobile	Total
High/Medium Hypnotizables	24 (20)	16 (20)	40
Low Hypnotizables	6 (10)	14 (10)	20
Total	30	30	

* Expected frequencies are in parentheses

Score (see Table 11). The condition by hypnotizability interaction failed to attain significance as did the main effect of hypnotizability. However, there was a trend towards significance for the main effect of condition on two of the dependent measures, namely, Total Number of Words and Total Number of Descriptors (Pillais=2.56, $p=.065$). For Total Number of Words, subjects in the mnemonic condition ($M=62.60$, $SD=46.19$) had a substantially higher number when compared with subjects in the hypnotic condition ($M=35.00$, $SD=28.70$). The same pattern held for Total Number of Descriptors—the mnemonic subjects ($M=11.73$, $SD=7.87$) more than the hypnotic subjects ($M=7.33$, $SD=6.77$).

Discussion

Hypnotic vs. Nonhypnotic Procedures

The present study supports the idea that complex, vivid and detailed false memories can be created by first structuring subjects' expectations and then motivating them to gain access to the "memories" that are congruent with these expectations. In addition, the results support recent research (Spanos & Bures, 1994; Weekes et al., 1992) indicating that both hypnotic and nonhypnotic subjects are equally likely to generate false memory reports. This finding contradicts Diamond's (1980) and Orne's (1979) contention that hypnotic procedures facilitate the production of false memories to a greater extent than do nonhypnotic procedures. Specifically, we found that 13 out of the 30 hypnotic subjects (43%) and 17 out of the 30 mnemonic subjects (57%) reported recalling the suggested

Table 11

MANOVA on total number of words; total number of descriptors and
qualifier score by Condition (hypnotic/mnemonic) and
Hypnotizability (low/medium/high)

Multiple Tests of Significance (Pillais)						
Multiple F	Value	F	Hypothesized DF	Error DF	p	
Hypnotizability	.14	1.28	6.00	106.00	.27	
Condition	.13	2.56	3.00	52.00	.07	
Hypnotizability by Condition	.02	.15	6.00	106.00	.99	
Univariate F-Tests for Hypnotizability						
Variable	SS	DF	MS	MSerror	F	p
Total Words	133.30	2	66.65	1583.63	.04	.959
Total Descriptors	62.53	2	31.27	56.49	.55	.578
Qualifier Score	7.43	2	3.72	1.09	2.42	.040
Univariate F-Tests for Condition						
Variable	SS	DF	MS	MSerror	F	p
Total Words	11426.40	1	11426.40	1583.63	7.22	.010
Total Descriptors	290.40	1	290.40	56.49	5.14	.027
Qualifier Score	1.35	1	1.35	1.09	1.24	.270

mobile. Moreover, even those subjects who did not recall experiencing the mobile reported many other infancy "memories" such as seeing bright lights, seeing nurses and doctors with masks on their faces, bars on their cribs etc.). For example, one subject described her infancy experience as follows:

Smells like babies...there's a flannel blanket around me and...animals hanging over my head...they're not moving, they're staying still...one's a giraffe..and..a zebra maybe....I can't hear anything...it's quiet....(focus on object)....I can see there's a whole bunch of animals...I can tell there's a giraffe, there's a long neck...and a zebra...it's got black and white...I think there's a monkey too--I can't tell---there's a lot of different colours...brown, black, white, orange, pink....I can't see.....there's blue...that's all the colours.

Another stated:

There's a really bright light...really bright...right above me and I remember people with big heads and masks looking down on me...and there's something hanging there...it looks like...I don't know...squares and one of them is really bright blue...(focus on object)...it's like a square turned on its' side, almost like a diamond, and it turns back and forth like it's spinning...it's attached to a string on one end and that's the way it hangs, pointing downward towards me.

This finding has important implications for the clinical setting. Recall that a number of investigators (Lindsay & Read, in press; Loftus, 1993; Mulhern, 1991; Spanos, 1994 and Spanos, Burgess and Burgess, 1994) have suggested that false memory reports are likely to be generated when subjects are provided with (i) a credible rationale from an authoritative source that makes such memories plausible (ii) when they are given information that leads them to expect that they possess such memories and (iii) when they are

administered procedures which they believe will facilitate the recovery of their hidden memories. All of these conditions frequently occur together during abuse resolution therapy aimed at uncovering purportedly repressed memories. For example, clients who turn to such therapies are frequently informed that such common presenting symptoms as depression, low self-esteem and gaps in memory are diagnostic of forgotten abuse. These clients may be further informed that, in light of their presenting symptoms, their inability to remember abuse is evidence of repression that can be overcome with such "memory work" procedures as hypnosis, dream analysis and guided imagery. In other words, the patients are subjected to factors which have been shown to facilitate the production of false memory reports both in the experimental setting (Loftus & Coan, in press; Spanos et al. 1993; Spanos, Menary et al., 1991) and in the clinical setting (Fiore, 1987; Jacobs, 1992; Shaffer & Cozolino, 1992).

In addition, the data of this investigation indicated that almost half of the subjects (47% in both the hypnotic and mnemonic groups) described their day-after-birth infancy memories as probably or definitely real memories. On the other hand, the majority of control subjects (80%) who were given no expectations that they would be able to recall infancy memories and given no regression procedures rated their resultant infancy experiences as definitely or probably fantasies rather than real memories. These results are consistent with the results of Spanos, Menary et al. (1991) who found that pre-regression information from the experimenter influenced the extent to which the false memory experiences were interpreted as

memories as opposed to simply fantasies. Importantly, it has already been established that many therapists (e.g. Blume, 1990; Fredrickson, 1992) give this same type of expectancy-raising information to their clients before they administer the therapeutic techniques aimed at "uncovering" memories.

One purpose of the present study was to examine the overconfidence issue. As already discussed, the results of numerous studies are mixed with respect to whether or not hypnotic procedures facilitate overconfidence in false memory reports. Our results, like that of Putnam (1979) and Zelig & Beidleman (1981), indicated that the hypnotic and mnemonic subjects were equivalent with respect to overconfidence placed in the infancy remembrances. The discrepancies found across studies with respect to the overconfidence issue could be attributed to methodological differences between studies (e.g. instructions to subjects, the experimental context etc.). Obviously more standardized procedures are necessary before any conclusive statements can be made.

Our expectation that we would find more elaboration among hypnotic subjects than among nonhypnotic subjects was not supported by our results. Past research has suggested that hypnotic subjects are more willing than nonhypnotic subjects to recall information that they are uncertain about (for reviews see McConkey, 1992; Smith, 1993). In the present study, the hypnotic and nonhypnotic subjects did not significantly differ in the total number of words used in their infancy narratives nor in the total number of descriptors used in their narratives.

Hypnotizability

We hypothesized that since high hypnotizables may have a superior ability to generate vivid imaginings and to become deeply absorbed in these imaginings (Sheehan, 1979), they would be more likely to generate false memory reports and to place more confidence in them than low hypnotizables, regardless of whether or not they were administered the hypnotic procedure. Both of these hypotheses were supported. High hypnotizables did in fact report significantly more mobiles than did low hypnotizables regardless of whether they were in the hypnotic or mnemonic condition. This finding supports the findings of Spanos and Bures (1994) and Weekes et al. (1992) who also found equivalent responding between hypnotic and nonhypnotic high hypnotizables.

In addition, it was shown that high hypnotizables scored significantly higher than low hypnotizables with respect to belief in the authenticity of the recalled infancy experiences (overconfidence in false memories). Related to this is our expectation concerning absorption and vividness. As expected, our results indicated that not only did high hypnotizables report having felt significantly more absorbed in their regression to infancy experience than low hypnotizables, they also rated their infancy experience as being much more vivid.

