

MEMORY CREATION IN HYPNOSIS

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Abstract

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Twenty-seven highly hypnotizable subjects were tested on a series of hypnotic items of high difficulty for an unselected sample over three experimental sessions. The aims of the present study were threefold. It sought to investigate the possibility of modifying an individual's memory of a specific time sequence through a hypnotic suggestion of confabulation. It also sought to demonstrate how hypnosis increases the confidence of subjects in the accuracy of their recall performance even in the absence of any actual improvement. Finally it sought to extend earlier findings (Laurence & Perry, 1981; Nogrady et al., in press) of differential cognitive patterns within this group of highly selected individuals.

The findings supported the three main hypotheses. Approximately half of the subjects gave evidence of memory creation or confabulation, and half did not. For half the subjects, the new memory was accepted and integrated into their own memories, either with absolute certainty or with manifest confusion. It was also shown that for all subjects, hypnosis increased the confidence in the accuracy of their recall even in the absence of any actual improvement in their

performance. The differential response pattern observed on the memory creation item was related to two indices of multiple levels of awareness, namely duality in age regression and the hidden observer effect. This finding extends the Laurence and Perry (1981) study on differential cognitive patterns within the group of high hypnotizable subjects.

The results of the present study are discussed in terms of their relevance for the experimental, clinical and forensic uses of hypnosis.

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Throughout its history hypnosis has been associated with extravagant claims; whether it be the possibility of exploring the future through hypnotic age progression (Moll, 1895/1982), of breast enlargement in women (Willard, 1977; Staib & Logan, 1977), as a contraceptive (Note 1), or as a means to seduce women (Note 2), these claims have always hindered the scientific investigation of hypnotic phenomena. A current concern among clinicians and experimenters who investigate and use hypnosis is the recent popularity and the increased usage of hypnotic techniques by law enforcement organizations in North America, Israel and Europe. This new development in the field of hypnosis has led to a major controversy both in the media and in public opinion.

As it often happens when a particular phenomenon or technique has not been restricted to a particular scientific organization, controversy arises between those who would like to see it employed by everybody, and those who would like to see it restricted to professionally trained individuals until it is better explored and understood. In the specific case of hypnosis, the debate is unfortunately more than just academic; in the United States for example, the media is beginning to discuss the problem created by the unrestricted uses of hypnosis in the judicial context (Barnes, Note 3; The Macneil-Lehrer Report, Note 4).

The problem has also reached the Supreme Court in the United States (People vs. Shirley; 1982), and the decision

rendered by the Court, following some consultation with the scientific community, indicates that the judicial authorities are more than alarmed by the issue at hand. Uses and abuses of hypnosis have been reported with sufficient frequency in scientific journals that professional organizations have felt the need to adopt a code of ethics regulating the use and teaching of hypnotic techniques to qualified professionals (see Notes 5 and 6)..

The investigative use of hypnosis raises two issues of considerable concern. The first is the issue of whether hypnosis can be used to coerce an individual into the commission of an act that he or she would not ordinarily perform. This complex problem has been extensively investigated over the last two decades, but has not been satisfactorily resolved (e.g., Barber, 1961, 1969; Coe, Kobayashi, & Howard, 1973; Kline, 1972; Levitt, Aronoff, Morgan, Overley, & Parrish, 1975; Orne, 1972a; Orne & Evans, 1965; Orne & Holland, 1968; Perry, 1979; Watkins, 1972). Part of the problem resides in the fact that it is extremely difficult to develop an experimental analog of such a complex real-life event. The experimental coercive situation is, by its very nature, open to a vast array of internal and external demands which prevent a clear and unequivocal interpretation of the data obtained. As matters presently stand, the mental health professional, when presented with a case of potential coercion, may be able to offer no more than an "educated guess" on most occasions.

A second major issue, upon which the present report focuses, has become recognized recently. The phenomena of hypermnesia, confabulation and of hypnotically created memory are currently at the center of a debate surrounding the use of hypnosis in the legal context (Barnes, Note 3). The popularity of hypnosis in the legal context stems from the belief that it can be used to restore hitherto inaccessible veridical memories, either naturally forgotten or repressed. Scientific authors, however, are divided on the question of hypnotic hypermnesia. Orne (1979) has emphasized that the hypermnesia demonstrated by a hypnotized person is often confounded by the person's tendency to confabulate under hypnosis either spontaneously or following a suggestion given by the hypnotist. This tendency to fill in memory gaps with fantasized material creates particular problems in the legal context, especially if the fantasized material or the created memories come to be believed as true by the hypnotized person, even after hypnosis is terminated. It becomes extremely difficult to identify what was historically correct from what was created hypnotically (Orne, 1979). On the other hand, Reiser (1980) rejects the whole notion of confabulation and created memories. For this author, these notions are equated to voluntary deception on the part of the hypnotized subject and have nothing to do with hypnosis or the hypermnesia that can be provoked by hypnosis. Sparse experimental data are presently available to support or invalidate the positions

that are taken by the various parties involved. Most of the data are to be found in a number of recent legal decisions. Orne (1979) has emphasized the potential impact of these issues for the miscarriage of justice, and has proposed a number of safeguards that could minimize the problem of a confabulated memory being accepted as real by courts of law. He has also demonstrated that it is possible to create a pseudo-memory in an unsuspecting subject (Orne, 1979), thereby providing an experimental analog of this phenomenon. The issues of confabulation, hypermnesia, and creation of pseudo-memory must be understood within the context of what is already known about hypnosis and hypnotizability, as opposed to what is still in the realm of scientific speculation.

Hypnosis and Hypnotizability

Hypnotic phenomena can be traced back to the end of the eighteenth century when Franz Anton Mesmer introduced his theory of animal magnetism. According to Mesmer, an invisible fluid which pervaded the entire universe, could be transmitted from certain individuals to other human beings. He believed that this fluid had magnetic properties that were therapeutic and beneficial to the person receiving them. By the end of the eighteenth century animal magnetists or mesmerists as they were soon to be called, realized that the magnetized person was experiencing a different consciousness; one that appeared similar to that found in sleep, or in somnambulism. This

finding appeared particularly evident in the alterations of memory that were the results of the mesmeric episode. Le Marquis de Puységur (Ellenberger, 1970), was the first person of the mesmeric tradition to report the presence of amnesia following a mesmeric state. But if hypnosis became quite rapidly identified with an altered state of consciousness, it also became evident that not everyone could experience this state to the same degree. As early as 1819, the Abbé Faria reported differences in responsiveness to the hypnotic situation (Sheehan & Perry, 1976). During the nineteenth century a number of investigators continued documenting these differences in responsiveness to hypnotic suggestions; among them, Schrenck-Notzing conducted the first international study on aptitude for hypnosis (Moll, 1895/1982). In France, Bernheim proposed a nine-point scale to assess an individual's responsiveness to hypnosis, where amnesia played a central role. The demonstration of posthypnotic amnesia whether it be suggested or spontaneous was regarded as the manifestation of the presence of the hypnotic state. The results of these investigators were strikingly similar to that of contemporary researchers; about ten to fifteen percent of the population were highly responsive to suggestions, seventy to eighty percent were responsive to a moderate degree, and the remaining ten to fifteen percent were not responsive to hypnosis (Hilgard, 1965). When hypnosis entered the era of contemporary scientific investigation with the work of Hull (1933), these

documented differences in responsivity to hypnosis led investigators to question the idea of hypnosis as an altered state of consciousness. Not only were individual differences well documented, but, the responsivity to hypnotic suggestion was found to be quite stable over time in the same individual. Hypnotizability, or, the aptitude for responding to hypnosis was found to be a stable characteristic of the individual (Hilgard, 1965).

This led to what has been called, the state-trait debate which in turn resulted in the development of a series of different methodologies aimed at explaining particular aspects of the hypnotic phenomenon (Sheehan & Perry, 1976). Both the situational demands of the hypnotic context and the internal capacities of the individual to experience hypnotic suggestions became central to the understanding of hypnosis. As Hilgard (Note 7) noted, hypnosis can no longer be looked upon as an altered state of consciousness imposed upon an individual by a hypnotist; the role played by the hypnotized subject can not be ignored. On the other hand, the role played by the individual undergoing a hypnotic induction cannot be explained solely by his or her behavioral responses to the situational demands; the subjective experiences reported by the hypnotized individual must be accounted for in order to understand what is occurring in a hypnotic situation.

The investigation of these different aspects of hypnosis has led to an integrative view of the phenomenon where

hypnotizability and the external and internal demands of the hypnotic situation interact constantly (Bowers, 1973; Orne, 1979; Perry, 1977a; Spanos & Barber, 1974). The interaction between hypnotizability and context has been investigated in the experimental situation quite thoroughly (Coe & Sarbin, 1977; Orne, 1972b, 1980; Sarbin & Coe, 1972; Spanos & Boderik, 1977; Sheehan & McConkey, 1982) and points to the importance of the demands of the situation in bringing out the different capabilities of the hypnotized individual.

In the clinical and forensic situation, this complex interaction is less amenable to stringent experimentation and a host of different variables may be at play that can not and probably should not be controlled for. Perry, Gelfand and Marcowitz (1979) pointed out to the inherent complexity of the clinical setting, emphasizing for example the motivational state of the individual seeking therapy in bringing out a successful intervention. In the forensic situation whether hypnosis is used with a defendant, a witness, or a victim of crime, the motivation as well as the overall mental status of the individual involved may prove to be more important than the hypnotic techniques employed (Orne, 1979).

Recognizing the role played by the situational variables in a hypnotic context, Orne (1977) placed a particular emphasis on the distortions of perceptions and of memory processes as the hallmarks of a highly hypnotizable individual. According to Orne, the main feature that characterizes hypnosis, or

more appropriately the hypnotized individual, is the capacity to distort perception, to alter memory processes without in any way being surprised or annoyed by the incongruities that such behavior may provoke. This capacity however can only be observed in ten to fifteen percent of the population; only highly hypnotizable individuals are able to display posthypnotic amnesia, carry on a posthypnotic suggestion or experience visual and auditory hallucinations.

Different paradigms have been employed in order to investigate what renders an individual highly hypnotizable. Considerable effort has been expended in seeking out the personality characteristics and/or cognitive skills which differentiate the highly hypnotizable from less responsive individuals (see Bowers, 1976 for a review of this literature). In addition, many investigators have sought to determine the features which distinguish hypnosis from other "states" of the individual such as sleep, wakefulness, anger, love, fear and alcoholic intoxication.

The most thoroughgoing attempt to document such differences has been by Orne using the real-simulator approach (Orne, 1959, 1979; for a review of the procedures see Sheehan and Perry, 1976). In essence, the real-simulator approach compares highly hypnotizable subjects in hypnosis with insusceptible subjects simulating hypnosis. The finding of a difference between these two comparison groups leads to the inference that hypnosis and possibly hypnotizability may be

responsible for it; failure to find a difference means only that the data can be interpreted in terms of the alternative hypothesis of "demand characteristics." These have been defined by Orne (1959) as implicit cues in the design and/or in the procedures of an experiment which communicate the experimental hypothesis to the subject.

Other investigators have used waking control groups or task-motivated groups in order to isolate characteristics of hypnosis and/or hypnotizability. The task-motivated group is a special control group that undergoes the same procedures as the experimental hypnotic group without the hypnotic instructions. Special instructions are given to the subjects in order to enhance their motivation to respond positively to the suggestions given. Such procedures allow the investigator to study more specifically the correlates of hypnosis given that it is indeed an altered state of consciousness (for a review of this literature, see Barber, 1969).

Recently Sheehan and McConkey (1982) proposed a new methodology which advocated that investigators should look at the subjective and cognitive alterations that hypnotized individuals experience during a hypnotic session. In their seminal paper, Sheehan, McConkey and Cross (1978) introduced what they called the Experiential Analysis Technique (EAT). The EAT is an adaptation of Kagan's (1975) Interpersonal Process Recall (IPR) method, which was developed for use in the counselling setting. Initially, Kagan (1975) utilized the

method as a means by which therapists could view and react to immediately preceding contact with their clients. In essence IPR uses videotaped playback of the counselling situation to stimulate recall of the underlying dynamics involved in the interaction of therapist and client.

Sheehan et al. (1978) proposed that similar procedures, adapted to the hypnotic setting, would produce comparable, dynamic material. One of the main advantages of this technique is the possibility of using it in conjunction with other paradigms, thus enabling the experimenter to gather more information on the subjective experiences of the subjects as well as on the particular technique employed (see for example, Nogrady, McConkey, Laurence, and Perry, in press).

Despite considerable experimentation using these different methodologies, relatively few behavioral differences have been demonstrated between hypnotized high susceptible subjects, and insusceptible ones. This is particularly evident when the results of the real-simulator paradigm are scrutinized (Sheehan & Perry, 1976). One reason for this may be that there are important individual differences among highly susceptible subjects themselves (Perry, Note 8). These differences could help to account for the heterogeneity of responses demonstrated by this group of subjects when they are administered hypnotic items of high item difficulty. Not all highly hypnotizable subjects can demonstrate posthypnotic amnesia and posthypnotic suggestion and a double hallucination

and a delusion of a missing number, and source amnesia for example. They exhibit some, but not all of these phenomena in different combinations according to their own capacities. This heterogeneity of behavioral responses among high hypnotizable individuals was demonstrated by Weitzenhoffer and Hilgard (1967) when they devised the Stanford Profile Scales of Hypnotic Susceptibility. These scales were constructed in order to identify the areas where hypnotizable subjects best excelled, demonstrating that each subject could not be expected to manifest all of the more difficult hypnotic phenomena.

Heterogeneity of subjective responses among high susceptible subjects can also be found; identical behavioral responses in different subjects do not necessarily reflect the same subjective experience and cognitive processes. This difference in subjective experience and cognitive functioning was pointed to by Perry and Walsh (1978) using an age regression item embedded in a real-simulator paradigm. They found that high susceptible subjects differed cognitively when reporting their experiences of a suggested age regression. About half of their subjects reported a feeling of "duality" during regression, in which they experienced being both adult and child either simultaneously or in alternation. The other half of the subjects reported feeling as if they really were the suggested age, with no awareness of their adult identity. Duality was not reported by any of the simulators in this study. This first report of a cognitive difference within a

group of high hypnotizable subjects led Perry and Walsh (1978) to hypothesize that over and above the heterogeneity of responses found in that highly selected group, there was also a specificity of responses linked to their selective cognitive processes.

Specificity of Responses among High Hypnotizable Subjects

Sheehan et al. (1978) demonstrated that highly hypnotizable subjects adopt different cognitive styles in order to carry out successfully the diverse hypnotic items that are proposed to them. These investigators pointed to the adaptability of the hypnotized individual in processing both the information from the context in addition to their active search for the best way to respond positively to the suggestion.

The theoretical basis for a cognitive perspective of hypnotizability is Hilgard's (1973a, 1977, 1979) neodissociation theory which seeks to account for a wide range of cognitive phenomena both within and outside the hypnotic context. The neodissociation view is essentially rooted in Janet's (1889/1973) concept of "désagrégation" which argued that particular cognitive systems can be split off from the major (i.e., conscious) cognitive system and that the use of hypnosis is one way in which they are capable of being brought back to awareness. Although this notion was accepted and utilized by a number of Janet's contemporaries (i.e., James, 1890; Prince,

1906/1920; Sidis, 1902), it lay dormant for a variety of reasons (see Hilgard, 1977 for a review), until it was revitalized and revised in the last decade. Hilgard predicated neodissociation theory on empirical studies involving mainly hypnotic analgesia in highly hypnotizable individuals (Hilgard, Hilgard, Macdonald, Morgan, & Johnson, 1978; Hilgard, Morgan, & Macdonald, 1975; Knox, Morgan, & Hilgard, 1974). These studies appear to support the position that more than one cognitive system is operating during hypnosis and that, by using what has been termed the "hidden observer" method, hypnotized subjects can report information about their experiences that was not previously available to consciousness.

Reactions to Hilgard's neodissociation perspective have ranged widely on both empirical and theoretical grounds. Theoretically, the notion of neodissociation has received comments ranging from thorough endorsement (e.g., Hebb, 1975, 1982) to cautious criticism (e.g., Neisser, 1979). Empirically data have been reported that suggest either partial support (Laurence & Perry, 1981) or absolute rejection (Spanos & Hewitt, 1980) (For a review of the empirical evidence on the "hidden observer" method, see Nogrady et al., in press; for a review of the critiques of neodissociation see Laurence, Perry, & Kihlstrom, 1983; Spanos, 1983).

The findings however, both within and between laboratories (Hilgard et al., 1978; Perry & Laurence, 1980; Laurence & Perry, 1981; Nogrady et al., in press) suggest that highly

susceptible subjects react differentially to the hidden observer instructions which, in turn, may be interpreted as further evidence of the heterogeneity of cognitive skills among high hypnotizables; it has consistently been found that around 50 percent of this highly selected group manifest the hidden observer phenomenon when it is suggested in a hypnotic context.

Perry and his colleagues sought to investigate the possibility of differential response patterns among the highly hypnotizable group. In a series of studies (Perry & Laurence, 1980; Laurence & Perry, 1981; Nogrady et al., in press), a consistent relationship between the hidden observer phenomenon and the experience of duality during age regression was found, supplementing the hypothesis of response specificity within the high hypnotizables. Within the context of neodissociation theory, at least two differential dissociative patterns were isolated empirically. On the one hand, about 50 percent of the subjects report multiple levels of awareness during these two hypnotic items; during the hidden observer item, they report feeling the pain that they had denied a few seconds earlier, and during a suggested age regression they report feeling both adult and child, either simultaneously or in alternation. On the other hand, the remaining 50 percent of the subjects continue to deny any sensation of pain during the hidden observer instructions, and also deny any sense of adult identity during age regression. These findings suggest that differential cognitive processes are at play in both of

these test items.

Consistent with this view are findings reported by Sheehan and McConkey (1982) that many high susceptible subjects spontaneously comment on their awareness of events that contradict the suggested events that they are experiencing. Sheehan and McConkey (1982) found that the cognitive styles subjects employ vary across different hypnotic test items. This observation further points to the importance of investigating the ease with which certain subjects adopt a multiple perspective or what could be called cognitive fluidity (see also Sarbin & Coe, 1972). A recent study (Nadon, 1982) adds further support to the notion of specificity of cognitive responses within the high hypnotizables. He reported that subjects who gave evidence of multiple levels of awareness during hypnosis differed from the group who did not manifest this phenomenon in their responses to a posthypnotic amnesia suggestion. Whereas both groups displayed equivalent levels of amnesia post hypnosis and prior to its reversal, they differed significantly once the amnesia suggestion was removed. Upon reversal of the suggestion, the hidden observer group provided a qualitatively less detailed account of their hypnotic experience than did their counterparts. Here again, although both groups displayed the same suggested behavior, they differed both experientially and cognitively.

Hilgard (1979) has placed a major emphasis on posthypnotic amnesia in his neodissociation theory. He proposed

that the splitting of different cognitive systems is possible because of an amnesic-like process that keeps such systems separated, thus enabling them to function in a pseudo-independent fashion. Although no experimental evidence exists to support this hypothesized amnesic-like process (Hilgard, 1979; Laurence & Perry, 1981), the results reported by Nadon (1982) and Nogrady et al. (in press) seem to indicate that being able to experience posthypnotic amnesia may have a certain relevance in being able to process information at multiple levels of awareness (Nogrady et al., in press) and that the quality of the amnesic process may differ within both groups of highly hypnotizable subjects (Nadon, 1982). What may be of particular importance in these findings whether it be in the experimental context, or the clinical or forensic situation, is not only the fact that high hypnotizables differ cognitively but also the influence of their different cognitive processes on their memorial system; the difference may not be quantitative but qualitative.

Hypermnnesia, Confabulation and the Creation of a Pseudo-memory

By far the most thoroughly investigated phenomenon in the history of hypnosis is posthypnotic amnesia. Nineteenth century investigators emphasized the role played by the amnesic process in the hypnotic situation. Janet (1889/1973) believed that the alterations of memories produced by hypnosis were central to understanding the phenomenon; he believed that high

hypnotizability or, what was termed somnambulism at the time, was only present if the subject (in his case his patients) could experience spontaneous or suggested alterations of memories. Contemporary researchers have pursued the study of posthypnotic amnesia extending its domain into cognitive psychology (see Kihlstrom & Evans, 1979; for a different view, see Spanos & Radtke-Bodorik, 1980).

Posthypnotic recall amnesia however is not the only alteration of memory that can be found or suggested in hypnosis. There are three other major phenomena that are also rooted in the history of hypnosis; they have however, been sparsely investigated. These phenomena interestingly have traditionally been viewed as psychopathology processes and have been taken more or less for granted by clinicians using hypnosis as a form of therapy.

Until recently, confabulation, memory creation, and hypermnesia have been neglected by experimenters. The sudden reemergence of hypnosis in the forensic context has revived the interest in these phenomena and triggered a debate within the scientific as well as legal community (Barnes, Note 3).

Although the debate has often been seen as involving rivalries between different organizations working in the forensic context (see Note 9; the resolution passed by the Society for Investigative and Forensic Hypnosis (1980) which clearly formulates the problem in antagonistic terms). As

legal cases, however, have accrued and the potential for abuses has been substantiated, the controversy addresses now the specific problems created by the use of hypnosis in the forensic context. The questions asked by the courts are difficult to answer in the light of the few valid experimental data available to the expert-witness.

The basic question concerns the conceptualization of the memory system. Is memory reproductive, reconstructive, or plainly an amalgam of constructive reproduction? Does the memory system actually work like a "videotape recording," faithfully reproducing events that happened in the past, or does it reconstruct past episodes in the light of its actual present perceptions? Before examining the experimental and clinical evidence relating to this issue, it may be interesting to look at the popular beliefs about memory. These popular beliefs are extremely relevant to what is happening in the forensic context since it has been demonstrated that people are generally influenced by the beliefs they hold.

Loftus and Loftus (1980) emphasized the divergence that exists between the belief that the memory system works like a recorder and the actual substantiating evidence for such a view. In an informal survey of 169 individuals, (among which 75 had formal graduate training in psychology, while the remaining 94 had not), they questioned subjects about both the permanence of stored information and also the accessibility of that information. Surprisingly 84 percent of the

psychologists indicated a belief that all information in long-term memory is stored accurately even though much of it can not be retrieved; 69 percent of the non-psychologists chose the same position. It was also believed by these people that hypnosis and other special techniques could help in eventually retrieving inaccessible details (Loftus & Loftus, 1980). It is therefore not particularly surprising to find that one of the major issues in the field of forensic hypnosis is the belief that once registered in long-term memory, information can be retrieved by using an adequate technique.

Two major positions can be isolated in the use of hypnosis in the legal context. The prevalent opinion among those who advocate the general use of hypnosis as an investigative technique is that memory works like a tape-recorder and that one can retrieve the desired information by using hypnotic age regressive techniques (Reiser, 1980). Reiser (1980) denies the existence of confabulation in memory, equating this phenomenon with deliberate lying and voluntary deception on the part of the subject. His main argument relies upon the work of Penfield (1969) on brain stimulation (for a review and critique of this particular position, see Perry and Laurence, 1982). Among those who recognize the possibility of confabulation, whether suggested or spontaneous, it is believed that when hypnosis is used in the legal context, it should be subjected to a number of stringent safeguards in order to minimize the possibility of distorted memories that could eventually be instrumental in a miscarriage of justice

(Orne, 1979).

When considering the problems of hypermnesia, confabulation and memory creation, two major aspects are of interest. The first one is, obviously, whether these phenomena exist; secondly, if they exist, how does hypnosis change the confidence of the subjects about what they recall after they have undergone a hypnotic induction?

When hypnosis is used in the forensic situation it is often within the context of an age regression, where the subject (either victim or witness of a particular crime) is asked to go back to the specific date and time of the crime. Regression to an earlier age in hypnosis can often be a compelling phenomenon particularly when it is to childhood or to a traumatic period in the life of the subject. The manifestations of age regression can, in fact, be so compelling, and so dramatic, that many past investigators have sought to demonstrate that hypnotic age regression is a literal reversion to earlier modes of thinking, in which all that has been learned and experienced since that particular age is functionally unavailable. Most reviews have tended to view the issue in terms of the reality or genuineness of age regression in this sense of it being literal, as opposed to it being one of the many variants of role-playing (Barber, 1962; Foenander & Burrows, 1980; Gebhard, 1961; Pattie, 1956). In general evidence has been found in support of both "literal" and of role components to the hypnotized person's experience

of age regression (Hilgard, 1977; Orne, 1951). Subjects may relive past experiences which are found to have occurred when independent attempts are made to verify subjects' verbal reports of them. At the same time, much of what occurs in age regression does not support the literalness hypothesis. It has been shown for example (Barber, 1962; Orne, 1951; O'Connell, Shor, & Orne, 1970) that the productions of age regressed subjects, be they handwritings, drawings, or Rorschach responses are more mature than those of children of these actual ages to which the hypnotized subjects have been regressed.

This formulation of the issue in terms of literalness versus role-play has diverted the attention from a more fundamental question, which was early recognized by Orne (1951). In this paper, Orne presented data to indicate that hypermnesia (described as the restoration of hitherto inaccessible veridical memories by hypnosis) is possible; sometimes. In the same paper however, he also discussed the problem of confabulation of memory in the age regression situation; that is the tendency to fill in memory gaps with fantasized material, which subsequently comes to be believed as true by the hypnotized person, even after hypnosis has been formally terminated (for a complete discussion and evaluation of this issue as it pertains to forensic as well as clinical cases, see Orne, Note 10).

Orne (1951) provided data of his own to document the

occurrence of hypermnesia, and also referred to the study of Stalnaker and Riddle (1932) as further evidence for its importance as a complicating factor in evaluating material obtained in age regression. Stalnaker and Riddle (1932) age regressed deeply hypnotized subjects to grade school where they had once learned "The Village Blacksmith" by Longfellow. In hypnosis the subjects appeared to be able to recite the poem far more easily and with far better recall than in the wake state which had been obtained one year earlier. Closer inspection of the data indicated that the apparent enhancement could be accounted for entirely in terms of confabulation. The subjects had improvised appropriate "filling gaps" for what was now imperfectly recalled. Further, subjects' testimony indicated that they believed that what was confabulated was actually veridical recall. Subsequently Orne (1977, p. 9) has noted that

We have repeatedly documented both processes occurring within the same age regression session: An apparent increase in recall as well as an increased tendency to confabulate, to make up suitable memories, using whatever information was previously available to the individual.

This observation is also in line with the earlier views about the reconstructive capacity of the memory system presented by Bartlett (1932).

Setting aside the issue of confabulation for a moment, it seems quite clear that hypnotic hypermnesia can be demonstrated experimentally in the laboratory. Of 14 reasonably well-documented studies, nine of them supported the validity of hypnotic

hypermnnesia while five studies did not (for a review of this literature, see Dywan-Segalowitz & Bowers, Note 11). The studies which supported hypnotic hypermnnesia focused primarily on the new items retrieved, and were less systematic in reporting the possibility of errors. Dywan-Segalowitz and Bowers (Note 11) addressed this question in a recently reported experiment. When compared to a task-motivated group, hypnotized subjects reported twice as many correct items. This increase in output however, was accompanied by a proportional increase of errors; subjects in the hypnosis condition reported as many as twice of these false-memories as subjects in the task-motivated group. When hypnotizability was taken into account, high hypnotizable subjects in the hypnosis condition had both the highest enhanced recall of correct items and the highest increase in false memories. This study clearly indicated that although hypermnnesia can be obtained in a selected sample of subjects in hypnosis, the cost in terms of errors produced is extremely high.

If hypermnnesia can be demonstrated in the experimental setting, and the evidence seems to support the phenomenon, it is more difficult if not impossible to extend these results to the clinical and the forensic situation. Although it is difficult to ignore reports from applied settings about the effectiveness of hypnosis as an aid to recall, the highly selective nature of these types of reports must be considered, as well as the difficulty in having access to the actual

material recalled. In applied settings, disentangling hypermnesia from confabulation can be as difficult as it was for Alexander the Great to cut through the Gordian knot.

The problems of hypermnesia and confabulation were already well recognized in the early periods of hypnosis and particularly in the last two decades of the nineteenth century. The main areas of interest at the time were mainly the coercive power of hypnosis and the confidence that should be placed in what is said under hypnosis (for an overview of 19th century forensic hypnosis, see Laurence and Perry, Note 12). The issue of confabulation and of hypermnesia did not evade the nineteenth century investigators. Binet and Féré (1888) were among the first ones to point out that any statement made under hypnosis should be considered with the greatest care, and that before accepting it many hypotheses should be entertained, namely confabulation, simulation, biased questioning and false testimony.

Binet and Féré recognized that both during and after hypnosis a person's testimony could be the product of any of three major possibilities: simulation which they argued should always be suspected in a legal case; hallucination which was their term for confabulated memory; and suggested memory to cover cases where a memory is created following a biased statement from the examiner. In an American case, *People v. Ebanks* (1897), the problem of confabulation was also brought to the attention of the judicial system. In a Note of the

Lawyers Annotated Report of 1897 (Note 13) the American authors cited came to the same conclusion as their European colleagues concerning the dangers of confabulation: "In a hypnotic condition or one of exaggerated receptivity, an individual is very apt to make illusional mistakes in identity which would be out of the question under other circumstances." The problems of confabulation and suggested memory were of more than mere academic interest. Moll (1889/1982, p. 381) reports the case of a trial at the Aisnes Assizes, where an alleged murderer was found innocent, in spite of the evidence against him, because the judge held that the chief witness might have been the victim of a suggested falsification of memory.

The possibility of creating a memory as well as the tendency of hypnotizable individuals to confabulate during hypnosis was well known to such investigators as Bernheim, Forel, and Janet. Each of them had experimented and demonstrated the possibility of memory alteration. Bernheim's term for the phenomenon was "retroactive hallucinations"; Forel called it "illusory retroactive memory" whereas Janet described the subject's behavior in terms of "plasticité" and "électivité". They all agreed that it was a crucial problem in legal cases because subjects came to believe these new memories, whether confabulated or created, as true (Bernheim, 1888/1973; Janet, 1889/1973; Bannister, 1895).

All three investigators provided numerous examples of subjects incorporating suggested facts into their normal memory.

Janet, for example, used the modification of a traumatic memory as a technique in his therapeutic practice. It is exemplified in the treatment of his well-known patient, Marie (see Ellenberger, 1970, pp. 361-364). Marie had a number of hysterical symptoms, one of which was blindness of the left eye which she believed was congenital. Janet established that the blindness had begun at the age of six when she was obliged to share a bed one night with another six-year-old who had impetigo on the left side of her face. Marie developed an identical impetigo in the same place, which was finally cleared up, but the unicular blindness persisted into young adulthood. Janet removed it using a confabulated memory. He reports:

I put her back (using hypnosis) with the child who had so horrified her; I made her believe that the child is very nice and does not have impetigo (she is half-convinced. After two reenactments of this scene I get the best of it); she caresses without fear the imaginary child. The sensitivity of the left eye reappears without difficulty, and when I wake her up Marie sees clearly with the left eye. (Ellenberger, 1970, p. 364)

Janet may have reasoned that if you can remove a hysterical blindness with a confabulated memory, especially in patients who are not particularly motivated for cure, that a clear danger exists in the investigative situation where hypnosis is used to tap inaccessible memories. This may well have been why Janet was one of the people instrumental in having hypnotically elicited testimony prohibited from the French

courts nearly a century ago. Other examples came from experimental studies carried on at Nancy. Bernheim provided the following example:

We can suggest to subjects that at some period now past, they saw such and such an act committed, and the image created in their minds seems like a living memory, which governs them to such an extent as to appear an incontestable reality.

For example, here is the case of a somnambulist, Marie G..., an intelligent woman of whom I have already spoken. I hypnotize her into a deep sleep and say, "You got up in the night?" She replies, "Oh, no." I insist upon it: "You got up four times to go to the water closet, and the fourth time you fell on your nose. This is a fact, and when you wake up, no one will be able to make you believe the contrary." When she wakes I ask, "How are you now?" "Very well," she answers, "but last night I had an attack of diarrhea, I had to get up four times. I fell, too, and hurt my nose." I say, "You dreamed that. You said nothing about it right now. Not one of the patients saw you." She persists in her statement, saying that she had not been dreaming, that she was perfectly conscious of getting up, that all the patients were asleep; and she remains convinced that the occurrence was genuine (1888/1973, pp. 164-165).

Bernheim actually believed that the same phenomenon could be elicited in hypnotizable individuals outside of hypnosis because of their vivid imagination. These experiments were of course crucial when it came to the legal context and Bernheim warned the legal system against those witnesses who would offer a "false testimony given in good faith" (Bernheim, 1889/1980, p. 92). Some of these early investigators believed

also that when used as an investigative agent, hypnotic questioning could lead to hallucinated memories. Binet and Féré (1888) and Bannister (1895) warned against the dangers of cueing the subjects to give an anticipated answer, emphasizing that magistrates and physicians alike can create a false memory and, in so doing, modify the subject's recollection of the facts.

A trial reported by Ladame in 1882, which can be found in Morand (1889, pp. 481-487) best illustrates the thinking of this period. It involved a young woman, Maria F., who had allegedly been raped by a male friend who frequently magnetized her. For nine months she apparently forgot the rape or whatever sexual interaction had occurred, and viewed her pregnancy as a very strange happening. After childbirth, her doctor hypnotized her and she then provided information on what had happened. What is of interest in this case are the conclusions reached by the court after hearing all of the parties. It concluded that under the circumstances (the rapport between the two young people) rape would have been possible; further, the date of birth was approximately nine months after the alleged rape had occurred. The delay in the hypnotic inquiry however, made it impossible to state with certainty the Maria's hypnotic recall was veridical. The court stressed also the dangers of confabulation in this case. It stated:

We can suggest voluntarily or involuntarily to the hypnotized subject dreams and hallucinations which she will describe

with an astonishing precision so that the results obtained will not be in any case sufficient testimony to justify a decisive and certain judgment. (p. 487)

Finally the court stressed that the possibility of simulation could not be ruled out in this case; the young man was acquitted and freed (Morand, 1889).

The same line of thought can be found today in North America where the use of hypnosis in the forensic context is undergoing a rapidly growing popularity among police organizations. Hypermnnesia, confabulation, and memory creation are still at the heart of the debate, even if nearly one hundred years ago, the European courts finally solved the problem by banning hypnosis from the courtroom (Moll, 1889/1982).

If the phenomenon of hypermnnesia has been demonstrated in the laboratory, the problem of confabulation has only been sparsely examined. Stalnaker and Riddle (1932) pointed to the tendency of subjects to fill in the memory gaps that they experienced. But additional studies addressing the problem in a hypnotic context are extremely rare. One study by True (1949) best illustrates the problem of suggested or cued responses when age regression is used in hypnosis. True age regressed volunteer subjects to their birthday party at age ten, and simply asked them what day of the week it was. Then he went on to age regress them to age 7 and, once again he repeated the same procedure at age 4. The findings were extremely interesting. At age 10, 92% of the subjects accurately recalled the day of the week of their birthday, 84% accurately

recalled the day of the week at age 7, and 62% accurately recalled the day of the week at age 4. These impressive findings however could never be replicated. In O'Connell, Shor, and Orne's (1970) major study on age regression, none of the actual ten 4-year old children used in the study knew the day of the week. The 62% accuracy of subjects regressed to age 4 thus had to be the result of subtle communication. Subjects in the True study were actually picking up cues from the experimenter who knew what day the actual birthday was. The experimenter did not ask: "What day of the week is it?", but rather asked the age regressed subjects, "Is it Monday? Is it Tuesday? Is it Wednesday?" until the subject stopped him, and said his birthday was Wednesday, for example. The experimenter had a perpetual calendar in view to check out the subjects' answer. (Orne, 1977). Thus, not only will subjects confabulate an answer if none is available from memory, but they will confabulate in response to cues supplied inadvertently by the experimenter.

In the literature stemming from the applied settings, numerous examples can be found of confabulation. The most noticeable one concerns Freud. When Freud changed his seduction theory of the psychoneuroses to his developmental view of infantile sexuality with the Oedipal complex as the core component, part of the change was due to him realizing that most of the memories of childhood abuses that he elicited from his patients could in fact only be fantasized material.

From a clinical viewpoint, these events seemed emotionally accurate in that they led to clinical improvement; but they were not necessarily historically accurate. Two contemporary examples will help clarify this point, since they exemplify how confabulated material can come to be believed as being historically accurate. Fiore (1980) makes this point most forcefully for a technique she uses clinically called Past Life Therapy. She writes: "Since this treatment modality achieves desired results, I feel the question of the validity of the 'remembered' or the 'relived' events is irrelevant" (p. 317). Elsewhere she states (1979, p. 2): "At this point I am neither a staunch believer nor non-believer in reincarnation. However, each day as I watch more and more patients and subjects explore past lives, I find myself increasingly convinced that these are not mere fantasies." On this view therapeutic success validates a belief in the reality of lives previous to one's present one. Other clinical investigators (Sexton and Maddock, 1979) have obtained alleviation of schizophrenic and neurotic depression by suggesting a reconciliation in Heaven with a deceased loved one. Such data however would not be taken as evidence that Heaven exists. This is not to say that veridical material is never obtained under a hypnotic age regression, but that the problem of confabulation does exist and should be taken into consideration when cases are reported in the literature (for a dramatic example of veridical material uncovered through a hypnotic age regression

technique, see, for example, Raginsky, 1969 in the clinical context and Mutter, 1979 in the forensic context).

A recent legal case (State v. Mack, 1980) can serve as an example of the problems that can arise because of this tendency to confabulate and of the necessity to carefully evaluate the verbal reports of age regressed individuals, furnished in good faith in a legal case.

The case appeared before the Minnesota Supreme Court in order to obtain a ruling as to the admissibility of the hypnotically obtained evidence which was about to be submitted to a lower court where the case was proceeding. In this case, the Defence was aware of the possibility of confabulation; the Prosecution was not. The Defence was then able to seek evidence bearing on the confabulation hypothesis. The Court ruled in favor of the Defence, and the hypnotic testimony was not admitted to the Lower Court. This resulted in the Prosecution's case being withdrawn, and the defendant was set free. He may have been triply fortunate that the hypnotic consultant employed by his lawyer was aware of the issue of confabulation, sought out evidence for it, and that the evidence was there to be found. The events leading to the laying of formal charges and subsequent trial can be summarized in brief. The following quotations are from the court judgement. The male defendant (Mr. A) had met Ms. Z at a bar, danced with her, and they adjourned to a nearby motel. They "were engaged in sexual intercourse when she

started bleeding." Mr. A called for an ambulance, and waited until it arrived. Having placed Ms. Z in safe hands, Mr. A, a married man, then departed for understandable reasons.

One of the ambulance drivers observed that Ms. Z was "quite drunk," "her speech was unclear" and she insisted that "it wasn't (defendant's) fault." At the Hospital Emergency Department, Ms. Z told one intern that she had been "engaged in sexual activity with fingers being placed in her vagina" and another that "she believed she had been injured in a motorcycle accident," which had actually occurred between the bar and the motel. Following repairs to the damaged tissue in question, Ms. Z was informed by the attending doctors that "they did not believe that she had been involved in a motorcycle accident." Further, the doctors "believed the wound was caused by a sharp instrument" and may have transmitted this opinion to her. Two days later, she telephoned the police to report an assault. She told the police that she could "remember nothing after the motorcycle accident, until she awoke... bleeding from the vagina," that "she had been suffering emotional problems" because "a serious relationship with a man had recently ended," and that "she had 'blacked out' from drinking on other occasions."

Police investigation commenced, and six weeks after these events, an appointment was made by the police with her consent, with a "self-taught lay hypnotist." Ms. Z was described to him as "a witness with a memory block who had been

hospitalized with a cut in her vagina."

For present purposes, there is no need to describe either the induction procedure, or the police procedures, for obtaining an audio tape recording of a portion of the hypnotic session, although they contain technical inadequacies, both for eliciting regressive material from a hypnotized person, and for the gathering of evidence that could withstand legal scrutiny. It is sufficient to say that during the hypnotic age regression, Ms. Z's memory of the event at the motel were now substantially different; she stated: "He pulled out a switchblade, and told me he was going to kill me. He kept sticking this knife up me (i.e., her vagina) and I remember screaming and screaming." The following day, she signed a sworn statement to this effect, and Mr. A was subsequently arrested.

In this particular case, confabulation is the only explanation of the change in her testimony when regressive techniques were used to stimulate memory of the events of six weeks previously. Although, in its verdict the Court did not mention confabulation explicitly, it noted several instances of it, nearly all of which might be explained away by one means or another. There is one that cannot be. The Court noted: "Although Ms. (Z) recalls the assault upon her as one of repeated stabbings, her hospital records indicate that she had only a single, deep cut inside her vagina and no injury to the labia or perineum." In short, the Court did not believe

that knifemanship of this calibre was humanly possible. Also decisive in its decision may possibly have been the testimony of one medical witness that "hypnosis would be of little value in retrieving an alcohol-produced memory 'loss'."

Clearly, accepting the verbal reports of age regressed subjects at face value, without attempting to validate them against external criteria, is potentially dangerous. This, however, is not to deny that hypnosis can have value in stimulating inaccessible memories (see Kroger & Douc e (1979) for a discussion of the Chowchilla kidnapping); the important thing is to demonstrate that this is what has been done.

Most of the evidence concerning either confabulation or a suggested pseudo-memory comes from actual legal cases. Spiegel (1980) after reviewing a number of cases (Leyra v. Denno, 1954; U.S. v. Miller, 1969) concluded that "it is quite possible to so contaminate the memory of the subject that he confuses the hypnotic implantations with his own knowledge. Then, by so fusing them, he cannot tell one from the other." Orne (1979) described a number of cases where the use of hypnosis led either to pure confabulation (United States v. Andrews, 1975), or a suggested pseudo-memory (State v. Hurd, 1980; People v. Michael Kempinski, 1980 and more recently, People v. Shirley, 1982).

Although the scientific community is now well aware of the problems of confabulation and of suggested created memory, there is still no available experimental data demonstrating

that it is possible to alter a memory or to create a pseudo-memory in an unsuspecting subject. Orne (1979, Note 3) however has provided an experimental analog that demonstrates the possibility of such happening.

A simple experimental demonstration which I have often carried out is directly relevant to the circumstances of attempts to hypnotically enhance recall. First, I carefully establish and verify that a particular subject had in fact gone to bed at midnight on, say February 17, and had arisen at 8 a.m. the following morning. After inducing deep hypnosis, it is suggested that the subject relive the night of February 17 - getting ready for bed, turning out the light, and going to sleep at midnight. As the subject relives being asleep, he is told that it is now 4 a.m. and then is asked whether he has heard the two loud noises. Following this question (which is in fact a suggestion), a good subject typically responds that the noises had awakened him. Now instructed to look around and check the time, he may say it is exactly 4:06 a.m. If then asked what he is doing, he may describe some activity such as going to the window to see what happened or wondering about the noises, forgetting about them, and going back to sleep.

Still hypnotized, he may relive waking up at 8 a.m. and describe his subsequent day. If, prior to being awakened, he is told he will be able to remember the events of February 17 as well as all the other things that happened to him in hypnosis, he readily confounds his hypnotic experience with his actual memory on awakening. If asked about the night of February 17, he will describe going to sleep, and being awakened by two loud noises. If one inquires at what time these occurred, he will say, "Oh yes, I looked at my watch beside my bed. It has a radium dial. It was exactly 4:06 a.m...." The subject will be convinced that his description about February 17 is accurately reflecting his original memories.

The subject's altered memory concerning the night of February 17 will tend to persist (unless suggestions are given to the contrary) particularly because the subject was asleep at the time and there are no competing memories (pp. 322-323).

This description of the alteration of memory in an unsuspecting subject was also demonstrated in Barnes (Note 3). When questioned about the noises that were reported happening during the night, and confronted with a tape recording of her pre-hypnosis report that nothing had happened during the same night, the subject stood behind her hypnotic version of the facts, and reaffirmed that the noises had actually happened. This demonstration, however, constitutes at best quasi-experimental evidence that a memory can be created in hypnosis.

The Present Study

The present study sought to systematically examine the experimental analog provided by Orne (1979) in a group of high hypnotizable subjects. For this initial investigation it was hypothesized that high hypnotizables represented the population most likely to produce the effects under investigation. As already mentioned, highly hypnotizable subjects appear to be more prone to demonstrate memory distortions and alterations of perceptions than the rest of the population. A recent study by Wilson and Barber (1982) provides further evidence of this possibility. In their study, 27 women, consistently rated as excellent hypnotic subjects were interviewed in depth, focusing on childhood and adult memories,

fantasies and psychic experiences. Wilson and Barber reported that as far as fantasies were concerned 85% of the subjects reported that they tend to confuse their memories of their fantasies with their memories of actual events. By contrast only 24% of the subjects in the comparison group (25 less susceptible female subjects) reported the same experience.

Two major questions were under investigation in the present study. The first one concerned the possibility of creating a pseudo-memory using a hypnotic suggestion in a population of high hypnotizable subjects. If Bernheim (1888/1973), Janet (1889/1973), and Orne (1979) were correct in their contentions, high hypnotizable age regressed subjects should accept and integrate a new suggested event within the time sequence of their memories. Furthermore, subjects should report the new suggested event as being part of their initial memories of the time they were regressed when questioned post experimentally, either immediately following hypnosis or one week later. Such behavior on the part of the high hypnotizable subjects would lend support to the possibility of creating a pseudo-memory in this highly selective group within a hypnotic context. On the basis of the previous work on differential cognitive processes among high hypnotizables (Laurence & Perry, 1981) it was also hypothesized that subjects who experience duality in age regression would differ in their responses to a pseudo-memory from subjects who reported a quasi-literal regression.

The second question addressed the issue of confidence of recall under hypnosis, as well as the possibility of spontaneous confabulation during a hypnotic recall task. According to Orne (1979) a witness or victim of a crime will demonstrate unshakable confidence in the accuracy of his or her recall after having been hypnotized, whether or not he or she was uncertain before hypnosis was attempted. This increase in the confidence of the correctness of their memories recalled during hypnosis then invalidates the process of cross-examination, biasing the judicial process.