One point needs to be emphasized with respect to the findings concerning the mobile reports and overconfidence. Although the high hypnotizables did have a greater frequency of false memory reports (i.e. mobile) and did place significantly more confidence in the false memories than did low hypnotizables, there was still a substantial number of low hypnotizables who not only generated the

memory reports but placed a high degree of confidence in them as well. Thus, it should not be assumed that low hypnotizability protects individuals from either generating false memory reports or from being overconfident about them.

Thoughts, Dreams and Body Memories

As previously mentioned, during abuse resolution therapy, subjects are oftentimes informed that they may experience intrusive thoughts about the abuse, dreams that either directly or symbolically reflect the past abuse and body memories of the abuse. However, some researchers (Lindsay & Read, in press; Spanos, 1994) have argued that these experiences occur simply because therapists routinely suggest to patients that they will occur and therefore the idea of them becomes highly salient to the patients. In the present study, the subjects were given an extensive rationale as to why they could expect these experiences in the following week. We anticipated that the subjects in the mnemonic and hypnotic groups would report equivalent frequencies of these experiences and both would have a significantly higher frequency than would subjects in the control condition. Our hypothesis was partially supported by our results. Both hypnotic and mnemonic subjects did report significantly more direct dreams and indirect (symbolic dreams) than did controls. The experimental subjects, however, differed neither in the reported frequency of thoughts about infants/infancy nor in reported body memories. The fact that almost half of the control subjects reported that they had experienced an itchy umbilicus is an interesting finding and serves to illustrate that simply inquiring about the occurrence of certain bodily sensations quite possibly will

elicit an affirmative response. Lindsay and Read (in press) make two valid points with respect to body memories. First of all, they argue that as people have diverse symptoms at different times and these can occur simultaneously with therapy simply by chance. Secondly, if unconscious memories of past events can cause physical sensations as some researchers have suggested, then there is no reason to assume that simply thinking about the symptoms could bring them on. In support of Lindsay & Read's (in press) second point, Coe, Peterson & Gwynn (1993) found that when subjects were told prehypnotically that they may experience a stiff neck and a headache as a result of being "hypnotized", many reported these symptoms posthypnotically. If Yapko (1994) is correct in stating that "therapists are just as likely as any other group to twist facts to fit beliefs" (p. 77), then there is little wonder that "body memories" are quite common in therapeutic settings. Smith (1993) recently reported preliminary results of a survey she conducted on 38 therapists specializing in sexual abuse recovery. Results indicated that 95% of these therapists reported that it was common for memories to surface in the form of unconscious body memories. Moreover, some of the surveyed therapists reported that 100% of their clients had experienced body memories during the course of therapy.

The Present Study

Consistent with the results of numerous past studies (Loftus, 1993; Loftus & Coan, in press; Ofshe, 1993; Spanos et al., 1991; Spanos et al., 1993; Spanos & Bures, 1994), this study suggests that memory is malleable, expectancy driven and reconstructive in

nature. Although not all the subjects reported experiencing the suggested mobile, almost all of them did report experiences consistent with commonly-held images of early infancy (nurses and doctors, bright lights etc.). This is consistent with Loftus' (1993) and Spanos' (1994) contention that people often fill in gaps in memory with what they expect to have happened or what they believe must have happened.

One potential limitation of the present study is the possibility that subjects were complying with the demands of the experimental context. In other words, perhaps the reports of infancy experiences and the high degree of overconfidence placed in these may be attributed to the fact that subjects, for one reason or another, were simply complying with what they believed to be the experimenter's wishes. For example, Barnier and McConkey (1992) found that some subjects disavowed their generated false memories post-experimentally and reported that they had only come up with these "memories" in the first place in order to comply with experimental demands. Importantly, other subjects reported that although they were uncertain as to the authenticity of their "memories" during the experiment, they labelled them as authentic memories because that is how the experimenter had treated them. Although this possible criticism may indeed contain some validity, it is important to keep in mind that it applies equally to the therapeutic setting. As Spanos (1994) argues, many clinicians exert substantial pressure on patients to "uncover" the hidden "memories" of abuse. It has already been established that many patients are often initially unsure as to whether the resultant images are indeed real memories of past abuse

or instead, simply imaginings of fictitious events (Bass & Davis, 1989; Lindsay & Read, in press). Many therapists are aware of this uncertainty and stress to clients that it is to be expected and does not mean that the recalled events did not really take place. In addition, many therapists also emphasize that in order for the patient to get "well" she or he must accept these as real memories of past abuse (Lindsay & Read, in press). It is obvious that future research is required in order to assess the role of compliance in false memory reports in both the experimental and clinical settings.

The controversy over recovered memories has received a great deal of publicity in the past few years. According to Loftus (1993), there has been a recent upsurge in the number of women who recover "memories" of abuse while in therapy. In addition to widespread media coverage, popular television shows have featured many women who tell autobiographical stories about their past abuse. Some of these women are celebrities (e.g. Roseanne Barr and the former Miss America, Marilyn Van Derbur) and therefore receive a great deal of publicity and media attention.

It will be recalled that there is a considerable amount of evidence that vivid, emotionally-charged, complex and coherent false memories of abuse are elicited routinely during some types of therapy (e.g. UFO abduction therapy and past life regression therapy). Therefore, it is imperative that the controversy surrounding the issue of false memories not be focused on whether false memories are generated in clinical contexts, clearly they are, but should instead be concerned with the conditions which facilitate the occurrence of such experiences and their legitimization as

memories in experimental as well as clinical settings. There is little reason to assume that the conditions that facilitate false memory reports differ markedly in these two contexts (Lindsay & Read, in press).

The false memory reports elicited in the present study do not prove that recovered memories of abuse are always false. Instead, this study has demonstrated that certain conditions (e.g. suggestions of a plausible event from an authority figure) contribute to the generation of false memory reports. Importantly, these same conditions are inherent in many types of abuse-resolution therapies. Therefore, given the reconstructive nature of memory, therapists should exercise considerable caution when they attempt to help the patient reconstruct her or his childhood experiences.

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Appendix A

Informed Consent

We are interested in the childhood antecedents of adult personality. Before you agree to participate in this experiment, we would like you to be aware of the procedures involved.

In today's session, you will be administered a series of questionnaires that are designed to assess your personality characteristics. While none of the questions are meant to cause any embarrassment, your responses will be kept confidential.

Following the completion of the questionnaires, you will be administered a hypnotic induction procedure and a hypnotic suggestion that you undergo an age regression experience. Specifically, you will be regressed back to ages 15, 10, 5 and one day after birth. You will be asked to recall only bland and non-threatening situations at each age, for example, sitting in a classroom or remembering a teacher etc. Following the regression session, you will be administered a series of questionnaires that assess the regression experience. This first session will take approximately one and a half hours.

Session 2 will take place approximately one week after session 1. This session will involve filling out questionnaires concerning your thought and dreams and will take approximately 15 minutes. Session 3 will take place a few months after session 2 and will be identical to session 2. At the end of session 3, you will be fully debriefed and will receive 2 experimental credits for your participation.

I, the undersigned, am aware that my participation in this study is voluntary and if, for any reason and at any time, I wish to leave the experiment, I may do so without explanation and without penalty.

Furthermore, I am aware that the data gathered in this study are confidential and anonymous with respect to my personal identity.

I have read the above form and I consent to participate in this study.

Participant's Signature

Date

Appendix B

Informed Consent

We are interested in the childhood antecedents of adult personality. Before you agree to participate in this experiment, we would like you to be aware of the procedures involved.

In today's session, you will be administered a series of questionnaires that are designed to assess your personality characteristics. While none of the questions are meant to cause any embarrassment, your responses will be kept confidential.

Following the completion of the questionnaires, you will be administered a guided cognitive restructuring procedure that will aid in the revivification of early childhood memories. Specifically, you will be aided in recalling experiences at ages 15, 10, 5 and one day after birth. You will be asked to recall only bland and non-threatening situations at each age, for example, sitting in a classroom or remembering a teacher etc. Following the revivification session, you will be administered a series of questionnaires that assess the regression experience. This first session will take approximately one and a half hours. Session 2 will take place approximately one week after session 1. This session will involve filling out questionnaires concerning your thought and dreams and will take approximately 15 minutes. Session 3 will take place a few months after session 2 and will be identical to session 2. At the end of session 3, you will be fully debriefed and will receive 2 experimental credits for your participation.

I, the undersigned, am aware that my participation in this study is voluntary and if, for any reason and at any time, I wish to leave the experiment, I may do so without explanation and without penalty.

Furthermore, I am aware that the data gathered in this study are confidential and anonymous with respect to my personal identity.

I have read the above form and I consent to participate in this study.

Participant's Signature

Date

Appendix C

Informed Consent

We are interested in assessing the frequency with which people experience sensations and imaginal experiences and how this relates to their personality type.

You will be given questionnaires that deal with dream content and thoughts. You will be given one half hour to complete these and you will receive a half experimental credit. Your responses will be kept confidential.

I, the undersigned, am aware that my participation in this study is voluntary and if, for any reason and at any time, I wish to leave the experiment, I may do so without explanation and without penalty. Furthermore, I am aware that the data gathered in this study are confidential and anonymous with respect to my personal identity.

I have read the above form and I consent to participate in this study.

participant's signature

date

Appendix D

The major purpose of this inventory is to determine how many adults remember themselves as very imaginative during childhood. A Second purpose is to quantify the kinds of childhood imaginative activities, fantasies, and related experiences that can be remembered by adults. A third purpose is to determine to what extent childhood imaginings affect adult experiences or carry over into adult functioning.

Please place a check in front of each item below that applies to you. Please answer as honestly as possible and do not be concerned if you find that you are either checking almost all the items or almost none.

- ____ 1. When I was a child, I enjoyed active movement such as running and jumping.
- ____ 2. When I was a child, I enjoyed swinging (on a swing).
- ____ 3. When I was a child, I liked some kinds of music.
- ____ 4. When I was a child, I enjoyed cartoons (on TV or in movies).
- ____ 5. I can remember clearly one or more things that happened to me when I was two years of age or younger.
- ____ 6. When I remember back to when I was 6, 7, or 8 years of age, I can re-experience myself as a child; that is, I can "see" and "hear" what I saw and heard then and I can feel again the emotions and sensations I felt then.
- ____ 7. Although I have grown and I've had more experiences, I still feel basically the same as I did when I was a child.
- ____ 8. When I was a child, I believed in such beings as fairies, elves, or leprechauns, etc.
- ____ 9. Now that I am an adult, I still in some sense believe in such beings as fairies, elves, or leprechauns, etc.
- ____ 10. When I was a child, I would dream or imagine I was flying with such vividness that I felt as if I actually did fly.
- ____ 11. When I was a child, I enjoyed fairytales.
- ____ 12. As an adult, I would still enjoy fairytales.
- ____ 13. When I was a child, I was very imaginative.
- ____ 14. At the present time I am very imaginative.
- ____ 15. When I was a child, I was a "childhood philosopher". That is, I spent time thinking about such things as the meaning of life, and of death, about hypocrisy, levels of existence, etc.

- _____16. When I was a child (below age 12), I preferred playing make-believe games which require imagining or pretending, such as cowboys, school, house, etc. I preferred such make-believe games over realistic games which require skills such as hopscotch, checkers, building things, ball games, etc.
- _____17. When I was playing make-believe games as a child, I usually would imagine so vividly that what I pretended seemed real to me.
- _____18. When I was a child, I lived in a make-believe world much or most of the time.
- _____19. As an adult, I still occasionally live in a make-believe world.
- _____20. When I was a young child, I believed that my doll(s) or stuffed animal(s) were alive.
- _____21. When I was a child I had an imaginary companion (or companions) such as an imagined person, animal, or object which I talked to, shared feelings with, or took along with me.
- _____22. When I was a child, I would at times pretend and in some sense believe I was someone else such as a fairytale character (e.g., Snow White, Peter Pan, Rapunzel, etc.), a prince or a princess, an orphan, etc.
- _____23. As an adult, I occasionally pretend I am someone else.
- _____24. When I was a child, I would have enjoyed or I did enjoy taking ballet dancing lessons.
- _____25. When I was a child or teenager, at times I was afraid my imagining would become so real to me that I would be unable to stop it.
- _____26. When I was a child or teenager, sometimes I was accused of lying when I was just reporting what I imagined.
- _____27. When I was a young (pre-teenage) child, I had sexual fantasies.
- _____28. I have had an orgasm (or orgasms) just by imagining only.
- _____29. When I was a child, I would spend at least half my total waking day imagining.
- _____30. Now as an adult, I spend a substantial part of my total waking day imagining.
- _____31. If I could not imagine anymore, besides other effects it would have on my life, I wouldn't be me anymore -- I would be a

basically different person.

- _____32. At times, when I was a child or adolescent, it was difficult for me to determine whether something actually happened or whether I had imagined it happened.
- _____33. If given the opportunity, I would be very eager to experience an entirely new sensation -- a sensation such as vision, hearing, smell, or touch, but as different from all these as they are all different from each other.
- _____34. I have had a deeply moving personal religious, spiritual, or mystical experience.
- _____35. I have felt, heard, or seen an apparition (a spirit or ghost).
- _____36. I have had an out-of-the-body experience; that is, I have felt as if "I" (my mind or my spirit) left my body and existed for awhile independently of my body.
- _____37. I have experienced precognition (prophecy or foretelling the future) in a dream or while awake. That is, I have known something would happen even though there was no rational way I could have known.
- _____38. I have at times written poems, inspirational messages, short stories, or songs, etc., and I did not feel it was I who was creating them.
- _____39. I have at times felt unexplainably compelled to go somewhere, or to do something I wouldn't ordinarily do (such as call someone I wouldn't ordinarily call) and then later discovered there was a reason for my compulsion. (For instance, the person I called desperately needed me at that moment.)
- _____40. I believe reincarnation is possible, and I have become aware of a life (or lives) that I may have lived prior to this one.
- _____41. I have at some time in my life experimented with marijuana, psychedelic drugs (LSD, etc.) amphetamines ("uppers"), tranquilizers ("downers"), or other such drugs in order to experience an altered state of consciousness; that is, in order to experience the world in a new way, not just to relax or feel good.
- _____42. I would like to experience hypnosis.
- _____43. I think I am hypnotizable; that is, I think I could be hypnotized