In the present study, subjects were asked to rate their confidence in the correctness of their answers to a questionnaire following a dichotic listening task in which subjects were asked to listen to a story while shadowing numbers. It was hypothesized that subjects would demonstrate a significant increase in their confidence ratings when the task was performed under hypnosis as compared to outside of hypnosis without any improvement in their actual performance. A free-recall form was also used to examine the possibility that they would spontaneously report information that was not part of the original story they listened to during the dichotic listening task.

This hypothesis was based on the idea proposed by Orne (1979) and Dywan Segalowitz and Bowers (Note 11) that subjects in hypnosis tend to lower their critical threshold for reporting a memory leading to an increase in output of both correct

and incorrect items.

If the hypotheses were supported it would lead to the conclusions that it is possible to alter a subject's memory under hypnosis. Furthermore it could show that for a number of individuals confabulation as indexed by the dichotic listening task, is already an active component of their cognitive processing system. If this was the case, the implications for the experimental and applied settings would be important both theoretically and empirically.

Method

Subjects

Two groups of subjects were recruited for the present study. Each group will be described separately in order to specify how and when they were recruited for the screening procedures. The subjects forming Group 1 were recruited through advertisements in the two university newspapers during the academic year 1981-82. Approximately 230 subjects were screened for hypnotizability on the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A) of Shor and E. Orne (1962). Subjects who appeared to be of high susceptibility to hypnosis were subsequently screened on the more stringent Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C) of Weitzenhoffer and Hilgard (1962) to confirm their previous score. Of these initial 230 subjects, 21 individuals were selected for the present study on the basis of their SHSS:C performance. Four of these individuals either cancelled or failed to appear for one or more of the experimental sessions and were not included in Group 1. It consisted of 17 subjects (12 females, 5 males); they ranged in age from 21-44 years (M:24.65, S.D.:9.25). Their HGSHS:A scores ranged from 6-12 (M:9.53, S.D.: 3.43) and their SHSS:C ranged from 9-12 (M:10.47, S.D.: 1.01).

The subjects forming Group 2 came from the 1979-1980 subject's pool of the hypnosis laboratory. These subjects had

participated in the Laurence and Perry (1981) study and had already undergone the same screening procedures as well as the first and second experimental sessions of the present study that will be described in a subsequent section. Of the 23 subjects who had participated in the Laurence and Perry (1981) study, only 11 could be contacted and accepted to participate in one further session. Of these 11 subjects, one experienced some difficulties during the testing session and his data were dismissed. Thus, Group 2 consisted of 10 subjects (4 females, 6 males); they ranged in age from 21-48 years ($M:28.20$, $S.D.:12.33$). Their HGSHS:A scores ranged from 11-12 ($M:11.60$, $S.D.:0.56$) and their SHSS:C scores ranged from 10-12 ($M:11.20$, $S.D.:0.79$).

Since there was no significant differences between the two groups in terms of their responses to the different individual items as well as their global hypnotizability scores, their data were pooled where it was appropriate to do so. The age range for the total sample of 27 subjects was 21-48 years ($M:27.85$, $S.D.:7.26$) and consisted of 16 females and 11 males. Their HGSHS:A scores ranged from 6-12 ($M:9.86$, $S.D.:1.83$) and their SHSS:C scores ranged from 9-12 ($M:10.74$, $S.D.:0.98$).

Subjects were classified as highly susceptible only if they passed the posthypnotic amnesia and most of the other SHSS:C items. Overall subjects were paid \$14.00 for their participation in the two screening sessions.

Procedures

All subjects underwent three experimental sessions; each session was separated by approximately a one-week interval. The subjects in Group 2 participated only in Experimental Session III, having already been tested on Session I and Session II in the Laurence and Perry (1981) study. Differences in the procedures between the two groups will be described as they occurred along the time sequence of the testing period. Each subjects was paid \$10.00 per experimental session.

First Experimental Session. On arrival for the first experimental session, subjects were asked to sign an Informed Consent Form and were asked also if they would agree to have the session videotaped. A copy of the "Informed Consent Form" can be found in Appendix A. They were not told (following Sheehan et al., 1978) that the videotape would form the basis of the postexperimental inquiry. They were informed that the inquiry would be performed by a second experimenter. They were then administered a seven-item induction which comprised of the following items: arm rigidity (Weitzenhoffer & Hilgard, 1959), delusion of the missing number (Evans, 1965), regression to age 5 (Perry & Walsh, 1978), glove analgesia (Perry, 1977), hidden observer (following Hilgard, 1977), uncanceled suggestion (Perry, 1977), and posthypnotic amnesia (Weitzenhoffer & Hilgard, 1962). A complete transcript of the induction is contained in Appendix B.

Items were selected in order to test subjects on aspects

of hypnosis thought to index deep levels of trance. Following current theorizing, the items sought to tap dissociation, tolerance of logical incongruities and ideationally-based distortions of reality. Immediately following the hypnotic session, a short postexperimental inquiry was conducted and tape-recorded to test the amnesia item and the uncanceled suggestion item.

Subjects were then introduced to the second experimenter who interviewed them using the Experiential Analysis Technique (EAT), following Sheehan et al. (1978). Before leaving the laboratory, they were asked if they would be willing to participate in a further session to be held the following week.

A Note on the "Hidden Observer" Item. Comparison of the "hidden observer" instructions as described by Hilgard (Note 12) with the instructions used in the present study (Appendix B) reveals a number of differences in the way that the item was administered. These were: (a) Hilgard typically uses cold pressor pain to test for this phenomenon (and in one case, ischemic pain). The pain stimulus in the present study was a Take-Me-Along electrical stimulator, powered by three 1.5 volt batteries, and manufactured by the Farrall Company. It was designed for patients undergoing behavior modification who are required to shock themselves in the absence of their therapist. The reason for this divergence from cold pressor and ischemic pain was to inflict the minimal amount of pain

possible, while still providing an adequate degree of pain to test for the "hidden observer" effect. (b) Hilgard typically places his hand on the subject's shoulder throughout the duration of this "hidden observer" item. By contrast, in the present study, the experimenter's hand was placed briefly on the subject's shoulder at the beginning of the "hidden observer" item, and again, briefly, at the end of this item to terminate it. The main reason for this divergence was to reduce the possibility that keeping the hand on the subject's shoulder throughout this item might act as a strong cue for compliance to the item. (c) Hilgard (Note 12) suggests that subjects will be amnesic for the "hidden observer" experience until posthypnotic amnesia is removed; this was not done in the present study. This divergence was primarily in the interests of hetero-method replication (Sheehan & Perry, 1976). (d) Hilgard (Note 12) tells the subject that there is another part of them that knows what is really going on; in the present instructions, subjects were given an opportunity to deny the "hidden observer" instruction by their being told that there could be another part of them, and if there was one, it could report what it felt upon receiving an electric shock. Again, the main reason for this variation of procedure was to minimize possibility of compliance effects..

Experiential Analysis Technique (EAT): The experiential Analysis Technique (EAT) was introduced recently to hypnosis

research by Sheehan et al. (1978). It is an adaptation of Kagan's (1975) Interpersonal Process Recall (IPR) method, which was developed for use in the counselling setting. Initially, Kagan (1975) utilized the method as a means by which therapists could view and react to immediately preceding contact with their clients. There are variations in the technique in the counselling setting (e.g., Kagan & Schauble, 1969; Van Noord & Kagan, 1976). In essence, however, IPR uses videotaped playback of the counselling situation to stimulate recall of the underlying dynamics involved in the interaction of therapist and client. Sheehan et al. (1978) proposed that similar procedures, adapted to the hypnotic setting, would produce comparable subjective, dynamic material.

In their initial study, 10 highly susceptible subjects underwent a hypnotic induction which was videotaped. The experimenter then left the experimental room, and a second experimenter proceeded to rerun the videotape of the hypnotic session. The subject was given the instructions that during hypnosis, they probably thought many things they either did not or were not able to say at the time, that the mind generally works faster than the voice anyway, and that there were probably occasions when they did not have time to say all of these things or else had only vague impressions and reactions which were not verbalized during hypnosis. The inquirer told subjects that as they viewed the record of

their hypnotic session these types of thoughts and feelings would probably return. They were told that whenever they recalled something about their experiences during hypnosis, they were to switch off the video and describe their experience. These verbal reports were recorded on cassette tapes.

The technique appeared particularly appropriate to the aims of the present study, since its primary focus was on individual differences in response to difficult hypnotic items among highly susceptible individuals. Initial work with the EAT indicated certain difficulties with the EAT that had not been identified in Sheehan et al.'s (1978) seminal paper. These were found at both the conceptual and operational level, and have been summarized elsewhere (Laurence, 1979).

Accordingly, the present study modified the EAT procedure in order to better serve the purposes of the investigation. In particular, several major procedural changes were made, which depart from those described by Sheehan et al. (1978). They were:

The interviewer controlled the video. Subjects were asked to tell the experimenter when to switch off the video and to describe their experience, which was recorded on audio cassette. Any time a subject failed to comment on a part of the induction procedure deemed relevant by the inquirer, the video was stopped by him and the subject questioned. The points in the induction procedure where this

was done were standardized, and were as follows:

- (a) During regression to age five, where subjects were always asked if they really felt they were five years old;
- (b) They were asked to comment on their experience when asked to write "I am participating in a psychological experiment" during age regression;
- (c) They were asked to comment on how they felt when asked for the name of the Prime Minister of Canada, during age regression;
- (d) They were asked to describe their experience during the delusion of a missing number item when the number 5 faded;
- (e) During the delusion of the missing number item, they were asked to describe their experience when they were presented with three arithmetic additions, two of which involved the number 5 in the solution;
- (f) They were asked to describe what happened when the number 5 was restored;
- (g) They were asked to describe their experience when the right hand was made analgesic;
- (h) They were asked to describe their experience when given the suggestion of the hidden observer.

In this way it was possible to obtain standardized interview data at each of these designated points during the induction. The EAT protocols were subsequently transcribed, and were used to evaluate the subjective accompaniments of the subjects' responses during the hypnotic session.

Second Experimental Session. Subjects who agreed participated in a second experimental session. Upon arrival they were asked if they agreed to have the session videotaped. Before undergoing the hypnotic induction, they were introduced to the concept of dichotic listening. It was ascertained that they had not had any previous experience with the technique. The dichotic listening task was described to the subjects as a difficult and demanding task, requiring sustained attention. They were asked to relax and prepare themselves mentally. When they reported being ready, the prehypnotic dichotic listening task was started. The dichotic listening tape was of four minutes duration. The prehypnotic test was used as a baseline for their performance on a similar dichotic listening task during the hypnotic session. After hearing the tape, subjects were asked to fill out a free recall form followed by a multiple-choice questionnaire on the story they had just heard. Each question on the questionnaire was followed by a 10 centimeter line that the subject was required to checkmark. The line represented the confidence the subject had in the correctness of their answers and ranged from "not at all certain" to "absolutely certain." The same procedures were repeated during the hypnotic session. The free recall form and the certainty lines were two modifications from the initial Laurence (1980) study; only the subjects in Group 1 followed this procedure.

The subjects were then administered a seven-item

induction which was comprised of the following items: compulsive/responsivity item (Sheehan, 1971), creation of memory, part one (adapted from Orne, 1979), dichotic listening task (especially constructed for the experiment), source amnesia (Evans and Thorn, 1966), rapid reinduction of hypnosis (Weitzenhoffer, 1957), posthypnotic amnesia (Weitzenhoffer and Hilgard, 1962), and posthypnotic suggestion (Weitzenhoffer and Hilgard, 1959). A complete transcript of the induction, as well as the questionnaires used for the dichotic listening task can be found in Appendix C. The only available transcript of Orne's creation of memory item is in Barnes (Note 3); it is reproduced verbatim in Appendix D. Immediately following the hypnotic session, a short post-experimental inquiry was conducted and tape-recorded to test the amnesia item, the source amnesia item and the post-hypnotic suggestion item. Subjects were then asked if they would agree to come back for a third experimental session and were scheduled for the following week.

The incorporation of the first part of the creation of memory item represents a third modification of the earlier Laurence (1980) second experimental session. In this study, the subjects in Group 2 had undergone a hypnotic dream instead of the creation of memory item. This modification was necessary in order to provide a one-week interval between the suggestion of a memory and the testing of the response to this suggestion.

A Note on the Creation of Memory Item. Comparison of Orne's suggested memory instructions (Barnes, Note 3; see Appendix D for a verbatim transcript) with the instructions used in the present study (see Appendix C) reveals a number of differences in the way the item was administered. These were:

(a) Orne's demonstration takes place over a period of two days. On the first meeting with the subject, he administers the suggestion of the memory. Two days later, he tests the response to it in an unstructured interview. In the present study the interval between the suggestion of the memory and its testing was extended to a seven day period in order to maintain the usual schedule of testing sessions to which the subjects were accustomed. It was decided also to test one group of subjects immediately following the hypnotic session, as part of the usual EAT interview. Thus for one group of subjects (Group 1) the item extended over two testing sessions (Sessions II and III) whereas for the second group of subjects (Group 2) the item was administered and tested during session III.

(b) Orne suggests to the subjects that they will hear two loud noises that may sound like shots; in the present study, it was suggested to the subjects that they would hear some loud noises and that they would sound like backfirings of a car, or some doorslammings. It was thought that gunshots were not particularly typical of a Montreal night suburban or downtown happening as it could be in downtown Philadelphia where Orne's laboratory is

situated. (c) Finally, Orne places a strong emphasis on having the subject describe what actually happened, what time it was, and how they checked for the exact time. In the present study, a less directive way of testing subjects was used. If for example a subject did not know what time it was, no pressure was placed on him or her to answer the question. Apart from these modifications the creation of memory item of the present study was modeled closely on Orne's item. It can be described in the following way. The item comprises six different aspects: (a) The subjects are asked to choose an evening and night of the preceding week and told that they are going to go back to that specific night. It is ascertained at what time they went to bed, at what time they woke up the next morning, if they woke up during the night or if they remember dreaming during the night. (b) Using a regression technique emphasizing that the mind works like a tape-recorder } subjects are taken back to the night they have chosen and asked to describe in great detail what they did during the half-hour prior to them going to bed. (c) Subjects are then taken through the night by suggesting a rapid progression of time. At one point subjects are asked to report if they heard some loud noises; if they did not report hearing the noises, the suggestion was repeated. If after a second suggestion, they still reported not hearing any noise, the experimenter proceeded to the end of the item. If they reported hearing noises, they were

asked to describe them, to say what they were doing, what time it was and whether or not the noises awakened them. It was then suggested that it was the next morning, and they were asked to describe what they were doing on awakening.

(d) Regardless of whether or not they reported noises, the item was terminated in the same way. The experimenter told the subjects that the memory system was akin to a tape-recorder and that they would remember exactly all that had happened that night following termination of the hypnosis session. (e) Following the session the experimenter said nothing about the noises. If a subject mentioned the item, the experimenter did not probe for any details, and merely acknowledged what the subject said. (f) Finally during the EAT interview of Session III, subjects were asked to review what they had done on Testing Session II or III depending on their group membership. When the creation of memory item was mentioned by the subjects, the interviewer asked for a description of the night chosen. If the subject did not spontaneously report hearing some noises, the interviewer asked the subjects about them; once a report of noises was given, the interviewer probed to determine whether or not the subjects believed them to have happened during hypnosis or during that specific night to which they had been regressed. The item was scored positively if the subjects reported that the noises actually happened the night they went back to or if they displayed confusion about the origins of the noises. The item was scored negatively if the subjects

did not report hearing noises or identified the origin of the noises as a suggestion administered during Session II.

Experimental Session Three. Subjects underwent a third session. Upon arrival, they were asked if they would agree to have the session videotaped. Before the hypnotic induction subjects were asked to undergo the Stroop Color and Word Test (Golden, 1978) in its standardized form (Golden, 1975). Following this test, the subjects were administered a six-item induction comprised of: induction by rapid reinduction (Weitzenhoffer, 1957), hand and arm levitation (Weitzenhoffer & Hilgard, 1967), hypnotic dream (Weitzenhoffer & Hilgard, 1962), double hallucination (Weitzenhoffer & Hilgard, 1967), pseudo-analgesia item (Arons, 1967), posthypnotic amnesia (Weitzenhoffer & Hilgard, 1962). For subjects in Group 2, the memory creation item was inserted between the hypnotic dream and the double hallucination. The item was administered as described in the previous section. A complete transcript of the induction can be found in Appendix E. Following the hypnotic session, a short postexperimental inquiry was conducted in order to test for the amnesia suggestion. Subjects were then introduced to the second experimenter who interviewed them using the EAT technique. The purpose of this interview was to test the creation of memory item performed during Session II for subject in Group 1 and Session III for subjects in Group 2. Before starting the videotape of the third session, the interviewer asked

the subjects to describe their previous session and always started by asking them to compare their performance on the Stroop Test and the dichotic listening task. When the subjects described the regression to the previous week and mentioned that they remembered hearing noises, the interviewer probed for details. If they did not mention hearing noises, the interviewer proceeded to take them through the six stages of the item described earlier, asking them each time to describe the phases. If the subject then reported hearing the noises, he or she was probed for details. If a subject did not recall hearing noises, the EAT proceeded in the usual fashion.

When noises were mentioned, the interviewer asked the subjects to describe them once again. The subjects were then asked how certain they were that the noises actually happened the night they were regressed to as opposed to them being suggested during the hypnotic session. Subjects were then asked if their report could have been, in any way, suggested by the hypnotist during the session. Finally they were confronted to their own contradictory statement and asked to explain why on the first occasion (Part A of the item) they had not reported hearing noises during the night as they were now doing.

Following the assessment of the creation of memory item, the interviewer proceeded with the EAT. Subjects were questioned on their responses to the items in Session III as they

were watching the videotape. Each item was played back in order to obtain the experiential report of the subject for the different suggested behaviors. Once the EAT was terminated the subjects were debriefed and the confabulation item was explained. When necessary, the videotape of Session II was shown to the subjects in order to demonstrate how the report of hearing noises had been suggested to them by the hypnotist. Subjects were then thanked for their participation in the study and asked if they agreed to have their name placed on the Subjects' Pool List of the hypnosis laboratory.

A complete description of the 20 items used over the three experimental sessions as well as the rationale for using them can be found in Appendix F.

Results

The results supported the main hypotheses of the study. For approximately 50% of the subjects, the suggested memory was reported as having actually occurred; the remaining 50% of the subjects did not incorporate the suggested event into their memories as an actually occurring event. This differential pattern of responses was found to be linked to the phenomena of duality during age regression and the hidden observer effect; most of the subjects who reported the suggested memory as real reported experiencing duality during the age regression item, and the hidden observer effect of Session I.

The hypothesis that subjects would show an increased degree of confidence about the correctness of their answers to the dichotic listening task questionnaires when performed during hypnosis was supported. Although their performance did not differ significantly on the dichotic listening task before and after hypnosis, all subjects demonstrated an increased level of confidence in the correctness of their answers during hypnosis.

Creation of Memory Item

Of the 27 highly hypnotizable subjects tested on the creation of memory item 13 (48.15%) showed evidence of believing the suggested memory to be a veridical one; the remaining 14 subjects (51.85%) did not accept the suggested

memory as real. The subjects responses were evaluated and scored by two independent raters who agreed on 92.60% of the cases.¹ Subjects in Group 1 and Group 2 did not differ in their responses to the creation of memory item; when tested at a one week interval, 9 of the 17 subjects in Group 1 showed the effect. When tested immediately following the hypnosis session, 4 out of the 10 subjects in Group 2 demonstrated the effect [$\chi^2(1) = 0.06; p > .05$]. There were no significant differences in terms of sex: 7 out of 16 females gave a positive answer as compared to 6 of the 11 males participating in the study [$\chi^2(1) = 0.02; p > .05$].

Although the response to the item was scored as either positive or negative, two types of answers could be identified within each category. Of the 14 subjects not demonstrating the effect, 4 reported hearing noises during the hypnosis session but correctly identified their origin subsequently. The remaining 10 subjects denied hearing noises during the first phase of the item. The following excerpts from the posthypnotic interview best illustrate the differences between these two variations in the answers of subjects who did not accept the suggested memory as real. Subject 26 reported not hearing noises during the regression to the night he had chosen. When questioned posthypnotically:

I: What about when you went back to a night last week? What do you remember of that night?

H: He (the hypnotist) asked for sounds. I didn't hear a

thing.

I: Nothing?

S: No.

Subject 06 also illustrates the same type of response.

I: What do you remember of that night?

S: I remember not feeling good, being unhappy. I went to bed early. That's all I remember.

I: Do you remember going back through the night?

S: Yes, I don't remember waking up or dreaming.

I: Do you remember any noises that could have woken you up?

S: No, I don't remember. I remember the hypnotist asking me, but I didn't hear anything.

The next three subjects reported hearing noises during the hypnosis session but finally identified the correct origin of the noises, when questioned about them.

Subject 07 had reported hearing a big "bang" like a door slamming.

I: What about going back to a previous night?

S: Oh yes... he (the hypnotist) told me I would hear a sound.

I: What happened there?

S: I heard a big bang.

I: Is it something he (the hypnotist) suggested or something that actually happened that night?

S: It's something he suggested. I actually did not wake up when I was asleep.

Subject 23 reported hearing traffic noises during the night.

I: Do you remember going back to a previous night?

S: He said something... Time passed... I was thinking of a particular evening. I played hockey. I didn't get to sleep till very late. Thinking about relationship with men, women... It was a rough week last week. I listened to a talk-show, Steve Martin... I remember telling J-R (the hypnotist) about traffic.

I: What was that?

S: I can't tell you I remember specifically that Thursday morning there was traffic. I don't remember. The feeling, in the back, somewhere about traffic.

I: Do you think it's something J-R suggested to you?

S: He said something about it. What was it? Backfiring...

I: Yes?

S: I didn't hear any backfiring or door closed...

I: So you think it was something he suggested?

S: Yes, I think it must have generalized from backfiring to traffic, you know, city traffic.

Subject 24 had reported hearing a door slamming.

I: Did you wake up during the night?

S: I woke up twice... The first time I went to the bathroom. I woke up at about 8:00 o'clock, anxious. I heard a door slam.

I: What was it?

S: No idea... I didn't know what it was doing there. He (the

hypnotist) talked to me about a door or a car... and I heard "clang" ... a door, but it didn't relate to anything. I didn't care about it.

I: Is it something you heard during the session or during the night you went back to?

S: No, during the session. He told me about it. It's something I heard during the session.

The reports of the subjects who incorporated the suggested memory differed dramatically from the previous ones. Of the 13 subjects who answered positively to the item, 6 were absolutely certain that they had actually heard the noises during the particular night they had gone back to, while the remaining 7 were confused by the memory. Prior to the regression, all subjects had reported not waking up during the night. All had emphasized that they were certain they had not woken up or dreamed during that particular night. The following two reports illustrate the confusion of some subjects when questioned posthypnotically about the origins of their memories.

Subject 18 reported hearing a "startling" noise during the night she was regressed to:

I: What do you remember of that night?

S: I heard something... a startling noise... something during my sleep... it disturbed me...

I: How did it disturb you?

S: Well, I was thinking, our new apartment in Toronto is

right beside a multilevel highway. So it could have been a backfiring, or a car, something like that.

I: So it happened while you were asleep?

S: Yes, I guess so.

I: and it disturbed you?

S: Yes, I remember being startled.

I: Did it wake you up?

S: No... it's like a jerk... you don't come completely awake ... so I went back to sleep...

I: About what time was that, do you know?