- ____44. I have at times thought something happened to me, developed physical symptoms but later found out that what I thought happened never actually occurred. (Some possible examples to illustrate this are as follows: (a) you thought something was in your eye, your eye became irritated, but you couldn't find anything in your eye; (b) or you thought you ate spoiled food, became ill, but later found out that others eating the same food were not bothered; (c) or you thought you touched poison ivy, developed an itch but the doctor said it wasn't poison ivy.)
- ____45. I have at some time in my life thought I was pregnant and in addition to not menstruating, developed other symptoms of pregnancy (e.g. morning sickness, abdominal enlargement, breast changes, etc.), only to find out later that I was not pregnant.
- ____46. While listening to my favorite music, in addition to experiencing mood changes (e.g., feeling calm, relaxed, energetic, mellow, etc.) I also often experience a transformation (e.g., a feeling of oneness with the music or being transported to the past or to another place or time, etc.)
- ____47. When I remember significant events in my life, in addition to thinking about them, I can also re-experience them. That is, I can see again what I saw then, hear again the sounds, voices, etc., as I heard them before, feel the emotions and sensations I felt then. I can re-live them -- not just think about them or see them in my mind's eye.
- ____48. I can vividly re-experience in my imagination such things as: the feeling of a gentle breeze, warm sand under bare feet, the softness of fur, cool grass, the warmth of the sun, and the smell of freshly cut grass.
- ____49. When asked to close my eyes and imagine holding a baby or an animal (dog, cat, etc.) on my lap, I can experience it as if it were actually there. That is, I can feel its weight and warmth, touch it, see it, hear it, etc.
- ____50. At times just before I fall asleep, I experience vivid images.
- ____51. Many or most of my dreams tend to be at least as vivid as actual life experiences.
- ____52. If I wish, I am usually able to finish or change a dream after I awaken.

Appendix E

This questionnaire consists of twenty-eight questions about experiences that you may have had in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen when you are not under the influence of alcohol or drugs. To answer the questions, please determine to what degree the experience described in the question applies to you and mark the line with a vertical slash at the appropriate place, as in the example below:

Example:

0% _____ / _____ 100%

1. Some people have the experience of driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

2. Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part or all of what was just said. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

3. Some people have the experience of finding themselves in a place and having no idea how they got there. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

5. Some people have the experience of finding new things among their belongings that they do not remember buying. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

6. Some people sometimes find that they are approached by people that they do not know who call them by another name or insist that they have met them before. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

8. Some people are told that they sometimes do not recognize friends or family members. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

9. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). mark the line to show what percentage of the important events in your life you have no memory for.

0% _____ 100%

10. Some people have the experience of being accused of lying when they do not think that they have lied. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

11. Some people have the experience of looking in a mirror and not recognizing themselves. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

12. Some people sometimes have the experience of feeling that other people, objects, and the world around them are not real. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

13. Some people sometimes have the experience of feeling that their body does not seem to belong to them. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

15. Some people have the experience of not being sure whether things they remember happening really did happen or whether they just dreamed them. mark the line to show what percentage of the time this happens to you.

0% _____ 100%

16. Some people have the experience of being in a familiar place but finding it strange and unfamiliar. mark the line to show what percentage of the time this happens to you.

0% _____ 100%

17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

18. Some people sometimes find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

19. Some people find that they sometimes are able to ignore pain. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

20. Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

21. Some people sometimes find that when they are alone they talk out loud to themselves. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

22. Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

23. Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations etc.). Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

25. Some people find evidence that they did something that they do not remember doing. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

26. Some people find writings, drawings, or notes among their belongings that they must have done but cannot remember doing. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

27. Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

28. Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear. Mark the line to show what percentage of the time this happens to you.

0% _____ 100%

Appendix F

This questionnaire was designed to help us understand the relationship between philosophical beliefs and personality. These questions are not intended to embarrass or to question any religious belief. They have been asked in accordance with a single assumption: If a belief is true, then no amount of challenge will change it. All answers are confidential. Computer analyses will be performed only after the person has been protected by a coded number.

Please answer the following questions as correctly as you can. Think carefully about each question before you answer it. The answer is either true or false. For each question, please circle either T (true) or F (false). If the answer could be either true or false, please circle the answer that is correct most of the time.

1. During important conversations, I stick to the topic more than most people. T F
2. When I get upset or angry, my legs feel weak. T F
3. After writing prose or poetry, I feel better. T F
4. There is good evidence that life exists on other planets. T F
5. If I breathe quickly, I feel dizzy or odd. T F
6. Sometimes an event will occur that has special significance for me only. T F
7. I have had a vision. T F
8. An inner voice has told me where to find something and it was actually there. T F
9. At least once in the last ten years, I have fallen asleep and then awoken the next morning in another room. T F
10. Sometimes I am sure that people can tell what I am thinking. T F
11. There have been times when I stared at an object and it appeared to become larger and larger. T F

12. Once I start talking in an enjoyable setting, I have a hard time leaving. T F
13. About once a year, I will awaken during sleep and not be able to move. T F
14. While sitting quietly, I have had uplifting sensations as if I were driving quickly over a rolling road. T F
15. Sometimes I can read another person's thoughts. T F
16. People tell me that I "blank out" sometimes when we are talking. T F
17. I have had a religious experience that I know was real. T F
18. Once I thought about a person whom I had not seen for awhile and then saw the person a few minutes later. T F
19. At least once in my life, very late at night, I have felt the presence of another Being. T F
20. If I am not careful, a high pressure salesperson can sell me a "bill of goods". T F
21. When I have a tough decision to make, a sign will be given and I will know what to do. T F
22. Intense smells bother me more than other people. T F
23. I would like to time travel. T F
24. There are no such things as ghosts or haunts. T F
25. I keep a diary or notebook about my feelings and thoughts. T F
26. I have been known to walk in my sleep. T F
27. People tell me that I become excited over insignificant events. T F
28. Sometimes I am so full of pep and energy that I feel superhuman. T F

29. When relaxed or just before falling asleep, I sometimes feel pleasant vibrations moving through my whole body. T F
30. Sometimes, in the early morning hours between midnight and 4:00 a.m., my experiences are very meaningful. T F
31. Christ has appeared to me in a vision. T F
32. My soul sometimes leaves my body. T F
33. I have never had "memory blanks" where I could not recall previous events. T F
34. I have heard an inner voice call my name. T F
35. At least once a month, I experience intense smells that do not have an obvious source. T F
36. I use "hunches" more than simple learning to solve new problems. T F
37. When I lose an argument, I spend a lot of time thinking about what I should have said. T F
38. I often feel as if things are not real. T F
39. People tell me that I imitate the characters in a movie I have just seen. T F
40. When I walk up stairs, I sometimes note a strange smell from nowhere. T F
41. I like poetry. T F
42. I can "speak in tongues". T F
43. Telepathy (ESP) is a real phenomenon. T F
44. As a child, I played with an imaginary friend. T F

45. Animals should not be killed just for the benefit of humans. T F
46. I have kept a diary. T F
47. There is an Eternal and Infinite Force. T F
48. Once, in a crowded area, I suddenly could not recognize where I was. T F
49. I have learned to meditate. T F
50. Although I am not sure, there is a good possibility that I have lived in a previous time. T F
51. After my religious conversion, I suddenly felt full of energy. T F
52. When I start something, I have a hard time stopping until it is finished. T F
53. I have had experiences where I felt as if I were somewhere else. T F
54. I have had dreams of floating or flying through the air at least once a year. T F
55. I am very religious (more than most people). T F
56. At times I feel like smashing things. T F
57. Alien intelligence is probably responsible for UFO's. T F
58. I have noticed tingling sensations along the back of my legs. T F
59. At least once a month or so, I'll keep singing or thinking a part of a song again and again. T F
60. When I am alone or feel low, reciting poetry or prose is a pleasant experience. T F
61. At least once in my life, just before falling down, I had the intense sensation of a smell from childhood. T F

62. When I see a child starving from hunger on T.V. commercials, I feel sad. T F
63. I have been visited by a Spiritual Being. T F
64. Two or three times in my life, there have been a few brief moments when I felt very close to a Universal Consciousness. T F
65. People say that I repeat myself often. T F

Appendix G

Princeton Personality Profile: HPCM

You are a perceptive and insightful person who can often intuitively understand the motives of others. You also have a curious nature and are interested in discovering more about yourself and other people. However, you have found it unwise to be too frank in revealing yourself to others. You are more intelligent than average and you enjoy thinking about abstract ideas. You have a tendency to be critical of yourself. Your sexual adjustment has presented some problems for you. Disciplined and controlled on the outside, you are sometimes worried and insecure on the inside. You worry about things more than you let on, even to your best friends. However, you are adaptable to social situations and your interests are wide ranging. You pride yourself on being an independent thinker and you do not accept the opinions of others without satisfactory proof that they are right. At times you are extroverted, affable, sociable and at other times you are reserved and cautious. You are imaginative but some of your aspirations tend to be quite unrealistic.

Appendix H

HYPNOSIS CONDITION

"As you may already know psychologists have discovered that early experiences are very important at influencing adult personality and adult cognitive styles. One problem scientists have in studying the effects of early experience is the fact that people are usually unable to remember back earlier than the time they were three or four years old. The problem is not that the early memories were not stored. Instead, the problem is one of retrieval; being able to get back very early memories that are there but that people normally can't remember. Fortunately, psychologists now have some tools that can uncover even the earliest childhood memories. One of these tools is hypnosis and that is what we will be using in the experiment today to help you to recover very early memories from the time you were an infant.

On the basis of the tests that you filled out earlier we know that you are an insightful and perceptive person. You have a high level of curiosity, you are not easily fooled by appearances and, instead, like to get behind superficialities to what's really going on. These characteristics constitute a cognitive style that is labeled High Perceptual Cognitive Monitoring or HPCM for short. Now all of these HPCM characteristics are known to be related to the development of those parts of the brain that have strong associations with the visual system, and early visual experiences were probably very important in stimulating the neural substrates that led to the development of HPCM characteristics as part of your personality.

In the early 1960's a great deal of work was done by psychologists on the effects of early experience, and more specifically, on the importance of visual stimulation and exposure to varied visual environments in the development of personality and cognitive abilities. About 25 to 30 years ago, on the basis of this research, some hospitals in Canada, the U.S. and in some other countries began hanging mobiles above the cribs of new born infants. The mobiles moved and were colored red and green in order to

attract and hold the infant's visual attention and to help the infant coordinate their eye-movements and their eye-hand coordination. We now know that the first few days after birth are a critical period. During this period visual stimulation is particularly important in facilitating the development of the neural structures that, in adulthood, are expressed in the HPCM cognitive style.

What we would like to do in today's experiment is confirm that you were born in one of the hospitals that hung mobiles in the cribs of newborn infants. Unfortunately, we cannot do this by contacting the hospitals themselves because most of them have not kept accurate records of when they started hanging the colored mobiles. Moreover, the mobiles that the hospitals used were not always red and green--it is not known which hospitals used mobiles of which color. Your test results indicate that you have an HPCM cognitive style, and therefore that you were exposed to high levels of visual stimulation during the first few days after your birth. Most likely you were exposed to a rotating red and green mobile hung several inches over your head. In order to confirm this hypothesis we would like to use hypnotic regression to take you back mentally to the day after your day of birth and allow you to recall what you experienced at that time. The human brain stores information in neural traces. Newer traces can interfere with older ones and, therefore, lead to memory failures. However, it is important to realize that memory failures are rarely due to a failure to store the original information. Instead, memory failures are almost always failures to retrieve the stored information. With the aid of hypnosis however you can retrieve memories from even very old neural traces.

Memory traces are activated when we recreate the environment that was present during the initial experience. For instance, if you visit some place you haven't been since childhood, you are likely to be flooded with old memories that you thought had been completely forgotten. In this case the place you visited caused a reactivation of memories associated with that place. These memories reactivated other memories with which they were associated and so on. It is not necessary to physically travel back to old places in order to reactivate old memories. The same effect can

be achieved by mentally recreating old environments. In other words, by imagining and thinking about childhood experiences during hypnosis, and by using hypnosis to mentally recreate the feelings and emotions you felt as a child, you will be able to reactivate even the earliest memories from childhood and get a continuous record of even very early memories. In other words, hypnosis enables people to relive even their early experiences as infants. After you have been hypnotized I will age regress you back to several younger ages. During the age regression process, you will be asked to place yourself back to each age so as to relive the thoughts, feelings, emotions and other experiences that you felt at each age. Recreating these experiences in age regression will trigger old memories, and those memories will trigger still other old memories. Finally I will ask you to age regress back to the day after your birth and re-experience yourself as an infant in a hospital crib. During this process I will ask you to try to re-experience the sensations and feelings that you had as an infant. Once you are primed in this way to reactivate your infant memories, I will ask you to visualize a mental TV screen and you will see yourself as an infant on your mental TV screen. Your memories will come to life and you will see yourself in your mind's eye in your crib a day after your birth. You will be able to use your mental TV screen to get close ups of what you are experiencing. I will ask you to focus on the area above your head and tell me what you see. I am particularly interested in whether you see a mobile and if you do what it looks like and what colors it is made from".

Hypnotic Induction Procedure

"Close your eyes. Your ability to be hypnotized depends entirely on your willingness to cooperate. It has nothing to do with your intelligence. As for your willpower, if you want to, you can pay no attention to me and remain awake all the time. On the other hand, if you pay close attention to what I say, and follow what I tell you, you can easily fall into a hypnotic sleep. Hypnosis is nothing fearful or mysterious. It is merely a state of strong interest in some particular thing. In a sense, you are hypnotized whenever you see a good show and forget you are part of the audience, but instead feel part of the story. Your cooperation, your interest, is what I ask for. Your ability to be hypnotized is a measure of your willingness to cooperate. Nothing will be done that will cause you the least embarrassment.

Now relax and make yourself entirely comfortable. Relax completely. Relax every muscle in your body. Relax the muscles in your legs. Relax the muscles in your arms. Make yourself perfectly comfortable. Let yourself be limp. Relax more and more--more and more. Relax completely. Relax completely. Relax completely.

Your legs feel heavy and limp, heavy and limp. Your arms are heavy, heavy, heavy as lead. Your whole body feels heavy, heavier. You feel tired and sleepy, tired and sleepy. You feel drowsy and sleepy, drowsy and sleepy. Your breathing is slow and regular, slow and regular.

You feel pleasantly drowsy and sleepy as you continue to listen to my voice. Just keep your thoughts on what I am saying. You are going to get much more drowsy and sleepy. Soon you will be deep asleep, but you will have no trouble hearing me. You will not wake up until I tell you to do so. Remember that the dangers of hypnosis are a myth. Nothing will be done that is in any way harmful to you. I shall now begin to count, you will feel yourself going down, down, down, into a deep, comfortable, a deep restful sleep. A sleep in which you will be able to do all sorts of things I ask you to do. One--you are going to go deeply asleep...Two.....down, down, down, into a deep, sound sleep....Three, Four, more and more, more and more asleep...Five---Six---Seven---you are sinking, sinking, into a deep,

comfortable, a deep restful sleep. Nothing will disturb you. Pay attention only to my voice and the things I tell you...Eight---Nine---Ten----Eleven---Twelve---deeper and deeper, always deeper sleep...Thirteen---Fourteen---Fifteen. You will always hear me clearly no matter how deeply asleep you may be...Sixteen---Seventeen---deep asleep. Nothing will disturb you. You are going to experience many things that I will tell you to experience...Eighteen---Nineteen---Twenty. Deep asleep. You will not awaken until I tell you to do so. You will wish to sleep and will have the experiences I shali presently describe.