S: In the middle of the night. I'm not sure... 3-4 o'clock.

I: You didn't look at a watch?

S: No, no.

I: How sure are you that it actually happened rather than something the hypnotist suggested to you?

S: I'm pretty sure it happened because I can remember being startled. It's... It's the physical thing I remember... I'm making an assumption that it was a noise but I was conscious of the different cars. It must have been something like that. I can remember the startle.

Subject 21 reported hearing background noises from the street during hypnosis. She also reported getting up to start the air conditioner in order to mask the noises. Before the regression she had reported not waking up, having slept very soundly on that specific night.

I: And then you went back to a night of last week?

S: Yes, I woke up to start the air conditioner. I was

hearing noises from the street, people talking.

I: You said you woke up to start the air conditioner?

S: Yes.

I: Is it something that actually happened or could it have been suggested to you?

S: I don't think he (the hypnotist) suggested it to me. It's something that I do often. I don't think he suggested that to me... It's hard to say. I wouldn't be surprised if it happened like that. It's my normal reaction to noises. I can't tell you I did that Saturday night, but it's a usual reaction if I heard noises.

I: But you said you did it?

S: Well, it wouldn't surprise me if I did it. But I can not be sure, sure, sure.

I: How come you did not mention that before the regression and then change your report?

S: (S laughs) Well, what can I say. I don't see anything inconsistent. I slept well... that doesn't mean I didn't wake up to start the air conditioner.

I: If I ask you which report is the real one? Did you or didn't you wake up on Saturday night?

S: (Pause) If I heard noises, yes I woke up. But I don't remember waking up with absolute certainty.

I: Could it have been something the hypnotist suggested?

S: Oh yes! He talked about noises. But I also did hear noises. I'm confused... I'm not sure. Yes he told me about

noises but not to get up and open the air conditioner...

The subject then looked at the videotape, and commented:

S: See, he told me there was loud noises. But he did not tell me to wake up and get up.

I: Now if you think about Saturday night, did it really happen like that?

S: It's so near reality. It wouldn't surprise me. I have the feeling that it happened that way. But I can't be 100% sure. I have the feeling that yes it happened that way.

The following three reports exemplify these subjects who reported with certainty hearing noises during the specific night they were regressed to.

Subject 09 mentioned when suggested to report hearing noises that a bunch of people talking under her window had disturbed her that night.

I: You described noises during the night. Do you remember that?

S: Oh yeah! There was a bunch of people talking under my window. I remember they were talking another language and it wasn't even French. It wasn't French, that's right.

I: Did they wake you up?

S: I'm not sure I was wide awake.

I: Would you say these noises actually happened that night or they happened in hypnosis...

S: Or both?

I: Can you explain that?

S: Well I can hear noises now; I remember the tone...

I: Would you say that it happened that specific night or that it was suggested during hypnosis?

S: Oh they happened... Oh, wow! I don't know... I think it's ... I think it's... Did you give me a suggestion to hear them again?

I: Why do you ask that?

S: I don't know. I know they happened that night. Whatever happened in hypnosis I could not have actually heard these noises again... I mean... I can hear them in my mind... I had to have been remembering them... They weren't happening here... They happened the night before.

After having seen the videotape of the session, she was still convinced that she had heard the reported noises on that night.

S: I feel foolish... I know it can happen in everyday life but not to that extent. I'm still quite sure I heard those people talking.

Subject 10 had reported hearing a cuckoo clock and an ambulance on the night she was regressed to.

I: Then you went through the night till the next morning. Do you remember that?

S: Yes... the cuckoo clock...

I: What cuckoo clock?

S: Cuckoo clock around 1:30 and than an ambulance or...

I: These were noises you heard that night...

S: Yeah! Yeah! I don't know if it was a police car. They

have a different tone. I think it was a police car.

I: So these are noises you heard during the night?

S: Yeah! Well I think I heard the cuckoo clock and woke up after and went: "Oh, that was the cuckoo clock" you know.

It's not... I don't know, I guess it's the sound that woke me up.

I: Do you think it happened or it was suggested to you?

S: Oh, no. I heard them. Definitely.

I: Quite sure of that?

S: Yes.

I: When you described the night the first time around, you said you hadn't woken up or heard noises. During the regression, the hypnotist suggested to you that you would hear noises and asked if you heard them and then you talked about these noises. How do you explain that? Does it surprise you?

S: Yes a little bit.

I: How certain are you that you actually heard these noises?

S: I'm pretty certain I heard them. As a matter of fact, I'm pretty damned certain. I'm positive I heard these noises.

The next subject, subject 13, reported hearing his neighbor coming in in the middle of the night:

S: He (the hypnotist) took me back to a night last week. I described going to bed and waking up to go to work.

I: Did you wake up during the night?

S: No, but I did listen to my next door neighbor who came in.

I: What happened there?

S: Oh, he came in, opened his closet and closed it. He has a squeaky closet and he went to the bathroom and flushed it.

I: Do you know what time it was?

S: Around two o'clock. But I didn't look at the clock. Usually I don't remember anything, not even dreams. The next thing I know, I'm awake again.

I: But you remember this one?

S: Yeah! I remember this one and he (the hypnotist) told me I would remember it. So...

When compared to Orne's (Note 3; Appendix D) demonstration of a suggested memory, these reports are strikingly similar even if in the present study the memory creation item was conducted in a less directive way. When the subjects who gave evidence of believing a suggested memory to be real were compared in terms of hypnotizability to those who did not, no significant difference emerged [$t(25) = 0.63$, $p > .05$].

Creation of Memory and Indices of Dual Cognitive Processing

Following Laurence and Perry (1981) and Nogrady et al. (in press), all subjects were rated in terms of duality report during age regression and their responses to the hidden observer instructions during hypnotic analgesia as part of the experimental protocol. The relationship between the two items is exemplified in Table 1. Following previous

reports (Laurence & Perry, 1981; Nogrady et al., in press) a significant relationship was found between the two types of responses. Subjects who report a hidden observer effect also report duality during an age regression item. It is not all subjects who experience duality, however, who also report the hidden observer effect.²

Insert Table 1 about here

Significant relationships were found between responses to the creation of memory item and responses to both duality in age regression and the hidden observer effect.

Of the 13 subjects who scored positively on the creation of memory item, 10 (77%) also reported duality during age regression. Of the 14 subjects who did not accept the suggested memory, 12 (85%) did not give evidence of duality during age regression [$\chi^2(1) = 8.34, p < .01$]. Table 2 presents these results.

Insert Table 2 about here

Table 3 presents the relationship between the creation of memory item and the hidden observer effect. It can be seen that the presence of a positive response to the created memory item can be observed in 87.5% (7 out of 8 subjects) of the subjects who reported a hidden observer effect as opposed to only 31.6% in those who did not [$\chi^2(1) = 4.99,$

Table 1

Relationship between duality in age regression
and the hidden observer effect.^a

		Duality	
		+	-
Hidden Observer	+	8	0
	-	4	15

a. $\chi^2(1) = 11.19, p < .01$

Table 2

Relationship between the creation of memory item
and duality during age regression.^b

		Duality	
		+	-
Creation of Memory	+	10	3
	-	2	12

b. $\chi^2(1) = 8.34, p < .01.$

p < .05].

Insert Table 3 about here

Other Relationships with the Creation of Memory Item

No other item used in the three experimental sessions was found to be related to the creation of memory item. One aspect however of the dichotic listening task was found to be related to the presence of a positive creation of memory response. Following the dichotic listening task, subjects (Group 1 only) were asked to write down everything they could remember about the story they had just heard, including those details they were unsure of. As part of the scoring procedures the number of relevant bits of information were counted as well as any intrusions in the recall of the story. An intrusion was defined as a bit of information that was not pertinent to the story. Examples of intrusions were wrong names for the characters in the story, wrong dates, events that were not part of the story or different events of the story that were linked by the subject when they were not in fact originally linked. If in the free recall form the subject had indicated that a bit of information could be wrong by, for example, placing a question mark beside it, it was not counted as an intrusion since the subject was aware of guessing and indicated it.

An overall significant relationship was found between

Table 3

Relationship between the creation of memory item
and the hidden observer effect.^c

		Hidden Observer	
		+	-
Creation of Memory	+	7	6
	-	1	13

c. $\chi^2(1) = 4.99, p < .05$

the presence of intrusions in the free recall forms and the presence of a positive suggested memory response. Subjects who gave evidence of believing a suggested memory all had intrusions in their free recall forms. By comparison, five of the eight subjects who did not report that suggested memory as real did not have any intrusions in their recall forms. Table 4 summarizes these results.

Insert Table 4 about here

The same significant difference was found when the pre-hypnosis session of dichotic listening was compared to the hypnosis session. Whether it be in or out of hypnosis, subjects who accepted a suggested memory as real all had intrusions in their free recall forms. Tables 5 and 6 summarize these results.³

Insert Tables 5 and 6 about here

Confidence of Recall in Hypnosis

All subjects performed in a similar way on the dichotic listening task. Subjects who gave a positive creation of memory response did not differ from those who gave a negative response on any measure of the dichotic listening task. There were no significant differences in their shadowing performance [$F(1,14) = 0.18, p > .05$], no differences in the

Table 4

Relationship between the presence or absence of a creation of memory response and the presence or absence of intrusions in the free recall forms of the dichotic listening task.^d

		Creation of Memory	
		+	-
Intrusions	+	9	3
	-	0	5

d. Fishers' exact $p < .005$

Table 5

Relationship between the presence or absence of a creation of memory response and the presence or absence of intrusions in the free recall forms of the dichotic listening task during the pre-hypnosis session.^e

		Creation of Memory	
		+	-
Intrusions	+	9	2
	-	0	6

e. Fisher's exact $p < .01$

Table 6

Relationship between the presence or absence of a creation of memory response and the presence or absence of intrusions in the free recall forms of the dichotic listening task during the hypnosis session.^f

		Creation of Memory	
		+	-
Intrusions	+	9	2
	-	0	6

f. Fisher's exact $p < .01$

amounts of bits of information recalled when intrusions were taken into account, [$F(1,15) = 0.13, p > .05$] and no significant differences in their responses to the multiple-choice questionnaires either in or out of hypnosis [$F(1,15) = 2.20, p > .05$]. This absence of significant differences between these two groups of subjects is not surprising; Laurence (1980) had reported the same absence of significant differences when duality responses were used as the discriminating variable. Because of the strong relationship between duality and creation of memory responses this pattern of results should be expected.

However a significant difference was found when subjects were asked to rate the certainty of their responses to the multiple choice questionnaires out of hypnosis and the certainty of their responses in hypnosis. A 2x2x2 Split-plot Analysis of Variance was conducted on the certainty scores that the subjects indicated for each of their answers on the multiple-choice questionnaires following the dichotic listening task, in and out of hypnosis; there was one between-subject variable (creation of memory response: positive or negative) and two within subjects variables (pre- and post-induction/correct and incorrect answers). The only significant result was a main effect of the induction procedures. All subjects were significantly more confident in their answers, whether they were correct or incorrect, following the hypnosis induction [$F(1,15) = 33.41, p < 0.001$].³ For

the prehypnosis session, subjects had an overall mean confidence score of 27.70% (S.D. = 21.00) as compared to a mean confidence score of 57.40% (S.D. = 25.38) during hypnosis. So although their performance did not change, subjects showed an increased level of confidence about the correctness of their answers when they were performing under hypnosis.

Prediction of Group-Membership among High Hypnotizable Subjects

A discriminant analysis was performed in order to statistically discriminate within the group of highly hypnotizable subjects those who responded positively to the creation of memory item from those who responded negatively to the item. A step-wise method, maximizing Wilks' lambda, was used to identify the best linear set of discriminating variables once the duality and hidden observer items were discarded. Only variables that had a range of responses from 30 to 70% were kept for the analysis. The rationale for using the different items in the three experimental sessions as well as the subjects' raw data can be found in Appendices G and H respectively. Overall the discriminant function found was significant [$\chi^2(4) = 13.919, p = < .0076$]. Four variables were selected that best predicted group membership. Table 7 presents the four variables as well as their levels of significance. Table 8 presents the predicted cases when

these four variables were taken into account in predicting group-membership.

Insert Tables 7 and 8 about here

The discriminant analysis correctly predicted 88.89% of the cases; in the group that showed a positive creation of memory response, 92.30% of the subjects were correctly classified. In the group that showed a negative response to this item, 85.70% of the subjects were correctly classified. Because of the small number of subjects used for this analysis, these results should be interpreted cautiously; they may indicate however, the usefulness of devising a multiple index scale for evaluating subjects' cognitive styles.

Overall, the results of the present study indicate that high hypnotizable subjects can respond positively to the suggestion of incorporating within their memories an event that is suggested in hypnosis. Furthermore, the tendency to do so seems to reflect a particular style of cognitive processing best exemplified by those subjects who report duality during age regression or manifest the hidden observer item. However the tendency to believe that a suggested memory is real is not restricted to these subjects since 25% of the subjects who reported no duality, and 31.58% of the subjects who did not manifest a hidden observer response also responded positively to the suggested memory.

Table 7

Discriminant analysis summary table

Step	Variables Entered	Wilks Lambda	Signifi- cance
1	Analgesia, left hand	.879575	.0762
2	Source Amnesia	.787005	.0565
3	Three boxes Hallucination	.646604	.0167
4	Analgesia, right hand	.545969	.0077

Table 8

Predicted group membership as compared
to actual group membership for the
creation of memory response

<u>Actual Group</u>	<u>N</u>	<u>Predicted Group Membership</u>	
		+	-
Creation of Memory +	13	12	1
Creation of Memory -	14	2	12

The present study also supported and replicated previous results (e.g., Dywan Segalowitz & Bowers, Note 9; Orne, 1979) demonstrating how hypnosis can increase the confidence of subjects in their performance even if this performance did not show any sign of improvement.

Finally, the finding of a relationship between believing a suggested memory in hypnosis and intrusions in the free-recall form of the dichotic task outside of hypnosis lends credence to the argument presented by Nogrady et al. (in press) that dual processing in hypnosis as indexed by the duality reports can be extended to their everyday life cognitive functioning. The significance of the present results as well as their relevance to the experimental, clinical and forensic contexts are discussed in the following section.

Discussion

The aims of the present study were achieved in an unequivocal fashion. The data reported strongly suggest the possibility of altering or modifying a person's memory of an event within the context of hypnosis. They demonstrate also that hypnosis when presented as a technique to improve memory recall (using such analogies as a memory system akin to a tape recorder device), serves to falsely enhance the confidence of the subjects in the accuracy of their memories. Both aspects of these findings will be discussed in the present section, and their implications for the experimental, clinical and forensic situations will be explored.

Confabulation in the Experimental Context

Two different issues must be considered when the main results of the present study are examined. The first one is the level of hypnotizability demonstrated by the subjects who participated in the study. The second one is the relevance of the findings to the conceptualization of memory as a system displaying both reproductive and reconstructive processes, the interface of which can not be easily delineated.

High hypnotizable subjects have been the focus of attention in recent years in an attempt to isolate and better understand the notion of hypnotizability. Perry (1977a) pointed out that this group of subjects differed from the rest of the population in the heterogeneity of responses

they displayed when submitted to a number of hypnotic items of high item difficulty. This notion of heterogeneity of responses within this highly selective group has been noted by different authors (Laurence & Perry, 1981; McConkey & Sheehan, 1980, 1981; Nadon, 1982; Nogrady et al., in press; Wilson & Barber, 1982). In the present study, almost half of the high hypnotizable subjects displayed a positive response to the creation of memory item and half did not. This pattern of response however, can not be explained on the basis of subjects' susceptibility level. This differential pattern can also be found across a range of hypnotic phenomena. For instance, approximately half of high hypnotizable subjects display trance logic (Orne, 1959; Sheehan, Obstoj, & McConkey, 1976), counter preconceptions about hypnosis (Sheehan, 1980), show posthypnotic persistence of an uncanceled suggestion (Perry, 1977) and breach posthypnotic amnesia (McConkey & Sheehan, 1981). In all cases this 50% phenomenon has rarely been explored and factors underlying these various patterns of responses need to be investigated.

Recently, Laurence and Perry (1981) and Sheehan and McConkey (1982) suggested that this variability within the response patterns of high hypnotizables could be the reflection of differences within their modes of cognition; this was further evidenced by Nogrady et. al.'s (in press) results which demonstrated that a strong relationship existed between the hidden observer effect and duality in age regression that

can not be found in low hypnotizable simulating subjects and medium susceptible subjects. Again this strong relationship could be found in approximately 50% of the high hypnotizable subjects.

The finding of a relationship between the creation of memory item, duality, and the hidden observer item adds further support to the notion of a variety of cognitive modes underlying the responses of the high hypnotizable subjects. This finding however is counterexpectational; subjects who report multiple levels of awareness as indexed by the hidden observer effect and duality in age regression have been considered so far as being more aware of reality, more matter-of-fact, more capable to differentiate what goes on in reality as opposed to what goes on as a result of a suggested hypnotic event (Hilgard, 1979; Laurence & Perry, 1981; No-grady et al., in press). In the present study, these subjects were the ones who gave evidence of believing a suggested memory as being veridical where in fact there was no memory before; rather than being able to differentiate what occurred in hypnosis from what actually happened in their lives one week earlier, they adapted the new event as part of their memories. The fact that certain subjects experience duality, report a hidden observer effect and incorporate a suggested memory may point to what Janet (1889/1973) described as the "plasticité" that many of his patients demonstrated once they were hypnotized. In contemporary terms,

these subjects may demonstrate a variety of cognitive modes or styles that they can employ in a relatively fluid fashion in a hypnotic situation, contrary to subjects who experience no duality during age regression, no hidden observer effect and deny any suggested event that did not actually happen. This cognitive fluidity may be conceptualized as the process underlying the experiences of multiple levels of awareness, in line with Hilgard's (1979) notion of neo-dissociation; it could represent a more flexible and adaptable way of meeting the situational as well as the interpersonal demands of the context in which the subjects are performing. Furthermore the relationship found between the presence of these hypnotic phenomena and the presence of intrusions in the free recall forms during the dichotic listening task outside of hypnosis parallels Nogrady et al.'s (in press) finding that these experiences are part of their everyday life. It also parallels Wilson and Barber's (1982) findings that most high hypnotizable subjects report that they tend to confuse their memories of their fantasies with their memories of actual events.

Many high hypnotizable subjects did not give evidence of incorporating the suggested memory and this response also needs careful examination. These subjects may be more deeply involved in their hypnotic experiences than those who display a memory creation effect. They are the subjects who report being totally engrossed in age regression to the point

of denying their adult identity and completely analgesic with no awareness of the actual sensations of pain. They may differ from the first group of subjects in their absorptive capacity and hypnotic involvement. They may demonstrate cognitive stability and/or rigidity rather than cognitive fluidity. Future research could usefully probe the correlates of these two general modes of cognition both in and out of the hypnotic context.

The second issue that needs to be addressed here briefly is the distinction between the reproductive and the reconstructive aspect of the memory system.

Memory or the memory system is usually conceptualized as being mostly reproductive. Most psychological experiments are constructed in such a way as to enhance this particular view of memory (Neisser, 1982) whereas memory in its natural context has been only sparsely examined. Memory experiments in hypnosis have also espoused the reproductive paradigm when studying phenomena like posthypnotic amnesia or hypermnesia (see Kihlstrom & Evans, 1979). Personal experiences support this notion of memory; every individual can recall a number of facts that happened exactly the way they are recalled or at least most individuals believe they can (Loftus & Loftus, 1980). In the present study, subjects did recall accurately part of what they had to remember from the dichotic listening task and this performance is in line with the reproductive capacity of the memory system; but they also interspersed in


their reproductive recall "fantasized bits that were not part of the original story. Furthermore, the fact that they integrated a new suggested memory within their stream of memories cannot be overlooked; they reconstructed a series of events in order to accommodate a "new memory" where in fact no memory existed. This type of behavior seems to indicate that not only can the memory system be reconstructive, it can serve also an adaptive function; when subjects reported the new memory, they adapted it to the demands of both the remembered situation and the present ongoing hypnotic one, in order to better minimize the inconsistencies of their recall when confronted by it. In fact when questioned more closely they continued to reconstruct the situation rather than dismissing the new information and recognize their "error of fact."

Recent results from memory experiments outside of the hypnosis setting seem to support the notion of the restructuring capacities of the memory system. Hertel (1982) has demonstrated how memory for facts and memory for reactions to facts can be susceptible to interference effects. Johnson and Raye (1981) have also showed how internally generated events can influence the perception of externally generated events. The results of these experiments point to the conceptualization of the memory system as an amalgam of reproductive and reconstructive characteristics that can not be easily separated.

The present results strongly indicate that memory should be investigated in its natural context, in its everyday life functioning. Rather than trying to isolate a system, research should address the role of memories in the present and future organization of the individual's behaviors (Neisser, 1982).

Confabulation in the Clinical Context

Nearly one hundred years ago, Pierre Janet in his book L'Automatisme Psychologique (1889/1973) reported using hypnosis to modify patients' perceptions about some traumatic event they had experienced. By using hypnosis not only was he able to have the patient reenact the traumatic memory but also alter their perceptions of the event. Once dehypnotized the patients' tendency to minimize and to adapt to events that were psychologically disturbing led them to a normal healthy way of living. Janet's discovery of traumatic memories underlying some hysterical neuroses led him to explore the ingenuity and adaptability that his patients demonstrated in accommodating to difficult life events. His whole notion of psychic economy and of dissociative reaction as a form of adaptation to some life crisis derived from these findings. Most of it however was lost when psychoanalysis invaded the psychological field (for a review of Freud and Janet's contributions to mental processing outside of awareness, see Perry & Laurence, Note 13).



This modification of memories through hypnosis was also well known to Breuer and Freud (1895). In fact it led Freud to some major theoretical changes in his theory of early childhood seduction. But not only was the suggested modification of memory through hypnosis effective; patients themselves modified their memories as they went along in life rendering the task of the psychotherapist especially difficult. Schachtel (1947) interpreted these spontaneous changes in memory content in terms of developmental and adaptative processes; the adult memory schemata do not correspond any longer to the early childhood ones so that each time a memory reappears it is modified to fit the ongoing life pattern of the individual.

The results of the present study support this line of thinking by showing that for at least half of the subjects in the present study, cognitive restructuring of their memories occurs under hypnosis. The new event was integrated and adapted to the personal history of the subject, without in any way disturbing the subject's assurance in the reliability and accuracy of his or her own memories. This cognitive restructuring lends further credence to what Janet (1889/1973) described as the adaptability of the human mind and its ability to process events in the most economic way.

What can become extremely useful in the clinical context over and above the hypnotizability of the individual seeking treatment, is the capacity to evaluate his or her

different and preferred modes of cognition. Standard hypnotizability scales have been found useful in the clinical setting when used as part of routine procedures in the evaluation of patients (Frankel, Apfel, Kelly, Benson, Quinn, Newmark, & Malmaud, 1979) and have added to our understanding of psychopathology. Frankel and Orne (1976) have shown for example that phobic patients were often more responsive to hypnosis, as well as more highly hypnotizable than a control group composed of smokers. Recent results replicated this finding and extended it using a more general population control (see John, Hollander & Perry, Note 14). What may be of particular interest here is not merely the fact that certain types of patients may be found to be more hypnotizable than a control group, but rather the exploration of the cognitive styles demonstrated by these patients. If such patients for example do not show any evidence of cognitive fluidity (as indexed by duality or confabulation) any hypnotic or non-hypnotic treatment aimed at modifying their cognitive styles may be doomed to failure. It could then become important in establishing individual strategies for treatment to know whether or not these individuals can manifest one or all of the previously mentioned phenomena.