You are feeling comfortable, relaxed, thinking of nothing, nothing but what I say, your eyes are closed, comfortably closed, you are thinking of nothing, nothing but what I say, your arms and legs are heavy, your arms and legs are heavy and you are relaxed. The muscles of your face, arms and legs are relaxed--your whole body is relaxed. Drift deeper. It feels as though you are going backward into the darkness, backward into the darkness, and as you go backward into the darkness, you feel more and more comfortable, more and more relaxed, you are listening only to my voice, only to my voice, thinking of nothing, absolutely nothing, concentrating only on my voice, listening only to my voice, you are feeling comfortable and relaxed, comfortable and relaxed, and you are in a deep, sound sleep--a deep, sound sleep---fully prepared to respond to and experience, what I ask you to do.

2 of/de 2

PM-1 3½"x4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 1010a ANSI/ISO #2 EQUIVALENT

PRECISIONSM RESOLUTION TARGETS

AGE REGRESSION TO INFANCY

"Alright, now I'm going to start counting backwards from your present age of ____ to the day after your birth. I want you to let your subconscious work, and as I count backwards I want you to think of yourself as getting younger and younger.

When I stop at a certain age I want you to feel as if you are that age. I'll just count backwards slowly, and you allow your mind to experience those age states as you get younger and younger.

Ok, I'll start now with your present age of ____ and now we'll go back to when you were 15 years old. I'll begin counting, and with each count you'll feel younger and younger. [START COUNTING BACKWARDS FROM PRESENT AGE TO 15]. 15 years old, you are now 15 years old once again. Let yourself experience being 15 years old again and sitting in school. . . take a few moments to experience yourself as 15 years old once again. Let the memories of you at 15 return. Now feel yourself as 15 once again. Now that you are 15 years old place yourself back in school. Look around the school room. Notice who is sitting beside you. Notice who is teaching the class at the front of the room. Let all of these memories flood back. Let yourself once again be 15 years old and a student in school.

1. Ok, please tell me what you are experiencing and remembering
[TAPE ON]

Now we are going to continue going back through time. Now, you are going back to age 14, 13, 12, 11, 10. You are 10 years old, 10 years old. I want you to experience being 10 years old and sitting in a class room in school. Let the memories, and feelings of you at 10 years old return. Let yourself feel 10 years old. Let yourself once again become 10 years old. Now that you are 10 years old, place yourself back in school. Look around the school room. Notice who is sitting beside you. Notice who is teaching the class at the front of the room. Let all of these memories flood back. Let yourself once again be 10 years old and a student in school.

1. Ok, tell me what you are now experiencing and remembering
[TAPE ON]

Once again we are going to continue going backward through time. Now you are becoming 9 years old, 8, 7, 6, and now 5 years old. I want you to experience being 5 years old and sitting in a class room in school. Let the memories, and feelings of you at 5 years old return. Let yourself feel 5 years old. Now that you are 5 years old, place yourself back in school. Look around the school room. Notice who is sitting beside you. Notice who is teaching the class. Let all of these memories flood back. Let yourself once again be 5 years old and a student in school.

1. Ok, tell me what you are now experiencing and remembering
[TAPE ON]

And now you feel yourself becoming still younger and younger. You are now 4 years old, 3, 2, 1 year old. Now you are going back even further, back beyond your first birthday, back to the day after you were born, getting younger and younger, now you are 6 months of age, 5 months, 4 months, 3 months, 2 months, 1 month, further and further back, to the day after your birth. Now it is the day after your birth, you are in a hospital lying in a crib. You are lying on your back in the crib. You are awake. You feel warm and comfortable, everything seems so new and strange. You can move your eyes and you keep looking around, taking in everything, noticing everything in your field of vision. Everything looks so new and strange and colorful. Take a few moments and experience what it is like to be a new born baby. Let the memories of infancy come flowing back into your mind. Notice the bars on your crib and what they look like from your perspective of lying in the crib looking up and from side to side. Now look up from the crib and notice what is hanging above your head. Notice the colored object hanging by a string above your head. It looks so bright. You try to reach it with your little hands, but it's too far away. But you keep looking at it because it moves around and has such bright colors and is so fascinating to watch.

Now I want you to continue remembering and experiencing that it is the day after your birth, but I want you to change perspective. I want you to mentally stand back and watch yourself as a one day old baby on a mental TV screen. Just let your memories of early infancy unfold as images on a mental screen before your eyes. You can still see the crib and the hospital room, but now it is like you are standing outside watching yourself as an infant. And because you are watching from outside you can talk to me as an adult, but still remember and experience what you felt as an infant.

Ok. Now I want you to describe what you, as an infant, are experiencing. Please describe these experiences in as much detail as you can. [PAUSE TO GET COMPLETE DESCRIPTION: TAPE RECORDER ON]

Now I want you to focus above the crib and describe to me what the object that you, the infant, are looking at; the object that is hung above your head. [TAPE RECORD ANSWER]

- 1) Please describe this object in as much detail as you can. TAPE ON
- 2) Describe any other details of the object that you can see. TAPE ON
- 3) (If subject has described mobile but not colors) What colors is the object that hangs above the head of you the infant? TAPE ON

Wake-up

Okay, now you are going to be going forward in time, you are going to get older as I count. You are now one year old....2 years old...getting older, older still.....five, six...seven years old....getting older...still older.....15, 16, 17, 18, 19 (or whatever their present age is).

Okay...you are going to wake up in a few moments...you will feel refreshed, wide awake and in a good mood. I am going to count from five and with each count, you will feel more fully awake. Five...starting to wake.....Four...more awake....three...still more awake.....two...becoming awake.....one....wide awake....open your eyes, you are now wide awake.

Appendix I

GUIDED MNEMONIC RESTRUCTURING CONDITION

"As you may already know psychologists have discovered that early experiences are very important at influencing adult personality and adult cognitive styles. One problem scientists have in studying the effects of early experience is the fact that people are usually unable to remember back earlier than the time they were three or four years old. The problem is not that the early memories were not stored. Instead, the problem is one of retrieval; being able to get back very early memories that are there, but that people normally can't remember. Fortunately, psychologists now have some tools that can uncover even the earliest childhood memories. One of these tools is hypnosis. Unfortunately, hypnosis is ineffective for many people and can only be used successfully with a minority of individuals. Fortunately, a new procedure known as guided mnemonic restructuring is effective at recovering early memories and can be used successfully by both good and poor hypnotic subjects. Guided Mnemonic restructuring is what we will be using in the experiment today to help you to recover very early memories from the time you were an infant.

On the basis of the tests that you filled out earlier we know that you are an insightful and perceptive person. You have a high level of curiosity, you are not easily fooled by appearances and, instead, like to get behind superficialities to what's really going on. These characteristics constitute a cognitive style that is labeled High Perceptual Cognitive Monitoring or HPCM for short. Now all of these HPCM characteristics are known to be related to the development of those parts of the brain that have strong associations with the visual system, and early visual experiences were probably very important in stimulating the neural substrates that led to the development of HPCM characteristics as part of your personality.

In the early 1960's a great deal of work was done by psychologists on the effects of early experience, and more specifically on the importance of visual stimulation and exposure to varied visual

environments in the development of personality and cognitive abilities. About 25 to 30 years ago, on the basis of this research, some hospitals in Canada, the U.S., and in some other countries began hanging mobiles above the cribs of new born infants. The mobiles moved, and were colored red and green in order to attract and hold the infant's visual attention, and to help the infant to coordinate their eye-movements and their eye-hand coordination. We now know that the first few days after birth are a critical period. During this period visual stimulation is particularly important in facilitating the development of the neural structures that, in adulthood, are expressed in the HPCM cognitive style.

What we would like to do in today's experiment is confirm that you were born in one of the hospitals that hung mobiles in the cribs of newborn infants. Unfortunately, we cannot do this by contacting the hospitals themselves, because most of them have not kept accurate records of when they started hanging the colored mobiles. Moreover, the mobiles that the hospitals used were not always red and green, but it is not known which hospitals used mobiles of which color. Your test results indicate that you have an HPCM cognitive style, and therefore that you were exposed to high levels of visual stimulation during the first few days after your birth. Most likely you were exposed to a rotating red and green mobile hung several inches over your head. In order to confirm this hypothesis we would like to use guided cognitive restructuring to take you back mentally to the day after your day of birth and allow you to recall what you experienced at that time. The human brain stores information in neural traces. Newer traces can interfere with older ones and, therefore lead to memory failures. However, it is important to realize that memory failures are rarely due to a failure to store the original information. Instead, memory failures are almost always failures to retrieve the stored information. With the aid of guided cognitive restructuring, however, you can retrieve memories from even very old neural traces.

Memory traces are activated when we recreate the environment that was present during the initial experience. For instance, if you visit some place you haven't been to since childhood,

you are likely to be flooded with old memories that you thought had been completely forgotten. In this case the place you visited caused a reactivation of memories associated with that place. These memories reactivated other memories with which they were associated, and so on. It is not necessary to physically travel back to old places in order to reactivate old memories. The same effect can be achieved by mentally recreating old environments. In other words, by imagining and thinking about childhood experiences, and by mentally recreating the feelings and emotions you felt as a child you will be able to reactivate even the earliest memories from childhood and get a continuous record of even very early memories. In other words, guided cognitive restructuring enables people to relive even their early experiences as infants. During the Guided Cognitive Restructuring procedure I will ask you to imagine yourself at several younger ages. I will ask you to mentally place yourself back to each age and try your best to recreate the thoughts, feelings, emotions and other experiences that you felt at each age. Recreating these experiences will trigger old memories, and those memories will trigger still other old memories. Finally, I will ask you to take yourself back to the day after your day of birth, and reexperience yourself as an infant in a hospital crib. During this process I will ask you to try to reexperience the sensations and feeling that you had as an infant. Once you are primed in this way to reactivate your infant memories, I will ask you to visualize a mental TV screen, and you will see yourself as an infant on your mental TV screen. Your memories will come to life and you will see yourself in your mind's eye in your crib a day after your birth. You will be able to use your mental TV screen to get close ups of what you are experiencing. I will ask you to focus on the area above your head and tell me what you see. I am particularly interested in whether you see a mobile and if you do what it looks like and what colors it is made from."

GUIDED MNEMONIC RESTRUCTURING TO INFANCY

"Ok, first please close your eyes and let yourself relax. The reason I am asking you to close your eyes is to eliminate as much external stimulation as possible. During the Guided Mnemonic Restructuring I will ask you to mentally place yourself back at different ages. At these times it is very important that you focus your thoughts and images on what you were like at the ages I suggest. Really try to experience yourself back at each of the earlier ages. Let yourself experience the feelings you had at those earlier ages. Memories are often strongly connected to feelings and so by recreating how you felt at an earlier age you will find yourself getting back memories from that age. I will ask you to think back to particular situations at each age, such as being in school. In order to get back memories of those times and places it is important that you imagine yourself in the situations I suggest. Really try your best to recreate the situation in your mind. Imagine yourself back in the situation I suggest and try your best to picture the people and the physical structure of that situation. Remember, images, like feelings, can call up memories. The more vividly you imagine the details of an earlier situation, the more you will call up memories from that situation. It is important that you really become absorbed in re-experiencing yourself at the ages I give you. Really try to make it feel like you are back there once again.

Remember, when I ask you to go back to an earlier age I want you to feel as if you are that age. Use your imagery and other cognitive skills to really recreate the experiences, feelings and memories of yourself at earlier ages.

Ok, I'd like you to start by going back to when you were 15 years old. Think back to when you were 15. Think back to a day when you were 15 years old and sitting in school. Let yourself experience being 15 years old again. . .take a few moments to experience yourself as 15 years old once again. Now that you are 15 years old, place yourself back in school. Look around the class room. Notice who is sitting beside you. Notice who is teaching the class at the front of the room. Let all of these memories flood back. Let

yourself once again be 15 years old and a student in school.

1. Ok, please tell me what you are experiencing and remembering
[TAPE ON]

Ok, that's fine, now lets go back even further, lets go back to your being 10 years old and sitting in a class room in school. I want you to experience being 10 years old. Let the memories and feelings of you at 10 years old return. Let yourself feel 10 years old. Let yourself once again re-experience being 10 years old. Now that you are re-experiencing being 10 years old, place yourself back in school. Look around the class room. Notice who is sitting beside you. Notice who is teaching the class at the front of the room. Let all of these memories flood back. Let yourself once again re-experience being 10 years old, and a student in school.

1. Ok, tell me what you are now experiencing and remembering
[TAPE ON]

Ok, that's fine, now lets go back even further. Lets go back to your being 5 years old and sitting in a class room in school. I want you to experience being 5 years old. Let the memories and feelings of you being 5 years old return. Let yourself feel 5 years old. As you re-experience yourself as 5 years old place yourself back in school. Look around the school room. Notice who is sitting beside you. Notice who is teaching the class. Let all of these memories flood back. Let yourself once again re-experience being 5 years old and a student in school.

1. Ok, tell me what you are now experiencing and remembering
[TAPE ON]

Ok, that's fine, now I want you to use your imaginative abilities to remember back even further. I want you to go back to the day after your birth. To do this I want you to picture a hospital room in a maternity ward. In the ward are a row of cribs, and I want you to

focus down on one of those cribs, and on the infant in the crib. I want you to imagine the infant in the crib. The infant is lying on its back and is awake. Now I want you to place yourself imaginatively in the infant's place. Let yourself become that infant. Let yourself see, experience and feel what that infant experiences. Just let your images blend into memories. Memories of what you felt and saw and heard the day after your birth. Let yourself remember how you felt warm and comfortable and how everything seemed so new and strange. Remember how you can move your eyes and how you kept looking around, taking in everything, noticing everything in your field of vision. Re-experience how everything looked so new and strange and colorful. Take a few moments and experience what it is like to be a new born baby. Let the memories of infancy come flowing back into your mind. Notice the bars on your crib and what they look like from your perspective of lying in the crib looking up and from side to side. Now look up from the crib and notice what is hanging above your head. It looks so bright. Remember how you tried to reach it with your little hands, but it was too far away. But you kept looking at it because it moved around and had such bright colors and was so fascinating to watch.

Now I want you to continue remembering and experiencing that it is the day after your birth, but I want you to change perspective. I want you to mentally stand back and watch yourself as a one day old baby on a mental TV screen. Just let your memories of early infancy unfold as images on a mental screen before your eyes. You can still see the crib and the hospital room, but now it is like you are standing outside watching yourself as an infant. And because you are watching from outside you can talk to me as an adult, but still remember and experience what you felt as an infant.