What the present findings may also indicate is the importance of working with the individual's actual understanding of his or her memories. Being able to decipher how a patient has succeeded in adapting his or her past memories

to the present situation may lead to the establishment of successful therapeutic interventions, whether hypnosis is used or not.

Confabulation in the Forensic Context

The major aim of the present study was to substantiate the hypothesis that hypnosis can be used to alter an individual's memory of an event. The results supported the hypothesis in an unequivocal fashion. The present findings also supported the notion that hypnosis by itself serves to falsely enhance the subjects confidence in the accuracy of their own memories.

Orne's (1979) contentions that the memories of a victim or witness of a crime can be unsuspectingly modified through a routine hypnotic session are confirmed by the results of the present study. It further confirms that an unsure witness or victim can become extremely credible in court once he or she has undergone a hypnotic session. Orne (1979) provided a series of safeguards in order to minimize the dangers of altering a person's report of a crime when he or she is hypnotized in the process of the investigation. Unfortunately, there are no safeguards against confabulation (Barnes, Note 3; Orne, Note 8). There exists no way to differentiate what really happened when a person witnessed a crime from what he or she recalls of the original scene.

To complicate matters further the present results indicate that for a number of subjects the process of

confabulation occurs outside of hypnosis as well, as evidenced by the intrusions in subjects' free recall of the prehypnosis dichotic listening task. So that not only could confabulation be elicited through the hypnotic context, but it could also be reinforced by it. When a person is hypnotized as part of the investigative process, he or she has already undergone a series of interrogation sessions that may already have changed his or her views of what happened at the scene of the crime he or she witnessed.

In the present study response to the creation of memory item was found to be linked to duality and hidden observer effects. Most of the subjects who did not report duality did not give evidence of believing a suggested memory and did not produce any intrusions in the free recall forms during the dichotic listening item outside of hypnosis. That was not true however of all subjects. Some of these also gave positive responses to the creation of memory item and produced intrusions. It may suggest that although some high hypnotizable subjects are more prone to confuse fact with fantasy than others especially if they give evidence of multiple levels of awareness, it cannot be ruled out in any subjects. The subjects used in the study were all high hypnotizables. Future research will have to demonstrate if the same phenomena can be elicited in individuals who are less hypnotizable, whether it be in or out of hypnosis. Hypnotizability may be a crucial factor underlying the

confabulation tendency that the subjects in the present study demonstrated.

One last issue deserves to be addressed. The alteration of memory that was suggested to the subjects in the present study was relatively trivial. For most of the subjects the background scene (a night of the previous week) was emotionally neutral and the suggested memory (some loud noises) was also emotionally neutral. It could be suggested that in a case involving high emotional arousal confabulation would not be likely to happen. There is not at the present any experimental evidence supporting or rejecting this view. Future research again will have to tackle this problem. It may however be extremely difficult to examine in an experimental context. There exist examples in the legal literature where high emotional arousal led to both confabulation (State v. Hurd, 1980) or exact recall (People v. Woods et al., 1977).

~~The fact that hypnosis also serves to enhance the confidence of the subjects in the accuracy of their recall was clearly demonstrated by the present study. Here again the same caution must be exercised; the design was not counter-balanced and hypnosis was presented as a facilitating factor in carrying out a difficult task. The subjects merely went along with the expectations. However the procedures used in the present study were similar to those used in the investigative context; witnesses or victims of crime are first asked to recall out of hypnosis, and only then are they hypnotized.~~

Hypnosis is usually presented as a technique that improves recall; it is not surprising then that the subjects in the present study (as would any witness or victim of a crime submitted to the same procedures) felt much more confident in the accuracy of their recall. In the investigative context, no matter how hypnosis is presented the underlying assumption for its usage is to enhance recall.

Conclusion

The confirmation that within a group of highly hypnotizable individuals, hypnosis may be used to alter their memory content is simultaneously exciting and troubling. The findings shed new light on the processes that may underlie the notion of hypnotizability, and point to the importance of considering the cognitive patterns of the hypnotizable person. It brings together a little more closely the experimental and clinical settings by illustrating how an experimental finding could be translated in an applied setting to maximize the effectiveness of a therapeutic intervention. It confirms that hypnosis should be used carefully in the forensic context and that in order to become a useful investigative tool, more will have to be known about the circumstances under which the likelihood of confabulation is minimized.

At the same time however it also brings to the front the notion of the potential hypnotic manipulation of unsuspecting individuals. This issue becomes extremely relevant

when one considers the popularity of hypnosis among police forces. In light of the present results it becomes quite evident that the safeguards proposed by Orne (1979) should be enforced each time hypnosis is used. It becomes the only way to insure that however and whenever hypnosis is used the right to a fair cross-examination will be available.

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Footnotes

1. The following categories were devised to rate the responses to the suggested memory: (a) the subject gave a positive response to the suggestion of hearing noises during hypnosis; (b) the subject gave a negative response to the suggestion of hearing noises during hypnosis; (c) during the posthypnotic interview (EAT), the subject reported hearing noises during the night and was certain that they really happened during the night; (d) the subject reported hearing noises during the night and showed confusion as to their origins; (e) the subjects reported hearing noises but showed no confusion about their origins of having been suggested in hypnosis; (f) the subject reported not hearing noises and remembered the suggestion.

When the following criteria were applied, either of the combinations a,c and a,d were rated as a positive answer. The combinations a,e and b,f were rated as a negative answer to the suggestion. The raters, the hypnotist and the interviewer, made their judgments by listening both to the videotaped session and the audiotaped posthypnotic interview. The raters agreed on 25 out of 27 responses given or 92.6%. Disagreements were solved through discussion. The two disagreements concerned the certainty versus confusion aspect of the positive responses of these two subjects. Both were finally rated

as demonstrating confusion.

2. The same scoring procedures that were used in the Laurence and Perry (1981) and the Nogrady et al. (in press) studies were employed in the present investigation. The duality report as well as the hidden observer effect were evaluated from the subjective reports of the subjects during the EAT inquiry and their convergent behaviors during the hypnosis session. Eight of the subjects in Group 1 had participated in the Nogrady et al. (in press) study and had been evaluated in terms of their responses to these two items as part of that study. The 10 subjects in Group 2 had been evaluated as part of the Laurence and Perry (1981) study. The remaining 9 subjects who participated in the present study were evaluated independently by both the hypnotist and the interviewer. For the hidden observer response, there was complete agreement in 77.77% of the cases (7 out of 9 subjects). For the duality response, there were complete agreement in 66% of the cases (6 out of 9 subjects). The hypnotist was then given the opportunity to listen to the EAT interview and change his ratings if the EAT data provided additional information. With the hypnotist being able to consult all the relevant data, there was complete agreement in all cases for both items.
3. Only 17 of the 27 subjects were included in this analysis. The 10 subjects that were deleted were the subjects

in Group 2 who had undergone the dichotic listening item as part of the Laurence and Perry (1981) study and who had not been asked to indicate the certainty of their answers to the multiple-choice questionnaires, as well as not asked to complete a free recall form.

Appendix A

Informed Consent Form

Background Information for Participation in
Research Studies in the Hypnosis Laboratory,
Department of Psychology

Name: _____

Telephone: _____

The research carried out with volunteer subjects in the Hypnosis Laboratory of the Department of Psychology includes a number of continuing research projects. Our studies are concerned with understanding more about the nature of hypnosis and various hypnotic phenomena. The success of our research depends upon the assistance of volunteers like yourself and we are very grateful for your participation.

Please sign this form after reading the following section:

Today I am volunteering to participate in a research study which will involve the individual administration of a combination of standardized hypnotic test items (e.g., arm heaviness which will be tested by holding my arm out and seeing if it moves downwards; glove analgesia which will be tested by the application of a harmless electric stimulus to the back of the hand; a selective attention task that will be tested by using a dichotic listening test; hypnotic age regression where you will be asked to go back to earlier periods of your life, etc. ...); my participation will also involve discussing my experience of hypnosis and completing a number of research inventories that will ask me to comment on my overall perceptions and experiences of the study. I understand that I will receive a nominal payment of \$10.00 for my participation in today's session.

Signature: _____

Investigator: _____

Date: _____

Appendix B

Induction Procedures for Experimental Testing Session One

Relaxation

First of all, just get yourself comfortable in the chair... just move around until you find a comfortable position... notice that the back of the chair is adjustable... just get comfortable and relaxed...

optional: and unclasp your hands and let them just rest loosely on your lap, or on the arm of the chair.

optional: and uncross your legs and let them find a comfortable position on the footrest of the chair.

... and if at any time during the session you find that this position is uncomfortable you can simply adjust it to a more comfortable one without in any way disturbing the hypnosis.

I'd like you to look at your hands and find a spot on one of them... like a fingernail or a knuckle... and just focus your vision on it. It doesn't matter which spot you choose... just select some spot to focus upon. I shall refer to the spot as the target. In the meantime, I'm going to give you some simple instructions that will help you to experience hypnosis. You'll find the instructions easy to follow and that you'll be able to experience the things I describe to you.

Indeed you will probably find that you'll be able to experience these things with greater vividness... with greater intensity... than you did in earlier sessions...

As you stare at the target you have chosen, you may find that occasionally your gaze may wander or that your vision may even blur... If this happens, simply refocus your eyes and continue staring evenly at the target...

Now take a deep breath in and hold it... hold it until it starts to feel a little uncomfortable... and then... when it starts to feel uncomfortable... just let it out very slowly... You find that you start to experience a comfortable feeling... a feeling of well being begins to develop as you continue to rest in the chair... looking at the target... listening to my voice... Now take another deep breath in and hold it... notice the feeling of tightness and tension in your abdomen... and then... as it starts to feel uncomfortable... just as you did before... let it out very slowly... notice that breathing out ... with letting the tension out of your lungs... makes you become even more aware of a feeling of comfort and well being settling over you... Just sink deeper into the chair... and focus your attention closely on feelings of warmth and relaxation in various parts of your body... in your head and in your neck... in your arms and in your legs... in your chest and in your back... and just breathe freely and evenly and deeply... freely... evenly... and deeply... not too quickly... and not too slowly... just at a comfortable rate for you to notice that the relaxation increases gradually as you breathe out... You may even be aware of the walls of your chest growing looser ... just rest there for a moment experiencing the sensations

... Continue relaxing your chest so that feelings of warmth and comfort irradiate to your back... your shoulders... and your neck... and your arms... and your legs...

You're probably starting to notice some changes in the target... changes that occur from staring at it for so long... sometimes the target may look as though it's moving up and down or from left to right... at times it may appear very distinct and clear... at other times it may appear fuzzy and blurred... and it may change color... you may see one of these things or even all of these things... whatever you see just continue staring at the target... continue listening to my voice... continue to become more deeply relaxed... more deeply relaxed...

And as you watch the target your eyelids become heavier... your eyes become tired from staring... your eyelids start to feel very tired and heavy... as you sit there breathing freely and evenly... and deeply... breathing in... breathing out... freely and evenly and deeply... Your eyelids are becoming so heavy... so tired... that soon they will just close of their own accord... as if they were coated with a lead paste... as if there were magnetic fields in the eyelashes... drawing your eyelashes together...

Concentrate now... even more carefully... on feelings of relaxation and comfort in various parts of your body...

First of all think of relaxation in the muscles of your left arm... the left hand... the fingers of the left hand... the

left forearm... the left upperarm... the left shoulder...

And then relax the muscles of the right forearm... the right upperarm... the right shoulder...

Think of relaxation in each of these areas... and as you think of relaxation the muscles become progressively more relaxed... and then relax the muscles of your neck... your chest and... your back... relax each of these muscle groups... the neck... the chest... and the back...

And as you relax these muscles... your facial muscles will also relax and loosen of their own accord... Then relax the stomach muscles by doing this... Tighten your stomach muscles... make your abdomen hard... and then when you're ready... let the tension out... Notice the feeling of well-being that comes with relaxing your stomach muscles... like a gentle massaging action all over your stomach and even perhaps... up to your chest...

And then relax the muscles of your legs... the right leg... the right foot... try to feel it in the toes of the right foot ... and then in the right calf... and then the right thigh... then the left leg... the left foot... the toes of the left foot... the left calf... the left thigh...

Just thinking about relaxation in each of these areas causes the muscles to become more relaxed... and you may even find an interesting thing happens... that the feelings of relaxation you feel in each of these areas of the body start to spread and irradiate... so that they may seem to join up... like the parts of a jigsaw puzzle... and you feel a deep feeling of overall relaxation... of contentment... and of well-

being... permeating the whole of your body...

And your eyes will probably have closed now from concentrating carefully on the target... but if they haven't... just close them gently now of your own accord...

With your eyes closed... you're ready to experience hypnosis ... to experience it more profoundly... but you'll find that no matter how deeply relaxed you ever feel... no matter how deeply in hypnosis you ever feel... your mind is always clear ... you're always aware of my voice and what I'm saying to you... you're aware of what is happening to you... even though you are deeply relaxed... deeply in hypnosis...

You will remain deeply in hypnosis until I ask you if you would like to come out of hypnosis... You will experience many things ... you will experience many things just for as long as I ask you to experience them...

And you will be able to speak to me when I speak to you... to open your eyes... and to move around while remaining deeply hypnotized... whatever you experience or do... you will remain deeply hypnotized... deeply in hypnosis...

If necessary: You can now go even deeper in hypnosis... Say to yourself, just by thinking it, "Now I'm going deeper and deeper". Think it to yourself... and imagine yourself standing at the top of an escalator. Visualize the scene of the escalator ... of the steps moving down... and picture the moving hand rail... Count backwards slowly from 10 to 1, imagining as you count, that you are stepping onto the first step of the escalator and standing with your hand on the railing while the steps

move down... carrying you deeper and deeper... into hypnosis. You can plan it so that you reach one just as you reach the bottom and step off the escalator. And to indicate to me that you have reached 1, the index finger of your right hand will lift up slowly... and I'll know that you have reached one... more and more deeply relaxed as you start counting backwards...

Arm Rigidity

Now hold your left arm out at shoulder height... left arm out at shoulder height... and imagine that the left arm is becoming stiff... and straight... and rigid... stiff and rigid like a ramrod... like a bar of steel... stiff and stiffer and more straight and more rigid... so that it's becoming progressively more difficult to bend... that's how stiff and rigid it's becoming... it's becoming like a ramrod... like a bar of steel ... Test how stiff and straight and rigid it's become... try to bend it... try very hard...

Pause for 10 seconds

That's fine... don't try any more to bend it... just relax that arm and return it to its original position... the arm is no longer stiff and rigid... all the normal sensations have returned to it... and there is no feeling of tiredness or fatigue from trying so hard to bend it when it was so stiff and rigid... Continue to relax... and to enjoy the pleasant feelings of being deeply hypnotized... deeply in hypnosis...

Age Regression

Now you're starting to drift away from the present... drifting back through time... as if you were on a magic carpet that is taking you back through the past... going back now to your very first day at University... and it all seems very vivid and real to you... It could be yesterday... or even today... or even now... It's all so very vivid... so very real... and to indicate that it's becoming very vivid and real to you just let the index finger of your right hand lift up... so that I will know that it's become very vivid and real to you.

PAUSE

You're going back even further now... further and further back... into the past... you're getting younger... younger and smaller... going right back now... right back through high school... right back to the beginning of high school... closer and closer to the beginning of high school... closer and closer as it becomes very vivid and real to you... right back to your very first day at high school... your very first day at high school... and just as you did before... to indicate its becoming vivid and real to you... just let the index finger rise once more.

PAUSE

That's fine... back further now... further and further into

the past... younger and younger... smaller and smaller...
 right back through primary school until you reach the age of
 five... younger and smaller... smaller and younger until...
 you're five years old... five years old... and when you've
 reached the age of five years old... just let the index finger
 lift up... so that I will know that you've reached the age of
 five years... a little girl (boy) of five years of age.

PAUSE

1. How old are you?
2. What is your name?
3. Where are you? What are you doing?
4. Are you going to school yet?

If no: What? You're five years old and your not going
 to school yet? Why is that?

5. Have you learned to write your name?

If no: Can you print?

If no: What? You're in school... and you don't know how
 to write your name? Why haven't you learned to
 write your name?

If yes: OK. I'm placing a pencil in your hand... and a
 pad on your lap... and just open your eyes slowly
 and gently... just enough to see the pad... with-
 out becoming any less hypnotized...

6. and write your name

7. and the date of your birthday
8. and what year this is...
9. and now write: I am participating in a psychological experiment.
10. There is one more thing I would like to ask you: Do you know who the Prime Minister of Canada is?

That's fine... the scene is fading... you're growing up again... all the way back up... through primary school... to the end of primary school... going into high school... all the way through high school... through to the last year of high school... right on now to the university... right up to this year at university... completely grown up now to this year 19__ at university.

How old are you?... Yes ____ years old at the university... pleasantly relaxed and calm and comfortable... enjoying the sensations of being in hypnosis...

Delusion of the Missing Number

As you continue to remain deeply relaxed... deeply in hypnosis... with your eyes closed... you begin to visualize a TV screen in front of you... it may take a moment but when you're able to see it clearly in your mind's eye... the index finger of your right hand will just lift up of its own accord so that I will know that you can see the TV screen in front of you clearly... even though your eyes are closed... Perhaps there is a program on the screen... do you see anything on the screen?

What can you see?

And now you can simply turn the knob to the next channel which is completely blank at first... you can turn the knob to the next channel which is completely blank at first... but then you can see something appearing on the screen... it is a string of numbers... a string of digits... a string of digits from 1 to 10... you start to see the digits 1-2-3-4-5-6-7-8-9-10... a string of digits from one to ten... bigger numbers are just combinations of these numbers that you start to see on the screen... bigger numbers like 11- 12- 13- 14- 15 and so on ... are just combinations of the digits you are beginning to see on the screen... and when you can see those digits clearly ... the index finger of your right hand will just lift up so that I will know that you can see the digits clearly... the digits 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 ---

That's fine... but now a very interesting thing is starting to happen... the number 5 is starting to look a little faint ... in fact the number 5 is starting to grow fainter and fainter... starting to fade right out... so that soon you won't be able to see it at all... soon you won't be able to see that number because it will have disappeared completely ... it will be invisible... and you won't be able to visualize that number... or to write it... or to say it... or to think about the number at all... Concentrate now as the number five starts to fade out... getting fainter and fainter... further and further away... weaker and weaker... fading right out... fading away altogether... until it has gone altogether... has

become completely invisible... and when it is completely invisible... the index finger of your right hand will just lift up so that I will know that you can no longer see it... no longer visualize it... no longer write it... no longer say it... no longer think it... (PAUSE)

That's fine... Now the digits are... 1-2-3-4-6-7-8-9-10... bigger numbers are just combinations of these... numbers like 11-12-13-14-16-17- are just combinations of these digits you see on the screen... The digits are just 1-2-3-4-6-7-8-9-10--- That's all the digits... And I want you to read out the digits you can see on the TV screen... That's fine... Now I'd like you to count in threes... from three to thirty...

That's good (if S blocks at 15 and cannot proceed, allow 10 sec. and supply 18).

Now I'm placing a pad on your lap... and a pencil in your writing hand... Are you right-handed?... And I want you to very slowly and very gently open your eyes... just open them slowly and gently... and look at the arithmetic additions on the pad... just open your eyes very slowly and gently in your own time and you'll find that you can do this without becoming any less deeply relaxed... any less deeply in hypnosis... just as I told you at the start and when you can see the pad clearly... I would like you to do the additions you can see on the pad...

PAUSE

That's fine... Now close your eyes again... and I'll take the

pad and pencil away from you...

Concentrate again on the numbers you can still see on the TV screen... concentrate on those digits... As you concentrate you'll find that the number five gradually comes back... it may be faint at first... but it grows stronger and clearer... clearer and stronger all the time... and as it becomes stronger and clearer all the time you may find that you can visualize five... you can think five... you can write five... you can say five... the digits now are just as they always were ... 1-2-3-4-5-6-7-8-9-10-- and bigger numbers are just as they always were... numbers like 11-12-13-14-15-16-17-- and so on... And I want you to say all those digits over again...

(PAUSE) That's fine. And to count in threes from 3 to 30.

(PAUSE) That's fine.

And now the TV screen is fading away... and with it the digits ... to be replaced by other things.

Glove Analgesia

This time I want you to imagine that someone is injecting a shot of Novocaine into your right hand... that someone is anesthetizing your right hand by injecting a shot of Novocaine into it... perhaps you feel the faint prick of the needle as it pierces the skin... And then... very soon you'll start to feel a slight tingling in the hand... a slight feeling of pins and needles as the Novocaine starts to take effect... making the hand feel different... making the skin tingle... making the muscles... and the fibres... and the tissues feel slightly

numb and dull... as if someone had applied a tourniquet at the wrist... so that it might feel as if... from the wrist downwards the circulation in the hand is being slowly cut off... And you feel this increasing sensation of dullness and numbness gradually spreading throughout the whole of the right hand... in the fingertips... in the joints of each finger... and of the thumb... in the knuckles... in the palm... throughout the whole of the right hand up to the wrist...

As that hand becomes more and more numb... more and more insensitive... more and more anesthetic... more and more insensitive... more and more anesthetic... more and more insensitive... more insensitive to touch... and to pressure... and to warmth... and to cold... and to pain... the hand is becoming devoid of all sensations... as if it was encased in a heavy bandage... or a gauntlet right up to the wrist... that's how numb and insensitive it's become...

So numb... so insensitive... that the hand feels that it no longer belongs to you... is no longer a part of you... no longer your hand... no longer your fingers... no longer your thumb... no longer your knuckles... no longer your palm... the hand is no longer a part of you... The hand is now so numb... so insensitive... so devoid of all sensations that in a little while I'm going to apply an electric shock... one that is completely harmless... but which ordinarily would be quite painful...

The hand is no longer your hand... the hand is no longer a part of you... it is numb and insensitive to pain...

I want you to report what you feel on a 1 to 10 scale where one is totally painless and ten is unbearably painful... when I apply this harmless... but ordinarily painful shock...

Apply Electric Shock

On a 1 to 10 scale... how would you rate it?

Did you feel anything at all?

Now to show you just how numb and insensitive your right hand is... I'm going to apply the same shock to the left hand now...

Apply Electric Shock

Tell me... using the same 1 to 10 scale... tell me how it felt?
(PAUSE)

Your hand will continue to feel numb... to feel anesthetic and insensitive to pain... while you listen very carefully to what I say next...