Ok, now I want you to describe what you, as an infant, are experiencing. Please describe these experiences in as much detail as can. [TAPE ON]

Now I want you to focus above the crib and describe to me the object that you, the infant, is looking at; the object that is hung

above your head. [TAPE ON]

- 1) Please describe this object in as much detail as you can.
- 2) Describe any other details of the object that you can see.
- 3) [If the subject has described a mobile but not colors] What colors is the object that hangs above the head of you the infant?"

Appendix J

please circle the one response that best reflects your experience

1. During the period in which I was asked to experience myself as being an infant, my adult self faded into the background.

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree
- (e) Completely

2. During the period in which I was asked to experience myself as being an infant, I became absorbed in being an infant once again.

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree
- (e) Completely

3. Please choose the one response that best describes how vividly you experienced yourself at being an infant once again.

- (a) Not at all vividly
- (b) Somewhat vividly
- (c) Moderately vividly
- (d) Very Vividly
- (e) Extremely vividly

4. To what extent do you believe that the events you recalled about yourself as an infant were memories of real events as opposed to fantasies that you made up?

- (a) The events I recalled were definitely real memories.
- (b) The events I recalled were probably real memories.
- (c) I am not sure whether the events I recalled were real memories or fantasies.
- (d) The events I recalled were probably fantasies rather than real memories.
- (e) The events I recalled were definitely fantasies rather than real memories.

Appendix K

"The best evidence we have about memory and how it operates suggests that the experiences you recalled from infancy were real memories. What this indicates is that the neural traces that contain your memories from the day after your birth have now been primed. As a result of this, during the next week you might find thoughts of yourself as an infant popping into your mind every once and awhile. These thoughts won't be disturbing to you in any way because young infants are typically quite content and happy. So they are likely to be pleasant thoughts. But don't be surprised if every once in awhile you notice yourself having thoughts about infants and infancy.

One other way in which the priming of these neural traces might be manifested is in dreams. In the next few days, you might dream either directly or indirectly about infancy and birth. Direct dreams of infancy might involve things like dreaming about babies. Indirect dreams may things like dreaming about going through a tunnel or dreaming about moving from a dark room into a well-lit room. In other words, indirect dreams are symbolic and you may notice some symbolic dreams about birth and infancy.

There are also a couple of other things that I would like you to be on the look-out for. As you know, infants have the umbilical cord cut after birth. This doesn't produce pain in the infant but for a short while after birth it often produces itchiness. The neural traces that contain the memories from the day after your birth are likely to remain activated for the next few days or so, and therefore you may experience some body memories from infancy. In particular, you may occasionally notice a mild itchiness in the area of your belly-button every so often. This is quite normal, and nothing to be concerned about, but if it does happen, I would really be interested in you letting me know about it the next time we meet. Thanks!! "

Appendix L

For each question, please choose the answer that best describes your experience.

- 1. During the last week, how frequently did you notice thoughts about infants or infancy popping into your mind while you were awake?**
 - (a) Never**
 - (b) Once or twice**
 - (c) Occasionally**
 - (d) Frequently**
 - (e) Very frequently**

- 2. During the last week, how frequently did you have dreams that involved an infant or infants?**
 - (a) Never**
 - (b) Once**
 - (c) Twice**
 - (d) Three times**
 - (e) More than three times**

- 3. During the last week, how frequently did you have dreams that you believed symbolized birth or other experiences of infancy?**
 - (a) Never**
 - (b) Once**
 - (c) Twice**
 - (d) Three times**
 - (e) More than three times**

- 4. During the last week, how frequently did you experience itchiness in the area of your belly-button?**
 - (a) Never**
 - (b) Once or twice**
 - (c) Occasionally**
 - (d) Frequently**
 - (e) Very frequently**

5. To what extent do you believe that the events you recalled about yourself as an infant in the first session were real memories as opposed to fantasies that you made up?

- (a) The events I recalled were definitely real memories.
- (b) The events I recalled were probably real memories.
- (c) I am not sure whether the events I recalled were real memories or fantasies.
- (d) The events I recalled were probably fantasies rather than real memories.
- (e) The events I recalled were definitely fantasies rather than real memories.

Appendix M

For each question, please choose the answer that best describes your experience.

1. During the last week, how frequently did you notice thoughts about infants or infancy popping into your mind while you were awake?

- (a) Never
- (b) Once or twice
- (c) Occasionally
- (d) Frequently
- (e) Very frequently

2. During the last week, how frequently did you have dreams that involved an infant or infants?

- (a) Never
- (b) Once
- (c) Twice
- (d) Three times
- (e) More than three times

3. During the last week, how frequently did you have dreams that you believed symbolized birth or other experiences of infancy?

- (a) Never
- (b) Once
- (c) Twice
- (d) Three times
- (e) More than three times

4. During the last week, how frequently did you experience itchiness in the area of your belly-button?

- (a) Never
- (b) Once or twice
- (c) Occasionally
- (d) Frequently
- (e) Very frequently

5. Please take a moment to try and think back to being in a crib the day after your birth.....Now, to what extent do you believe the event you just recalled about yourself as a one day old was a memory of a real event as opposed to a fantasy that you made up?

- (a) The event I recalled was definitely a real memory.
- (b) The event I recalled was probably a real memory.
- (c) I am not sure if the event I recalled was a real memory or a fantasy.
- (d) The event I recalled was probably a fantasy rather than a real memory.
- (e) The event I recalled was definitely a fantasy rather than a real memory.

Appendix N

Debriefing

A good deal of evidence now suggests that human memory is expectancy driven and reconstructive in nature. It has been found that people recall inaccurately and fill gaps in memory by recalling what they expect happened or what they believe must have happened.

Frequently, the elicitation of "pseudomemories" or false memories involves the use of hypnotic procedures to enhance recall. A great deal of current controversy concerns whether hypnotic procedures bias recall and/or enhance confidence in inaccurate recall to a greater extent than do nonhypnotic procedures. Consequently, one purpose of this study was to compare hypnotic and nonhypnotic procedures in the elicitation of, and degree of confidence placed in, false memory reports. Therefore, we had two experimental groups (hypnotic age regression and non-hypnotic age regression i.e. mnemonic restructuring) and one control group (no age regression).

Much of the controversy in the false memory literature concerns delayed recall of events that purportedly occurred in childhood. In this study, we examined this issue by providing the participants with a rationale for attempting to recover early memories. The Princeton personality profile given to those in the two experimental conditions, which claimed that they possessed a High Perceptual Cognitive Monitoring personality type, was bogus. The same profile was used for everyone, regardless of their personality type. This was necessary so participants would believe that they did experience a stimulating environment after birth (the colored mobile) which did increase their insightfulness and perception. The story that those in the two experimental conditions received that told about experiencing a colored mobile hanging over their crib as constructed to determine whether hypnotic or non-hypnotic procedures lead individuals to create and believe in false memories. Frequently, people who recall early memories also experience physical symptoms associated with those memories. We were interested in whether such physical symptoms could also be suggested and incorporated into false memories.

Another purpose of this study was to examine the relationship

between hypnotizability and the generation of false memories. We did this by using individuals already tested for hypnotizability and by varying participants' expectations about the relationship between their recall and their earlier hypnotizability performance.

We very much want to thank you for your participation in this important psychological study. If you have any questions or ethical concerns regarding this experiment, please contact any or all of the following faculty members:

Dr. K. Matheson, 788-2600 ext. 7513, Loeb A307 (Faculty Supervisor)

Dr. L. Paquet, 788-2600 ext. 2692, Loeb A812 (Chair of Ethics Committee)

Dr. W. Jones, 788-2600 ext. 2648, Loeb B559 (Head of the Psych. Dept.)

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