Hidden Observer

Often it is possible for people who are hypnotized to comment in some way on their experiences... what they are feeling at the time... the various sensations and experiences they feel while they are hypnotized... you are deeply hypnotized now... deeply in hypnosis and you can no longer feel your right hand... In fact... you may find that an interesting thing is going to happen... There are many things going on in our bodies of which we are unaware or only very slightly aware. There are bodily

processes like homeostasis which we are not aware of at all and functions like heartbeat... like breathing... like pulse rate that we have to concentrate on if we want to be aware of them... Just as there are things like these of which we are unaware going on in our bodies... under hypnosis there may be information processes of which the hypnotized part of you is not aware of... processes that you cannot feel... things that the hypnotized part of you... to which I am now talking... may not know... but maybe another part could feel or know these things... and if this part exists... it will be able to comment in some way on the experiences you are living right now... When in a little while... I place my hand on your shoulder... this other part will comment on these experiences... will tell what it is feeling at the time... and when I place my hand on your shoulder a second time, you will be right back where you are now... deeply hypnotized... now take a few moments to go deeper... (PAUSE) I'm placing my hand on your shoulder now ... and this other part of you will be able to talk with me... (PAUSE) I'm going to apply this electrical stimulus to your right hand again... and you will be able to comment on your experience to tell me what it felt like... on the same scale, from 1 to 10, how did it feel? That's fine... now... as I told you before... I'm placing my hand on your shoulder a second time... and things are as they were before... right back where they were before I touched your shoulder the first time... You are deeply relaxed... comfortable... enjoying all the sensations of being in hypnosis...

Dehypnotization and Amnesia

In a little while I'm going to ask you if you would like to come out of hypnosis... and if you would I will count slowly from one to ten... you will come out of the state you are in slowly and gradually until at seven your eyes will open gently but you will not be completely un hypnotized... and at ten you will be fully roused up... in your normal state of alertness ... When you come out of hypnosis... you will feel very refreshed... and invigorated... and full of vitality... which will persist for quite a long time after you have left this room...

It will be the sort of feeling of exhilaration you feel when you've awakened from a very deep and dreamless sleep... just like a deep and dreamless sleep... so deep... and so dreamless in fact that at first you may have difficulty in remembering anything that has happened since this hypnosis session began...

You'll try hard to remember... you'll try very hard... but it will be very difficult to remember anything at all... and you may not be able to remember a single thing...

But later on... I will say to you... Now you can remember everything and the events of this session... everything that has happened will return to you with complete vividness and clarity...

That's when I say to you... Now you can remember everything... Up until then you'll find it very difficult to remember any-

thing... Now just rest there for a while enjoying the warm... pleasant... and very tranquil sensations of being in hypnosis ... and in a little while I will ask you if you would like to come out of hypnosis... and if you would... I will count slowly from one to ten...

(Pause for one minute)

Are you ready to come out of hypnosis now?

O.K. I'm going to count from one to ten... 1 - 2 - 3 - 4 -
5 - 6 - 7 - 8 - 9 - 10--- Wide awake now... wide awake...

How do you feel?

Appendix C

Induction Procedures and Questionnaires for
Experimental Testing Session TwoRelaxation

First of all, get yourself comfortable in the chair... just move around until you find a comfortable position... notice that the back of the chair is adjustable... just get comfortable and relaxed...

optional: and unclasp your hands and let them just rest loosely on your lap, or on the arm of the chair,

optional: and uncross your legs and let them find a comfortable position on the footrest of the chair.

... and if at any time during the session you find that this position is uncomfortable you can simply adjust it to a more comfortable one without in any way disturbing the hypnosis. I'd like you to look at your hands and find a spot on one of them... like a finger nail or a knuckle... and just focus your vision on it. It doesn't matter which spot you choose... just select some spot to focus upon. I shall refer to the spot as the target. In the meantime, I'm going to give you some simple instructions that will help you experience hypnosis once more. You'll find the instructions easy to follow and that you'll be able to experience the things I describe to you, just as you have in the past. Indeed you will probably find that you'll be able to experience these things with even greater vividness... with even greater intensity... than you

did in earlier sessions...

As you stare at the target you have chosen, you may find that occasionally your gaze may wander or that your vision may even blur... If this happens, simply refocus your vision and continue staring evenly at the target...

Now take a deep breath in and hold it... hold it until it starts to feel a little uncomfortable... And then just let it out very slowly... You find that you start to experience a comfortable feeling... a feeling of well-being begins to develop as you continue to rest in the chair... looking at the target... listening to my voice... Now take another deep breath in and hold it... notice the feeling of tightness and tension in your abdomen... and then... as it starts to feel uncomfortable... just as you did before... let it out very slowly... notice that breathing out... with letting the tension out of your lungs, makes you become even more aware of a feeling of comfort and well being settling over you... Just sink deeper into the chair... and focus your attention closely on feelings of warmth and relaxation in various parts of your body... in your head and in your neck... in your arms and in your legs... in your chest and in your back... and just breathe freely and evenly and deeply... freely... evenly... and deeply... not too quickly... not too slowly... just at a comfortable rate for you to notice that the relaxation increases gradually... as you breathe out...

You may even be aware of the walls of your chest growing looser

... (PAUSE)... Continue relaxing your chest so that feelings of warmth and comfort irradiate to your back... your shoulders... and your neck... and your arms... and your legs... You're probably starting to notice some changes in the target ... changes that occur from staring at it for so long... sometimes the target may look as though it's moving up and down or from left to right... at times it may appear very distinct and clear... at other times it may appear fuzzy and blurred... and it may change color... you may see one of these things or even all of these things... whatever you see just continue staring at the target... continue listening to my voice... continue to become more deeply relaxed... more deeply relaxed. And as you watch the target your eyelids become heavier... your eyes become tired from staring... your eyelids start to feel very tired and heavy... as you sit there breathing freely and evenly and deeply... Your eyelids are becoming so heavy... so tired... that soon they will just close of their own accord ... as if they were coated with a lead paste... as if there were magnetic fields in the eyelashes... drawing your eyelashes together...

Concentrate now... even more carefully... on feelings of relaxation and comfort in various parts of your body...

First of all think of relaxation in the muscles of your left arm... the left hand... the fingers of the left hand... the left forearm... the left upperarm... the left shoulder...

And then relax the muscles of the right arm... the right hand

... the fingers of the right hand... the right forearm... the right upperarm... the right shoulder...

Think of relaxation in each of these areas... and as you think of relaxation the muscles become progressively more relaxed... and then relax the muscles of your neck... your chest and... your back... relax each of these muscle groups... the neck... the chest... and the back.

And as you relax these muscles... your facial muscles will also relax and loosen of their own accord... Then relax the stomach muscles by doing this... Tighten your stomach muscles... make your abdomen hard... and then when you're ready... let the tension out... Notice the feeling of well-being that comes with relaxing your stomach muscles... like a gentle massaging action all over your stomach and even perhaps... up to your chest... And then relax the muscles of your legs... the right leg... the right foot... try to feel it in the toes of the right foot... and then in the right calf... and then the right thigh... then the left leg... the left foot... the toes of the left foot... the left calf... the left thigh...

Just thinking about relaxation in each of these areas causes the muscles to become more relaxed... and you may even find an interesting thing happens... that the feelings of relaxation you feel in each of these areas of the body start to spread and irradiate... so that they may seem to join up... like the parts of a jigsaw puzzle... and you feel a deep feeling of overall relaxation... of contentment... and of well-

being... permeating the whole of your body...

And your eyes will probably have closed now from concentrating carefully on the target... but if they haven't... just close them gently now of your own accord...

With your eyes closed... you're ready to experience hypnosis once more... to experience it more profoundly... but you'll find that no matter how deeply relaxed you ever feel... no matter how deeply in hypnosis you ever feel... your mind is always clear... you're always aware of my voice and what I'm saying to you... you're aware of what is happening to you... even though you are deeply relaxed... deeply in hypnosis... You will remain deeply in hypnosis until I ask you if you would like to come out of hypnosis... You will experience many things... you will experience many things just for as long as I ask you to experience them...

And you will be able to speak to me when I speak to you... to open your eyes... and to move around while remaining deeply hypnotized... whatever you experience or do... you will remain deeply hypnotized... deeply in hypnosis...

If necessary: You can now go even deeper in hypnosis... Say to yourself, just by thinking it, "Now I'm going deeper and deeper". Think it to yourself... and imagine yourself standing at the top of an escalator. Visualize the scene of the escalator... of the steps moving down... and picture the moving hand rail... Count backwards slowly from 10 to 1, imagining as you count, that you are stepping onto the first step of

the escalator and standing with your hand on the railing while the steps move down... carrying you deeper and deeper... into hypnosis. You can plan it so that you reach one just as you reach the bottom and step off the escalator. And to indicate to me that you've reached 1, just let the index finger of your right hand lift up... so that I will know that you have reached 1 and step off the escalator.

Compulsive Responsivity

Now listen carefully to what I'll say next. In a little while you will find that a very interesting thing will happen. Each and every time you hear the word "experiment" your right hand will scratch your left hand. Whatever you will be doing through out this session, each time you hear the word "experiment", your right hand will scratch your left hand.

This will happen by itself and you will scratch your left hand gently so that you will remain completely unaware of it. This will occur everytime you hear the word "experiment" whenever it occurs. Even if you hear it as in the word "experimentally", your hand will respond... will respond everytime you hear the word "experiment". Your hand will remain constantly alert for the word and will respond gently. Your hand will know and will respond... It will happen by itself... so gently you will be unaware of it... Everytime your hand will know and will respond ...

And as you continue to relax and to drift off more and more into a deep and comfortable relaxation... listen to what I'll say now...

Compulsive Responsivity

Formal Testing:

I will read you a series of words and I'd like you to listen very carefully to these words...

- 1) personality
- 2) psychology
- 3) experimental
- 4) maintenance
- 5) electricity
- 6) experiment

Deeply relaxed now, deeply in hypnosis...

You are becoming more and more relaxed... comfortably relaxed
... enjoying the pleasant sensations of being in hypnosis...

Confabulation Item

In a few moments you will find yourself going back through time; about a week ago, reliving the particular events of one evening and night. It may be any of last week's evening and and I would like you to take a few moments and tell me which evening you are going to go back to...

(S reports)

That's fine... First, I'd like you to think about and remember in as much detail as possible what you did that evening, especially the half-hour before you went to sleep... NOW IT'S VERY IMPORTANT THAT YOU REMEMBER WHAT HAS HAPPENED, BECAUSE EVERYTHING THAT HAS HAPPENED EVEN IF YOU DO NOT RECALL IT NOW, EVERYTHING IS RECORDED IN YOUR MIND AND YOU CAN REMEMBER IT...

PAUSE

Now tell me: What time did you go to sleep?

What time did you wake up the next morning?

Did you wake up at any time during the night?

Are you certain of that?

Do you remember dreaming during the night?

Are you certain?

Note: If subject reports waking up or dreaming, probe for details; what was going on? Why did he/she wake up? What did he/she dream? That's fine. Now just relax and let yourself go back through time...

You're going back to the night of the 1982. In a few moments you will be there again reexperiencing the events of that particular evening and night.

I will count slowly from 3 to 1 and as I do you will find yourself going back through time, back to the night of the 1982..

3... going back to the night of 1982. In a few moments you will be there again reexperiencing the events of that particular evening and night...

2... you are nearly there now... back on 1982, about half an hour before going to sleep...

1... back there now... back on 1982 half an hour before going to sleep... and to indicate to me that you are back on 1982, let the index finger of your right hand lift up, so that I will know that you are back on the 1982, about half an hour before going to bed.

(S reports)

That's fine. Now I would like you to describe to me what you are doing... Be as detailed as possible in describing to me what you are doing...

First of all tell me what time it is.

(S reports) - Probe anything subject says -

That's fine... Soon you'll be getting ready for bed...

It is now... (repeat time subject gave)... and you are getting ready to go to bed... You are reliving these moments clearly and vividly and sometimes it may even happen that you will

relive moments and details THAT YOUR CONSCIOUS MIND HAS FORGOTTEN... BUT YOUR SUBCONSCIOUS IS REMEMBERING THEM... Now tell me about this half hour as you are going to bed...

(S reports ...: probe for details)

That's fine... It is now approximately and you are falling asleep... And you will sleep like this until tomorrow morning, o'clock. You are sleeping now and time goes by... (repeat) It is now (adapt for each subject)... and you are still deeply asleep... and time goes by... It is now (one-hour steps)....,, perhaps and I want you to tell me whether you hear some loud noises. Some loud noises that may sound like back-firings of a car, or door slammings... some loud noises. Listen carefully and tell me when you hear them and if they wake you up.

(S reports)

Alright just attend carefully... Now tell me it's around ... o'clock... tell me whether you become aware of them and when?

(S reports) ... (if subject still denies hearing the noises, go on to the following...)

That's fine... maybe you are too deeply asleep to be bothered by the noises. But as I told you before... YOUR MIND WORKS LIKE A TAPE-RECORDER AND HAS PROBABLY RECORDED THAT INFORMATION. LATER ON WHEN YOU WILL BE OUT OF HYPNOSIS AGAIN AND YOU THINK ABOUT THAT PARTICULAR NIGHT YOU WILL REMEMBER CLEARLY EVERYTHING THAT HAS HAPPENED THAT NIGHT...

Now just continue to relax (go to end of item)

S reports hearing noises:

That's right... Go on... And perhaps you look at your clock and see what time it is...

(S reports)

And tell me what the noises sound like...

How many noises do you hear?

What are you doing?

Are you getting out of bed?

Do you think they might be important?

You are aware of them now?

That's all right... Just continue to relax and you go to sleep again... (go to end of item)

End of item:

You are going back to sleep again and very soon you will find yourself awakening the next morning. You will remember everything that has happened the evening and the night before very clearly. It is now and you are waking up. Can you tell me what you are doing?

That's fine... Now listen carefully to what I am saying. These scenes are starting to fade now and you are coming back through time, coming back through time to today,(date).....

deeply hypnotized, relaxed and comfortable. You are back in the laboratory now, deeply relaxed, deeply hypnotized... And to indicate to me that you are back in the laboratory, just let the index finger of your R/L hand lift up again so that I'll know that you are back to this day in the laboratory...

Selective Attention

Just as you did in the practice session before we started this hypnosis experiment I am going to ask you in a little while to put on the earphones...

Just as you did before, your task will be to repeat the numbers that you will hear in one of your ears as you hear them and to attend at the same time to the story that will come in your other ear.

We know that this task is very difficult and demanding. However very often people in hypnosis can do this task without any of the frustration that sometimes accompanies it. You are very relaxed now... deeply hypnotized... You will be able to do this task without losing any of your present hypnotic depth and with no feeling of frustration or tenseness...

At the end of the story... you will remove the earphones and remain as deeply hypnotized as you are now. At that point in the experiment, I will hand you two questionnaires on the story that you will just have heard... You will be able to answer these questions without in any way losing any of your present hypnotic depth...

Do you have any questions?

Fine. Now you can place the earphones on your head and listen carefully to the instructions that will be given once again to you...

... START TAPE AND PUT ON EARPHONES

... ONCE Ss HAVE REMOVED THE EARPHONES...

Good. Deeply relaxed... deeply in hypnosis... breathing slowly and comfortably...

You can relax now... completely relaxed... You are still deeply hypnotized... deeply in hypnosis...

PAUSE 10-30 SECONDS

I am now placing a pad on your lap and a pencil in your hand. In a few moments, I'd like you to open your eyes, very slowly and gently, without losing any of your present hypnotic depth and start writing on the pad everything that you remember of the story you just heard... Write down everything you remember, in as much detail as you can... Ready? Then just open your eyes and start writing...

That's fine... Now I'd like you to complete this questionnaire.

(After completion)

That's fine. You may close your eyes again and relax... Very relaxed now, deeply hypnotized... enjoying the calm and pleasant sensations of a deep relaxation...

Free Recall Form

Please write down everything you can remember about the story you just heard. Include all details even if you are not completely sure of them.

Multiple-Choice Questionnaire: Pre-induction Session

Please answer each question by circling the appropriate letter. Indicate also how certain you are of your answers by ticking the certainty line below each question.

1. The Baychimo was unique among the arctic trading ships because...
- a) it had made the trip more often than any other ship.
 - b) no other ship had begun the trip so late in the year.
 - c) no other ship had completed the journey successfully.
 - d) the captain wanted to spend the winter in the North-west Passage.

0

100%
Certain

2. In what city was the home-port of the Baychimo located?
- a) Pont Barrow
 - b) Vancouver
 - c) Victoria
 - d) Herschel Islands

0

100%
Certain

3. The Baychimo usually came back from the Arctic at the end of ...
- a) September
 - b) October
 - c) November
 - d) December

0 _____ 100%
Certain

4. In its two-month voyage the ship...
- a) unloaded food and supplies and took on furs.
 - b) traded with the Eskimos of the Arctic.
 - c) loaded the cargo of fish caught during the summer.
 - d) was the only ship to trade with the Eskimos in that area.

0 _____ 100%
Certain

5. After the ship had become trapped in the ice, the only hope was
- a) that the ship could break through the ice.
 - b) that the wind would blow the ice away.
 - c) that the ice would be washed out to sea.
 - d) that the ice would crack and give the ship passage.

0 _____ 100%
Certain

6. While the crew was waiting, its major recreation was...
- a) fishing through the ice.
 - b) remaining on board to read and play cards.
 - c) betting on the day the icepack would move.
 - d) playing football on the ice.

0 _____ 100%
Certain

7. The first sign of danger to the ship became apparent when...

- a) the ice began crunching along its side.
- b) the wind shifted direction.
- c) a crack appeared near the ship.
- d) the sides of the ship began to buckle.

0

100%
Certain

8. The fate of the Baychimo was that...

- a) it was taken as a prize by the Eskimos.
- b) it was sunk in a mysterious gale.
- c) it became a legend, and no one knows what happened to it.
- d) it remained frozen in the icepack off Herschel Islands.

0

100%
Certain

Free Recall Form

Please write down everything you can remember about the story you just heard. Include all details even if you are not completely sure of them.

Multiple-Choice Questionnaire: Post-induction Session

Please answer each question by circling the appropriate letter. Indicate also how certain you are of your answers by ticking the certainty line below each question.

1. The Egyptian alchemists appeared successful because...
- a) they coated lead with sheets of gold.
 - b) they succeeded in creating a little gold.
 - c) they created large quantities of impure gold.
 - d) they kept the results of their experiments secret.

0 _____ 100%
Certain

2. The person who introduced magic in the science of alchemy was...
- a) Nilos
 - b) Bernard of Trêves
 - c) Albertus Magnus
 - d) Cagliostro

0 _____ 100%
Certain

3. The use of hocus-pocus in alchemy spread in spite of the fact that...
- a) it had been unsuccessful in public demonstration.
 - b) alchemists themselves were usually not superstitious.
 - c) the wealthy patrons of the alchemists did not believe it.
 - d) other methods of making gold had proved much more

successful.

0 _____ 100%
Certain

4. Besides hoping to produce gold, the early alchemists hoped to find...
- a) the fountain of youth
 - b) an elixir of life
 - c) a way of making silver
 - d) a way to make diamonds multiply

0 _____ 100%
Certain

5. Such men as Bernard of Trêves practiced alchemy because
- a) it would enable them to fool the public.
 - b) it was the best scientific method known at the time.
 - c) they had a great desire to get something for nothing.
 - d) they were not intelligent men.

0 _____ 100%
Certain

6. Which of the following was not one of Cagliostro's accomplishments?
- a) cheating the rich and gullible out of their money.
 - b) changing his name.
 - c) avoiding prison.
 - d) convincing people of his honesty.

0 _____ 100%
Certain

7. The first step in Cagliostro's formula for changing small diamonds to large ones was to....
- a) say magic words over them.
 - b) change them to another substance.
 - c) treat them with a red powder.
 - d) bury them in the ground.

0 _____ 100%
Certain

8. Nuclear physicists do not change lesser metals into gold because
- a) they have not discovered how.
 - b) they concentrate on making more valuable metals.
 - c) they are forbidden by law.
 - d) the process costs more than the gold is worth.

0 _____ 100%
Certain

9. The main idea for this selection is that...
- a) through the ages man has tried to find a way to turn ordinary metals into gold by various magical and scientific methods.
 - b) man has always been gullible when offered an easy way to get rich.
 - c) alchemy was the ancestor of chemistry as we know it today.
 - d) man has always tried to create gold by scientific methods and has finally succeeded, although too late

to be of much value.

0

100%
Certain

Source Amnesia

This time I'm going to ask you a few questions. This is a test of general knowledge. Some questions will be harder than others, but do not worry if you cannot answer them all... Other people cannot answer all the questions, either... Listen carefully to each question before giving me the answer...

Here's the first question...

1. What is the capital city of England? (London)
2. Who is the Prime Minister of the province of Quebec? (René Levesque)
3. An amethyst is a blue or a purple gemstone. What color does it become when it is exposed to heat? (Yellow)
4. How many moons revolve about the planet Venus? (None)
5. Lewis Carroll is the famous author of "Alice in Wonderland". Apart from that, what was his primary occupation? (Mathematician)

Spare Question:

What is the difference between the antennae of a moth and the antennae of a butterfly? (The antennae of a moth have long, furry hairs)

... REPEAT QUESTIONS THAT HAVE BEEN MISSED UNTIL S CAN ANSWER THEM CORRECTLY.

That's fine. As you can see you are able to learn in this state of deep relaxation... of deep hypnosis... You will continue to remain completely relaxed... deeply in hypnosis...

Rapid Reinduction

In a moment I'm going to ask you to open your eyes... very slowly and very gently... without losing any of the depth of hypnosis you presently feel...

At the time when you open your eyes, you will see that I am holding a pen in front of you... just look at the pen for three or four seconds... get a strong impression of it... and then close your eyes very gently...

We're going to use this pen at our next session to teach you to enter hypnosis more quickly... at the start of this next session, and if you are agreeable to being hypnotized... when I hold the pen up, and you look at it... you'll find that your eyes become very heavy and tired... and that they'll want to close:...

And then... as I count slowly from 10 to 1 you will find yourself entering hypnosis more rapidly than you did today... That's when I hold up my pen to begin the next session and only if you are agreeable to being hypnotized as you were today. Now open your eyes very slowly and gently without losing any of your present hypnotic depth and look at the pen for three to four seconds... until you have a firm impression of it and then ... when you've done that... let your eyes close again... and you continue to remain in a deep and relaxed state...

Dehypnotization, Amnesia, PHS, and Cancellation of Compulsive Response

In a little while I am going to ask you if you would like to come out of hypnosis... and if you would I will count slowly from 1 to 10... you will come out of the state you are in slowly and gradually until at 7 your eyes will open gently but you will not be completely un hypnotized... and at 10 you will be fully roused up in your normal state of alertness. When you come out of the experiment, you'll feel very refreshed... and 'invigorated...' and full of vitality... which will persist for quite a long time after you have left this experimental room... It will be the sort of feeling of exhilaration you feel when you've awakened from a very deep and dreamless sleep ... just like a deep and dreamless sleep... so deep... and so dreamless in fact that at first you may have difficulty in remembering anything that has happened since this hypnosis session began... You'll try hard to remember... You'll try very hard... but it will be very difficult to remember anything at all... and you may not be able to remember a single thing. But later on... I will say to you... Now you can remember everything... and the events of this session... everything that has happened will return to you with complete 'vividness' and clarity. That's when I say to you... Now you can remember everything... up until then you'll find it very difficult to remember anything.

After you've come out of hypnosis... I will stand up to pick

up some papers on the table near me... At that time, you will stand up too and stretch your body... In fact you will feel an urgent need to stretch at the same time that I will stand up to get some papers... You will do this spontaneously without being aware of it...

And now just rest there for a few more moments enjoying the warm... pleasant... and very tranquil sensations of being in hypnosis... and in a little while I will ask you if you would like to come out of hypnosis... and if you would... I will count slowly from 1 to 10 and that will terminate this phase of the experiment.

Remember that I told you a little while ago that your right hand would scratch your left hand whenever you heard the word "experiment". Your hand will no longer respond... will no longer be alert to the word "experiment"... Your right hand will no longer scratch your left hand when you hear the word "experiment"... Everything is back to normal now...

Just relax for a moment enjoying the warm and pleasant sensations of being in hypnosis...

PAUSE 60 to 90 SECONDS

Are you ready to come out of hypnosis now?

O.K. I'm going to count from 1 to 10. 1... 2... 3... waking up slowly... 4... 5... 6... waking up gently... 7... 8... 9... waking up gradually... 10... wide awake now... wide awake.

How do you feel?

Appendix D

Excerpts from the B.B.C. Television Special
"Hypnosis on Trial": Orne's Confabulation Item

This demonstration shows how a potential witness' memory can be accidentally altered and evidence changed during hypnosis. The subject is a nurse working in Philadelphia.

PROF. ORNE: ... Monday, ah, were you home, by yourself?

MARION SAEGAR: In the evening? Yes, mm.

PROF. ORNE: In the evening. Okay. About when did you go to bed?

MARION SAEGAR: About ten or ten-thirty.

PROF. ORNE: And when did you get up?

MARION SAEGAR: Four-thirty in the morning.

PROF. ORNE: At - so you slept from ten-thirty to four-thirty?

MARION SAEGAR: Mmhmm.

PROF. ORNE: Did you wake-up at any time during the night?

MARION SAEGAR: No.

PROF. ORNE: Are you certain?

MARION SAEGAR: Positive.

PROF. ORNE: And I want you to remember getting ready for bed. It is now ten-twenty about, and you're ... and you're now going to fall asleep. Now it's very important that you remember what has happened, because everything that has happened, even if you do not recall it, it is still recorded in your mind, and you can remember it. Now as you think back time goes by, it's now midnight, it's now one o'clock, one-thirty, perhaps two,

I want you to think back whether you hear two loud noises, they might sound like a car back-firing, or shots, or something like that. And tell me - do they wake you?

MARION SAEGAR: No.

PROF. ORNE: Alright. Just attend carefully. Now tell me, it's around two, tell me whether you become aware of them and when.

MARION SAEGAR: I hear them.

PROF. ORNE: That's right. Go on. And look at your clock and see what time it is.

MARION SAEGAR: It's about three.

PROF. ORNE: About three. Look carefully so you'll know exactly.

MARION SAEGAR: Three-o-five.

PROF. ORNE: Three-o-five. And tell me what the noises sounded like.

MARION SAEGAR: Some oars.

PROF. ORNE: Right. How many were they? One, two or three? Or four?

MARION SAEGAR: Two.

PROF. ORNE: Ah-ha. Now what are you doing? Are you getting out of bed to look and see what's happened?

MARION SAEGAR: No.

PROF. ORNE: What do you do?

MARION SAEGAR: I just hear them.

PROF. ORNE: Mhmm. Do you think that they might be important?

MARION SAEGAR: Not really.

PROF. ORNE: But you are aware of them now?

PROF. ORNE: Alright. Soon you'll wake up, you'll feel fine, refreshed and relaxed and you'll remember everything that has happened, you'll remember the events during hypnosis, you'll remember the events of last Monday, you'll remember everything that has happened.

Hypnosis leads to increased suggestibility and it leads to decrease in critical judgement. As a consequence the subject picks up subtle cues from the hypnotist. If the hypnotist is aware of what he expects to find, he may unwittingly communicate that, and cause the subject to remember some particular person or some - the number of shots, or what you will. By the same token, if the subject himself believes something he's seen a picture of the - of somebody being arrested on the tele or in the newspapers, then again, he may turn that believe about this person being guilty into a memory during hypnosis and consequently testify to it as something he remembers from the original event, whereas in fact it was created unwittingly during hypnosis he translated the belief into a memory.

COMMENTARY: Two days later, the witness was questioned again.

MARION SAEGAR: Yes.

PROF. ORNE: Ah - were you home that night?

MARION SAEGAR: Yes, I was home.

PROF. ORNE: Right, and you went to bed about what time?

MARION SAEGAR: About -um- ten or ten-thirty.

PROF. ORNE: Did you wake - and when did you get up?

MARION SAEGAR: Four-thirty in the morning.

PROF. ORNE: Four-thirty-

MARION SAEGAR: Tuesday morning.

PROF. ORNE: Did you wake up any time during the night?

MARION SAEGAR: I woke up one time. I heard some noises during the night.

PROF. ORNE: About when was that?

MARION SAEGAR: Around three, I believe, somewhere around three.

PROF. ORNE: Can you place that - how - how do you know?

MARION SAEGAR: Ah - my digital clock, I think it was three-o-five, I believe it was.

PROF. ORNE: I see. And what kind of noises did you hear?

MARION SAEGAR: I heard some sharp noises -uh- and they could have been -uh- metal crashing or a - a shot or something of that sort, something like that, a noise.

PROF. ORNE: A noise - one noise?

MARION SAEGAR: It was like -uh- a noise followed by another noise.

PROF. ORNE: Oh, two noises?

MARION SAEGAR: Yeah, mmhmm.

PROF. ORNE: I see. Not three?

MARION SAEGAR: No.

PROF. ORNE: Two. You're quite certain of that?

MARION SAEGAR: Yes, it was two, two noises.

PROF. ORNE: Now you're absolutely certain that you heard that on Monday night?

MARION SAEGAR: Right, mmhmm.

PROF. ORNE: And try and think if - is there any possibility that you're mistaken, because it's a very important question.

MARION SAEGAR: No, it was Monday night, I'm sure.

PROF. ORNE: Is it possible that you might have mistaken it? It might have been Tuesday or - that you -

MARION SAEGAR: No, it wouldn't have been Tuesday night.

PROF. ORNE: You're absolutely certain?

MARION SAEGAR: Positive.

PROF. ORNE: Willing to swear to that?

MARION SAEGAR: Yes, I'd swear to it.

PROF. ORNE: Well, let me play you a tape of what you said about this before, and I'd like you to listen to it.

PROF. ORNE (TAPE): About when did you go to bed?

MARION SAEGAR (TAPE): About ten or ten-thirty.

PROF. ORNE (TAPE): And when did you get up?

MARION SAEGAR (TAPE): Four-thirty in the morning.

PROF. ORNE (TAPE): And so you slept from ten-thirty to four-thirty?

MARION SAEGAR (TAPE): Mhmm.

PROF. ORNE (TAPE): Did you wake up at any time during the night?

MARION SAEGAR (TAPE): No.

PROF. ORNE (TAPE): Are you certain?

MARION SAEGAR (TAPE): Positive,

PROF. ORNE (TAPE): Absolutely?

MARION SAEGAR (TAPE): Absolutely positive.

PROF. ORNE: Ah, I asked you about Monday night -uh- and you told me that. How do you explain that?

MARION SAEGAR: Well I remember waking up. I remember hearing the noise, the two noises.

PROF. ORNE: When you did that you were very certain. How come? Try and think. I mean, there must be some reason. I mean, you know why would you have said you-you were certain that you had slept the night through, and now you're absolutely certain that you didn't?

MARION SAEGAR: I-I remember waking up. I don't know. I remember - I remember hearing the noises.

PROF. ORNE: And despite the tape you would still be willing to swear that last Monday you -

MARION SAEGAR: Yeah. I - I woke up, I know I woke up.

PROF. ORNE: You're certain.

MARION SAEGAR: Mmhmm.

PROF. ORNE: This illustrates how, in a court, the - a serious miscarriage of justice can take place. What we've seen is how a well-meaning witness is able to in - in recounting her memories, be asked about them during hypnosis and the process of asking distorts her actual memory so that she now believes that something entirely different happened, which didn't happen, which she originally knew didn't happen but now firmly believes. She is credible because she believes it, she's honest and she's willing to swear that that's her original memory, because it was implanted during hypnosis and could easily happen

unwittingly by a well-meaning individual just in the process
of trying to find out what occurred.

Appendix E

Induction Procedures for Experimental
Testing Session ThreeInduction by Rapid Reinduction

I want you to look at the top of my pen... and you are going to find that your eyes will start to become heavy and tired... and that you will start to feel relaxed... calm... and comfortable...

Just let your eyes close and you will start to drift away into the early stages of hypnosis... becoming more relaxed, and calm and comfortable... breathing freely, evenly, and deeply ... freely, evenly and deeply... breathing in... breathing out ... not too quickly, not too slowly... just enough to notice the various muscles of your body starting to become relaxed... to become more and more relaxed... more and more relaxed and I will just count to five... and as I count you will start to go more deeply into hypnosis.

ONE: starting to drift into hypnosis... becoming more deeply relaxed... to breathe more deeply and freely and evenly ... to feel the various muscles in your body becoming more deeply relaxed.

TWO: more and more... more and more...

THREE: drifting further into hypnosis... becoming more relaxed, and calm and comfortable...

FOUR: starting to feel a bit like you felt in the last session ... more deeply relaxed... more deeply in hypnosis...

FIVE: deeply relaxed... deeply in hypnosis... nothing will disturb you... you will experience many things... you will experience many things for as long as I ask you to experience them... but as before... no matter how deeply relaxed you ever feel... no matter how deeply in hypnosis you ever feel... your mind is always clear... you are always aware of my voice... and what I'm saying to you...

Deeply relaxed... deeply in hypnosis...

As you sit in the chair in a comfortable position... take a few moments to enjoy the calm and relaxing feeling of being in hypnosis... and when you feel that you are deeply relaxed, deeply in hypnosis... as deeply in hypnosis as you were in the previous session... the index finger of your right hand will just lift up of its own accord and I will know from this that you are just as deeply in hypnosis as in the previous session ...

When subject lifts finger, proceed to first item.

Hand and Arm Levitation

Now you're ready to go more deeply into hypnosis... You can do it simply by doing this: concentrate your attention on the feelings and sensations in your right hand and arm... and imagine that all the sensations of weight... all the sensations of heaviness are starting to dissipate from this arm... to drain away and as this happens... the hand and the arm start to feel light and weightless and more light and more weightless.

And very soon the hand and arm will start to lift up... start to drift up... start to float up... upwards and up... towards your forehead.

And as they start to lift and drift and float... up and up... so you find yourself more deeply relaxed, more deeply in hypnosis... so that when your hand touches your forehead, you will find yourself very deeply hypnotized...

It may seem as if there is a colored balloon... filled with helium attached by a string to your wrist and as the balloon floats upwards... your hand and arm follow it up... continuing to float and lift... to drift and float... as the hand and arm become lighter and lighter.

In a moment your hand will touch your forehead... and when it does... you will feel even more deeply in hypnosis...

WAIT UNTIL HAND TOUCHES FOREHEAD

That's fine. The hand and arm go back to their original position now. Your hand and arm feel normal again... the sensations

of weight and heaviness have returned... and you continue to experience the pleasant sensations of being in hypnosis...

Hypnotic Dream

As you rest there... peaceful and relaxed... a dream will come to you... a vivid dream will come to you... it will be a dream about hypnosis and what hypnosis means to you...

When the dream begins the index finger of your right hand will straighten out... and when the dream ends, the finger will return to its present position.

You're going a bit deeper now... it's rather like at night when you're falling asleep... and as you do, you become even more relaxed and peaceful... and the dream will soon begin.

And as the dream begins, that index finger begins to straighten out. And as the dream begins... that index finger begins to straighten out...

Pause until index finger returns to its original position

The dream is over and you can remember every detail of it with complete vividness and clarity... and I would like you to describe the dream from its very beginning while remaining deeply relaxed... just describe your dream to me... right from the beginning.

(if subject has no dream: That's all right. Not everyone dreams in hypnosis)

(if subject hesitates, or reports vaguely, probe for details).

That's all for the dream now. You're deeply relaxed, comfortable, enjoying the warm and pleasant sensations of a deep relaxation.

Confabulation Item

In a few moments you will find yourself going back through time; about a week ago, reliving the particular events of one evening and night. It may be any of last week's evening and and I would like you to take a few moments and tell me which evening you are going to go back to...

(S reports)

That's fine... First, I'd like you to think about and remember in as much detail as possible what you did that evening, especially the half-hour before you went to sleep... NOW IT'S VERY IMPORTANT THAT YOU REMEMBER WHAT HAS HAPPENED, BECAUSE EVERYTHING THAT HAS HAPPENED EVEN IF YOU DO NOT RECALL IT NOW, EVERYTHING IS RECORDED IN YOUR MIND AND YOU CAN REMEMBER IT...

PAUSE

Now tell me: What time did you go to sleep?

What time did you wake up the next morning?

Did you wake up at any time during the night?

Are you certain of that?

Do you remember dreaming during the night?

Are you certain?

Note: If subject reports waking up or dreaming, probe for details; what was going on? Why did he/she wake up? What did he/she dream? That's fine. Now just relax and let yourself go back through time...

You're going back to the night of the 1982. In a few moments you will be there again reexperiencing the events of that particular evening and night.

I will count slowly from 3 to 1 and as I do you will find yourself going back through time, back to the night of the 1982.

3... going back to the night of 1982. In a few moments you will be there again reexperiencing the events of that particular evening and night...

2... you are nearly there now... back on 1982, about half an hour before going to sleep...

1... back there now... back on 1982 half an hour before going to sleep... and to indicate to me that you are back on 1982, let the index finger of your right hand lift up, so that I will know that you are back on the 1982, about half an hour before going to bed.

(S reports)

That's fine. Now I would like you to describe to me what you are doing... Be as detailed as possible in describing to me what you are doing...

First of all tell me what time it is.

(S reports) - Probe anything subject says -

That's fine... Soon you'll be getting ready for bed...

It is now... (repeat time subject gave)... and you are getting ready to go to bed... You are reliving these moments clearly and vividly and sometimes it may even happen that you will

relive moments and details THAT YOUR CONSCIOUS MIND HAS FORGOTTEN... BUT YOUR SUBCONSCIOUS IS REMEMBERING THEM... Now tell me about this half hour as you are going to bed...

(S reports ... probe for details)

That's fine... It is now approximately and you are falling asleep... And you will sleep like this until tomorrow morning, o'clock. You are sleeping now and time goes by... (repeat) It is now (adapt for each subject)... and you are still deeply asleep... and time goes by... It is now (one-hour steps)...., ..., perhaps and I want you to tell me whether you hear some loud noises. Some loud noises that may sound like back-firings of a car, or door slammings... some loud noises. Listen carefully and tell me when you hear them and if they wake you up.

(S reports)

Alright just attend carefully... Now tell me it's around ... o'clock... tell me whether you become aware of them and when? (S reports) ... (if subject still denies hearing the noises, go on to the following...)

That's fine... maybe you are too deeply asleep to be bothered by the noises. But as I told you before... YOUR MIND WORKS LIKE A TAPE-RECORDER AND HAS PROBABLY RECORDED THAT INFORMATION. LATER ON WHEN YOU WILL BE OUT OF HYPNOSIS AGAIN AND YOU THINK ABOUT THAT PARTICULAR NIGHT YOU WILL REMEMBER CLEARLY EVERYTHING THAT HAS HAPPENED THAT NIGHT...

Now just continue to relax (go to end of item)

S reports hearing noises:

That's right... Go on... And perhaps you look at your clock and see what time it is...

(S reports)

And tell me what the noises sound like...

How many noises do you hear?

What are you doing?

Are you getting out of bed?

Do you think they might be important?

You are aware of them now?

That's all right... Just continue to relax and you go to sleep again... (go to end of item)

End of item:

You are going back to sleep again and very soon you will find yourself awakening the next morning. You will remember everything that has happened the evening and the night before very clearly. It is now and you are waking up. Can you tell me what you are doing?

That's fine... Now listen carefully to what I am saying. These scenes are starting to fade now and you are coming back through time, coming back through time to today,(date)..... deeply hypnotized, relaxed and comfortable. You are back in the laboratory now, deeply relaxed, deeply hypnotized... And to indicate to me that you are back in the laboratory, just let the index finger of your R/L hand lift up again so that I'll know that you are back to this day in the laboratory...

Double Hallucination

In a moment I'm going to ask you to very slowly and very gently open your eyes... without losing any of your present hypnotic depth and to look to your right... at the little table to your right...

On the table you will see a small rectangular box... It's a gray metal box... about 12 inches long and 2 inches wide and high... a long narrow metal box WITH A LIGHT AT ONE END...

When you open your eyes... you will look carefully at this little box, get a strong impression of it and then close your eyes again.

PAUSE

Now in your own time just very slowly and gently open your eyes while remaining as deeply in hypnosis as you are now... and look at the table on your right...

Do you see the table clearly?

Do you see the little box and the light?

That's fine. Now just close your eyes again.

(Ss close eyes again)

That's fine. Now I'd like you to imagine the little box, to see it clearly in your mind's eye and when you do see it clearly, just let the index finger of your right hand lift up...

That's fine. Now attend carefully to this image. I would like you to imagine that there is a second light at the opposite end

of the box, a second light absolutely identical to the one you just saw. And when you can see the two lights in your mind's eye, I'd like you to indicate it to me by letting the index finger of your right hand lift up again.

That's fine. Now in a few moments I will ask you to open your eyes and look at the small table on your right. On the table, you will see a small rectangular box with a light at both ends. You will see the two white lights, both of which are turned on, one on the left and one on the right. When you will open your eyes... you will see these two lights on the table to your right.

PAUSE

Now in your own time just very slowly and gently open your eyes while remaining as deeply in hypnosis as you are now... and look at the table on your right...

Do you see the table clearly?

Do you see the two lights turned on?

If S acknowledges seeing two lights:

Now I'm going to tell you something that will not affect the way the two lights look to you right now... Only one of the lights that you see is real... the other is imaginary... Now... I wonder if you can tell me which of the two lights is real... just by looking at them?

(S is unable to tell lights apart) Please make a guess... On what basis did you make your guess... The left one is the real

one... Can you tell them apart? Now can you see that there never was a right light?

(Unplug light) Has anything happened?

IF S SEES ONE LIGHT ONLY:

Just close your eyes... Perhaps you can see the two lights now? One on the left... and one on the right... Do you see the two lights now?

(If yes) Tell me what they look like. That's fine. That's all for the lights now. You know that there never was a second light...

(If no) That's all right... You know there never was a second light...

Now just let yourself go and relax completely... You no longer see the two lights... and you just continue to relax and to enjoy the warm and pleasant sensations of being deeply in hypnosis... deeply hypnotized...

Pseudo-Analgesia Item

I would like you now to think about your right hand and arm. Place your right arm on the arm of the chair and start concentrating on the different sensations in your right arm and hand. Soon an interesting thing is going to happen. In a previous session you were able to successfully anesthetize your right hand and not feel an electrical stimulus when it was applied to your right hand. This time rather than becoming insensitive to pain, your right hand and arm will become insensitive to touch and pressure, completely devoid of all sensations, in fact so completely devoid of all sensations that you will be unable to even feel the touch of my pen when I touch your arm and hand.

Now concentrate on your arm and hand and as you do you will find that your right hand and arm are becoming completely anesthetic, completely numb, completely devoid of all sensations of touch and pressure. You may imagine that your arm and hand are like a bar of steel, cold and unresponsive to touch and pressure. Maybe you can feel a coldness developing in your arm and hand. In a few moments it will be completely devoid of all sensations, cold like a bar of steel. You won't be able to feel anything, not even the slight touch of a pen. Colder and colder, completely devoid now of all sensations... Now I would like you to tell me if you can feel the pen when I touch your arm or hand.

Touch forearm and hand twice: Now? _____ Now? _____

(If subject reports feeling the pen, repeat last paragraph)
 That's fine. I will now draw a circle with the tip of my pen on the back of your hand and as I do your hand and arm will be back to normal except for the inside of the circle. Your forearm and hand will be back to normal except for that part inside the circle.

E draws a circle on the back of the hand

Your arm and hand are back to normal except for that part inside the circle, that part is still completely numb.

Listen carefully to what I'll say next:

"I'M GOING TO TOUCH YOU WITH A PEN ON VARIOUS PARTS OF YOUR FOREARM AND HAND. WHENEVER YOU FEEL THE TOUCH SAY YES: WHENEVER YOU DON'T FEEL IT SAY NO."

- | | |
|--------|---------|
| 1. out | 9. in |
| 2. out | 10. out |
| 3. in | 11. in |
| 4. out | 12. out |
| 5. in | 13. out |
| 6. in | 14. in |
| 7. out | 15. out |
| 8. in | 16. in |

That's fine. Now your hand is coming back to normal again. All the feelings and sensations are coming back to your hand again. Everything is as it was before I suggested the anesthesia. How does your hand feel now?

Dehypnotization and Amnesia

In a little while I'm going to ask you if you would like to come out of hypnosis... and if you would I will count slowly from one to ten... you will come out of the state you are in slowly and gradually until at seven your eyes will open gently but you will not be completely un hypnotized... and at ten you will be fully roused up... in your normal state of alertness... When you come out of hypnosis... you will feel very refreshed ... and invigorated... and full of vitality... which will persist for quite a long time after you have left this room... It will be the sort of feeling of exhilaration you feel when you've awakened from a very deep and dreamless sleep... just like a deep and dreamless sleep... so deep... and so dreamless in fact that at first you may have difficulty in remembering anything that has happened since this hypnosis session began... You'll try hard to remember... you'll try very hard... but it will be very difficult to remember anything at all... and you may not be able to remember a single thing... But later on... I will say to you... Now you can remember everything and the events of this session... everything that has happened will return to you with complete vividness and clarity ...

That's when I say to you... Now you can remember everything... Up until then you'll find it very difficult to remember anything... Now just rest there for a while enjoying the warm... pleasant... and very tranquil sensations of being in hypnosis

... and in a little while I will ask you if you would like to come out of hypnosis... and if you would... I will count slowly from one to ten...

(Pause for one minute)

Are you ready to come out of hypnosis now?

O.K. I'm going to count from one to ten... 1 - 2 - 3 - 4 -
5 - 6 - 7 - 8 - 9 - 10--- Wide awake now... wide awake...

How do you feel?

Appendix F

Item Descriptions and Rationale for the
20 Items Tested Over the Three Hypnosis Sessions

As already mentioned in the Method Section, items in the present study were selected in order to test subjects on aspects of hypnosis thought to index deep levels of "trance". Following current theorizing, the items sought to tap dissociation, tolerance of logical incongruities, and ideationally-based distortions of reality.

Items in Experimental Session I

(a) Arm Rigidity. In this item, suggestions are made that the arm is becoming progressively "more stiff and more rigid" so that the subject will not be able to bend it. Unlike ideomotor items (e.g., arm levitation) where the subject follows the suggestion passively, the arm rigidity item is classified as a challenge item. Once the arm has become rigid, suggestions are given to the subject to try to bend the arm. He or she is actually challenged to bend the arm. Arm rigidity has an item difficulty of approximately 45% when given as a part of the SHHS:C, and has a correlation of about .76 with the same scale (Hilgard, 1965). On a factor analysis, after rotation, this item has a factor loading of .74, and is one of the most representative items of the ideomotor inhibition factor (Factor I) for the SHSS:C (Hilgard, 1965). Because the present study was working with high susceptible subjects, it was thought that this item would be relatively easy for them and would serve as

a kind of reestablishment of the initial rapport between the experimenter and the subject. It was scored as is recommended in the SHSS:C manual. The criterion of passing was that the arm should not have bent more than two inches in 10 seconds.

(b) Age Regression to 5 years old. Adapted from Perry and Walsh (1978), this item is seen as a good example of dissociation, although it can often involve considerable elaboration through role-playing (Hilgard, 1965). However since the present study was interested in individual differences between high susceptible subjects, this last point is not particularly relevant. In this item, subjects are told that they are going back through time, to when they were 5 years old. When they reach the age of five, they are asked a series of standardized questions (see Appendix B) and are asked to write several things. Two points need mentioning here. Firstly they are asked to write the sentence "I am participating in a psychological experiment". This part of the item is seen as an index of what Orne (1959) has called the phenomenon of "trance logic". The second point is also another example of this phenomenon. Subjects are asked "Could you tell me who is the Prime Minister of Canada?" These demands place the subjects in a "double-bind" situation where they have to decide whether they can answer such a question or write such a sentence. Age regression is scored both objectively and subjectively. Objectively, subjects passed the item if they showed some changes in their handwriting (Hilgard, 1965) and on the face value of their responses to the different questions. Subjectively, subjects are

asked posthypnotically to describe their experience and if objective and subjective criteria seem to correlate, the item is scored positively. In the present study, apart from passing or failing the regression item, four other variables are scored: a) whether or not subjects wrote something of what was asked during the task, b) whether or not they specifically wrote the sentence "I am partic...", c) whether or not they answered the question "Could you tell me who the Prime Minister ...", and d) whether or not they reported dual functioning during age regression.

(c) Delusion of number 5. This item taken and adapted from Evans (1965) is an example of negative hallucination and was first tested by Evans (1965) in order to develop a paradigm to study the tip-of-the-tongue phenomenon. The item consists of suggesting a specific amnesia for number 5 and then placing the subject in situations where he/she has to use the number. The suggestion is given that the number 5 will disappear completely, and that the subject will be unable to use that number in any way. Then subjects are asked to count from 1 to 10, and then by threes from 3 to 30, and to perform some arithmetical additions where the number 5 is necessary. The item is scored positively if the subject did not use or say five at all. In the present study, an additional subjective score was derived for that item. If the subject used the number only once during the suggestion but still maintained during the posthypnotic inquiry that the number five was gone, that he/she could not relate to that symbol, the subject was scored as

subjectively passing the item. If the subject acknowledged using it voluntarily, he/she was scored as subjectively failing the item.

(d) Glove Analgesia. This item was taken from Perry (1977) and is also an example of a negative hallucination. It is also an item that is found in the Stanford Profile Scales, form I (SPS:I) (Weitzenhoffer & Hilgard, 1967) where it is also described as indexing dissociative processes (Hilgard, 1965, 1978/79). In this item subjects are asked to think of their right hand becoming progressively more numb and insensitive to all sensations including pain. They then are administered an electrical stimulus. They are asked to rate that stimulus on a subjective scale from 1 to 10, where one is defined as completely painless and ten as unbearably painful. A second shock is applied to the opposite hand that then becomes a control-reference point and again they are asked to rate the pain. Any difference between the two ratings is taken as evidence of a positive response to the analgesia suggestion; this objective report is then compared to their subjective description of the item during the posthypnotic inquiry. It should be noted here that this item was left uncanceled in the present study so that the posthypnotic persistence of analgesia could be tested following the formal termination of hypnosis.

(e) The "Hidden Observer" Item. This item has been described in the Method and Appendix B.

(f) Uncanceled Suggestion. This item is taken from Perry

(1977). The persistence of an uncanceled suggestion post-hypnotically is akin to the persistence of a posthypnotic suggestion which is seen as a compulsive, quasi-automatic response to the demands of the hypnotist. However, very few studies have been devoted to this phenomenon (see Perry, Note 6, and Laurence, 1979, for a review of this question), and little is known of the parameters affecting the responses to such an item. In the present study, the analgesia is left uncanceled and tested during the posthypnotic inquiry. As soon as the subjects mention the hand analgesia item during the inquiry, the experimenter asks the subjects' permission to test that hand again. The pain rating is then compared to the previous ones. The item is scored positively if there is a difference between the obtained rating and the one reported when the control hand was tested during hypnosis.

(g) Posthypnotic Amnesia. This item is taken from the SHSS:C (Weitzenhoffer & Hilgard, 1962) and is looked at as one of the more difficult items of that scale. Percent passing or the difficulty index of that item is generally about 27% (Hilgard, 1965, 1978/79) and it has become central to the neo-dissociation model proposed by Hilgard (1979). In this item, subjects are told that they will forget everything that has happened during the hypnotic session until a prearranged cue is given during the posthypnotic inquiry ("Now you can remember everything"). If subjects recall three items or less before the cue is given, they are scored as passing the item. In the

present study, subjects had also to remember a certain number of items after the cue in order to be scored positively. This scoring procedure is usually referred to as the reversibility criterion and is used to differentiate between normal forgetting and posthypnotic amnesia, pseudo-amnesia, and partial amnesia (Kilhstrom & Evans, 1979).

Items in Experimental Session II

(a) Compulsive Responsivity Item. This item was adapted from Sheehan (1971) and has been mainly used to assess the so-called hypnotic rapport between the subject and the hypnotist. In the item, subjects were told that each time they would hear the word "experiment" their right hand would gently scratch their left hand. They were told they would do this unconsciously, that is, the suggestion explicitly stated that they would remain unaware of their hands' movements. The item was then formally tested by reading a list of words to the subjects. In the list, the word "experiment" and "experimental" were inserted and subjects were scored on their responses to these two words. The suggestion for this compulsive behavior was not cancelled until near the end of the session prior to dehypnotization. Interspaced throughout the session, the word "experiment" or "experimental" was said a certain number of times and subjects' responses recorded.

(b) Dichotic Listening Task. The idea of using the dichotic listening task stemmed from three sources. Hilgard (1975) suggested that some of the high hypnotizable subjects'

responses to the "hidden observer" suggestion are vague and ambiguous. These types of responses cannot reasonably be explained in terms of the "amnesic barrier". He then proposed that some kind of "selective attention" hypothesis could be used to explain these results. The second and third source stemmed from experimental work done by Ingram, Saccuzo, McNeil, and McDonald (1979) and Karlin (1979) who showed that high hypnotizable subjects seem to have a better attentional capacity. The following task was then devised: subjects would listen to a tape on which two tasks were recorded. On one channel, successive random numbers were spoken and on the second one a story was told. Subjects had to repeat the numbers, as they heard them, and attend at the same time to the story. At the end of the task, they were given two questionnaires on the story. Before the beginning of session II, all subjects had a first session to familiarize them with the dichotic technique. The first session also served as a baseline record for each subject; subjects were told that they would have to perform a similar task during the hypnosis session. All texts and accompanying multiple choice questions used in the dichotic listening task originated from Educational Laboratories, Don Mills, Ontario. The texts were taken from series HG-10/23. The pre-induction session lasted four minutes. The experimental session lasted 6.50 minutes. The texts were read by a native speaker at an average speed of 165 words per minute.

A list of random numbers was constructed using the digits 1, 2, 3, 4; this list was used as a shadowing task. The speed of shadowing was 1 digit every 750 milliseconds during the entire task. The subjects had to repeat aloud each number as they heard them. Each time a wrong number was called, or if the subjects inserted additional numbers, it was recorded as an error.

The instructions in the pre-induction condition were given by the experimenter; in the experimental session they were given on the tape itself. The instructions were followed by a warning signal 10 seconds before the beginning of the task.

Fourteen different scores were derived from this item:

1. percentage of shadowing error, pre- and post-induction.
2. percentage of correct answers on the multiple-choice questionnaires, pre- and post-induction.
3. percentage of bits of information recalled on the free-recall form, pre- and post-induction. An information bit was defined as being at least a word related to the story.
4. percentage of certainty for the questions on the multiple-choice questionnaire; three percentages were obtained for pre- and post-induction: a global percentage, a percentage for the correct answers, a percentage for the incorrect answers.
5. Intrusions in free-recall: the presence or absence of any irrelevant bit of information written on the free-recall form was noted. An intrusion was defined as any word that

did not relate to the story and that the subject had not indicated as being a guess.

(c) Confabulation Item This item has been extensively described in the Introduction, Method, and Appendix C. Refer to these sections for any details concerning this item.

(d) Source Amnesia. This item was taken from Evans and Thorn (1966). Again this item is seen as tapping dissociative processes in hypnosis (Hilgard, 1965; Evans & Thorn, 1966). In this item subjects are given specific information during the hypnotic session, usually in a question and answer form. No information is provided as to the goal of the questioning or the expectations of the hypnotist. At the end of the session, during the recall test of the amnesia suggestion, the questions are asked again if the subject did not mention them in his/her recall. Typically, subjects manifesting the source amnesia phenomenon will be able to give correct responses but will have forgotten that they learned them in hypnosis. They will say that they don't know how or why they know these answers or they will try to rationalize their answers. If this happens, the item is scored positively.

(e) Rapid Reinduction Technique. Taken from Weitzenhoffer (1957), this technique was introduced in the hypnotic session in preparation for subsequent sessions. Subjects are shown a pen and told that next time they come to the lab, they will rapidly experience hypnosis just by looking at the pen. They are told that they will feel their eyes closing and will soon

be as hypnotized as in their previous session, without going through the usual induction procedures. This technique can be a time-saver when working individually with a large sample.

(f) Posthypnotic Amnesia. This item is identical to the one used in Session I and needs no further description.

(g) Posthypnotic Suggestion. This item, taken from Weitzenhoffer and Hilgard (1959), is described as the carry-over of a suggestion outside of the hypnotic context. This item has generally shown no correlation with the posthypnotic amnesia item. Here the subject is told during the dehypnotization period that on a prearranged cue, he/she will stand and stretch. The item is passed if the subject carried out the suggestion completely. This method of scoring differs from the standard one: usually, any partial movement will be scored as a success. In the present study, a more stringent criterion was chosen to eliminate any ambiguous responses.

Items in Experimental Session III

(a) Stroop Test. The standard version of the Stroop Color and Word Test (Golden, 1975, 1978) was used in the study. Following previous results (Laurence & Perry, 1981) showing that high hypnotizables demonstrated differential cognitive patterns in response to dissociation-like hypnotic items, it was thought that their performance would differ on a task requiring immediate adaptive cognitive control. The Stroop Test could be used to derive a score of interference proneness.

(b) Hand and Arm Levitation. Following the induction by the

rapid reinduction technique (described in a previous section), this item was used as a deepening technique. Although this item is solely an index of motor responses to suggestion, it is one of the more difficult to succeed. Only approximately 35% of a general sample will actually respond positively to this item (Hilgard, 1965); most high hypnotizable subjects however can do this item easily.

(c) Hypnotic Dream. This item was taken from the SHSS:C of Weitzenhoffer and Hilgard (1962). Subjects are specifically instructed that they're going to have a dream about hypnosis and what it means for them to be hypnotized. They are then given suggestion to sleep and dream. In this session a finger-signaling technique was used so that the experimenter would know when the dream began and when it ended. Subjects were told that the index finger of their right hand would raise when the dream began and return to its original position when the dream ended. This technique is more permissive than the one originally used in the SHSS:C. However the same scoring procedure was retained. The dream is passed if the subject has had an experience comparable to a dream, not just fleeting experiences, thoughts, or feelings without accompanying imagery.

(d) Double Hallucination. This item was selected from the Stanford Profile Scales, Form I (Weitzenhoffer & Hilgard, 1967). The subject is asked to hallucinate the presence of a second lightbulb, identical to one he or she is actually

looking at; with their eyes opened, only about 11% of selected subjects can succeed this item. When asked to do it with their eyes closed, 35% can successfully produce the required hallucination (Hilgard, 1965). It is also an indication of what Orne (1959) has called trance logic; confronted with two identical stimuli, and knowing that one of them is an hallucination does not seem to trouble the highly hypnotizable subjects. When asked to identify the real object, the subject will usually succeed even if at first he/she insisted that both were perfectly identical. Subjects will describe the hallucination as having a transparent appearance, as if they could see through it. In the present study, both the report of seeing the second light and the subject's description of it were taken into account in the scoring procedures.

(e) Pseudo-analgesia Item. This item was taken from Arons (1967). Arons has proposed this item as a way of identifying subjects who are faking hypnosis in a forensic context. This item is believed also to index trance logic. No data however have been presented on the validity and reliability of the item. The item can be described in the following way: an arm analgesia is induced in the subject and tested by pricking his/her arm with a needle. You then draw a circle on his/her hand, telling him/her that the feeling is now back everywhere except within this circle. You then give the following instructions: "I am going to touch you with this needle on various parts of your hand and arm. Whenever you feel the touch,

say "Yes" - whenever you don't feel it, say "No" (Arons, 1967, p. 141).

According to Arons, if the subjects are not following the instructions and say nothing when the anesthetic area is touched by the needle, it is an indication that they are faking. Subjects who would be "really" hypnotized would accept the contradictory instructions (trance logic) and say "No" each time they did not feel the needle.

The item was used in the present study as a first attempt to gather some data on how high hypnotizable subjects would react to such instructions.

(f) Posthypnotic Amnesia. This item was identical to the one used in Session I and had already been described in a previous section.

It should be noted here that subjects in Group 2 received the confabulation item as part of Session III. The item was inserted after the hypnotic dream; it was administered as described previously.

Appendix G

Variable Descriptions and Scoring Procedures

Variables 1 to 5 were identifying variables for each subject and will not be described here as they are not relevant to the data presented in Appendix H and to the statistical tests conducted in the present study.

Variable 06: Stanford Hypnotic Susceptibility Scale, Form C
SHSS:C score, scale of 0 to 12.

Variable 07: Response to the "hidden observer" suggestion.

This variable was scored 1 if the subject showed recovery of pain during the suggestion and/or some subjective alteration related to the presence of a "second" part. Above all, the presence of both criteria was looked for. The variable was scored 0 if there was no recovery of pain and/or no reported subjective alteration.

Variable 08: Duality report in age regression. This variable was scored 1 if the subject reported during the EAT interview a feeling of dual functioning during the age regression item. Any report of feeling simultaneously or in alternation both adult and child was scored as a duality report. The variable was scored 0 if the subject denied any adult identity during the regression and steadfastly maintained that he/she was 5 years old.

- Variable 09: Pain report in the analgesic right hand following shock administration (Scale of 1 to 10).
- Variable 10: Pain report in the left (control) hand (Scale of 1 to 10).
- Variable 11: Pain report in the right analgesic hand during the "hidden observer" suggestion (Scale of 1 to 10).
- Variable 12: Delusion of number 5. This variable was scored 1 if the subject did not say or use the number 5 during the counting task and the arithmetic additions.
- The variable was scored 0 if the subject used the number 5 at any point during the item.
- Variable 13: Posthypnotic suggestion, Session II. This variable was scored 1 if the subject actually got up and stretched on the prearranged cue. The variable was scored 0 if the subject did not get up and stretch.
- Variable 14: Shadowing pre-hypnosis, percentage of correct numbers shadowed.
- Variable 15: Shadowing during hypnosis, percentage of correct numbers shadowed.
- Variable 16: Percentage of correct bits of information reported during the free-recall test, in the pre-hypnosis session.
- Variable 17: Percentage of correct bits of information reported

during the free-recall test, during the hypnosis session.

Variable 18: Multiple-choice questions answered correctly during the pre-hypnosis session, percentage of correct answers.

Variable 19: Multiple choice questions answered correctly during the hypnosis session, percentage of correct answers.

Variable 20: Percentage of certainty, total questions, pre-hypnosis session.

Variable 21: Percentage of certainty, total questions, during hypnosis session.

Variable 22: Percentage of certainty, correct answers, pre-hypnosis session.

Variable 23: Percentage of certainty, correct answers, during hypnosis session.

Variable 24: Percentage of certainty, incorrect answers, pre-hypnosis session.

Variable 25: Percentage of certainty, incorrect answers, during hypnosis session.

Variable 26: Source Amnesia. This variable was scored 1 if the subject gave the right answers during testing to the questions but could not explain how he/she knew them or if the subject rationalized the fact that he/she knew the answers.

The variable was scored 0 if the subject post-

hypnotically did not know the correct answers or could give the correct source of information.

Variable 27: Memory Creation Item. This item was scored 1 if the subject incorporated the suggested memory into his/her description of what happened during the night chosen for the regression, or if he/she showed evidence of confusion as to the correct origin of the suggested noises.

The item was scored 0 if the subject did not acknowledge hearing noises, or if he/she correctly identified the source of the noises.

Variable 28: Double Hallucination. The item was scored 1 if the subject reported seeing two lights turned on rather than the single light present.

The item was scored 0 if the subject reported seeing only one light.

Variable 29: Stroop Interference Scores. A ratio was taken between the time to read the interference sheet and the time taken to read the color sheet..

Variable 30: Three Boxes Hallucination. This item was scored 1 if the subject reported seeing only two boxes rather than the three that were presented.

The item was scored 0 if the subject reported seeing the three boxes.

Variable 31: Voice Hallucination. The item was scored 1 if the subject answered at least one question when

it was suggested that a person (actually not present) would ask him or her a few factual questions.

The item was scored 0 if the subject did not answer any question.

Variable 32: Intrusions in free-recall. If at least one intrusion was present in the free-recall during the pre-hypnosis session, the item was scored as 1.

If no intrusion was noted, the item was scored as 0.

Variable 33: The same as 32, for the during hypnosis session.

Variables 34 to 37 were actually variables 09 to 11 and 29; their scoring procedures have been described earlier. For the purpose of an analysis using stepwise discriminant analysis, the numerical data for these variables were divided by median split, with 1 = above the median and 0 = below the median.

Appendix H

Individual scores for each subject on all variables

<u>Ss: Group 1</u>	Variables							
	06	07	08	09	10	11	12	13
01	12	00	01	04	06	05	00	01
02	12	00	01	02	08	01	01	01
03	10	01	01	03	06	04	01	01
04	11	00	00	04	10	01	01	01
05	09	00	00	02	09	02	01	01
06	09	00	00	05	10	05	01	01
07	12	00	00	02	08	07	01	01
08	10	00	00	05	06	03	00	01
09	10	01	01	01	04	02	01	01
10	11	01	01	03	09	01	01	01
11	10	00	00	06	10	06	00	01
12	10	00	00	04	10	04	01	01
13	11	01	01	01	05	02	01	01
14	11	01	01	07	10	10	01	01
15	09	00	01	03	07	05	00	01
16	10	00	00	02	09	04	01	01
17	11	00	01	03	08	03	00	01

	Ss: Group 1			Variables				
	14	15	16	17	18	19	20	21
01	79	70	05.75	21.87	38	66	06.62	69.77
02	79	79	01.00	18.75	38	44	28.12	90.66
03	83	86	05.75	06.87	50	55	24.50	42.66
04	69	78	06.89	04.37	50	44	46.87	72.22
05	72	65	06.89	07.50	25	77	00.00	36.88
06	91	89	04.60	03.75	25	33	23.37	36.22
07	93	92	09.20	06.87	25	44	58.87	79.55
08	95	92	02.30	06.87	25	66	08.00	63.33
09	81	81	02.30	05.00	13	33	01.12	00.88
10	76	72	04.60	04.37	00	11	40.87	77.00
11	99	99	01.15	05.62	13	66	00.00	27.44
12	85	82	04.60	03.75	38	22	03.50	24.66
13	83	80	06.90	10.00	25	44	44.87	61.88
14	95	95	06.89	05.00	38	33	41.00	75.11
15	75	75	06.89	10.00	50	55	50.12	68.88
16	73	78	03.45	05.00	50	22	37.37	91.66
17	84	3	10.34	08.12	75	44	55.75	56.33

<u>Ss: Group 1</u>	Variables							
	22	23	24	25	26	27	28	29
01	14.33	02.00	67.33	74.66	01	01	00	16.3
02	38.33	22.00	85.25	95.00	00	00	01	17.6
03	31.50	17.50	52.20	30.75	00	01	00	18.0
04	56.25	37.50	81.25	65.00	00	00	01	15.5
05	00.00	00.00	45.28	07.50	00	00	00	23.8
06	31.50	20.66	31.00	38.83	01	00	00	17.0
07	55.55	60.00	80.50	78.80	01	00	01	17.6
08	01.00	01.00	07.00	50.00	00	00	00	14.4
09	01.00	01.14	00.00	01.50	01	01	01	19.0
10	00.00	40.87	81.00	76.50	01	01	01	26.6
11	00.00	00.00	39.50	03.33	00	00	00	1.60
12	01.00	05.00	37.50	21.00	00	00	00	22.7
13	38.50	47.00	76.00	50.60	01	01	01	15.3
14	29.00	48.20	70.00	77.66	01	01	00	19.3
15	68.26	32.00	79.60	55.50	01	01	01	19.0
16	37.25	37.50	87.50	92.85	00	01	00	19.5
17	56.00	55.00	53.00	59.00	01	01	00	18.1

<u>Ss: Group 1</u>	Variables							
	30	31	32	33	34	35	36	37
01	01	01	01	01	01	00	01	00
02	01	01	01	01	00	00	00	01
03	00	01	01	01	01	00	01	01
04	00	01	01	00	01	01	00	00
05	00	00	00	00	00	01	00	01
06	01	00	00	00	01	01	01	00
07	01	01	00	01	00	00	01	01
08	00	00	00	00	01	00	01	00
09	01	00	01	01	00	00	00	01
10	01	01	01	01	01	01	00	00
11	00	00	00	00	01	01	01	00
12	00	01	00	00	01	01	01	00
13	01	01	01	01	00	00	00	01
14	00	01	01	01	01	01	01	01
15	00	00	01	01	01	00	01	01
16	00	00	01	01	00	01	01	01
17	01	00	01	01	01	00	01	01

<u>Ss: Group 2</u>	Variables							
	06	07	08	09	10	11	12	13
18	10	01	01	02	10	04	01	01
19	10	01	01	01	10	01	00	00
20	11	00	00	08	10	03	00	01
21	11	00	00	01	07	00	01	01
22	12	00	00	05	08	02	01	01
23	12	00	00	05	09	04	01	01
24	11	00	00	02	09	02	01	01
25	12	00	00	02	09	02	00	01
26	12	01	01	02	07	07	01	01
27	11	00	00	03	08	02	01	01

	<u>Ss: Group 2</u>	14	15	16	Variables	17	18	19	20	21
18	78	78	99.00	99.00	99	33	99.00	99.00		
19	89	89	99.00	99.00	99	50	99.00	99.00		
20	80	87	99.00	99.00	99	44	99.00	99.00		
21	81	98	99.00	99.00	99	75	99.00	99.00		
22	75	83	99.00	99.00	99	89	99.00	99.00		
23	96	86	99.00	99.00	99	66	99.00	99.00		
24	97	98	99.00	99.00	99	11	99.00	99.00		
25	72	80	99.00	99.00	99	55	99.00	99.00		
26	97	98	99.00	99.00	99	33	99.00	99.00		
27	72	79	99.00	99.00	99	33	99.00	99.00		

<u>Ss: Group 2</u>	Variables							
	22	23	24	25	26	27	28	29
18	99.00	99.00	99.00	99.00	01	01	00	16.0
19	99.00	99.00	99.00	99.00	00	01	01	15.4
20	99.00	99.00	99.00	99.00	01	00	00	16.2
21	99.00	99.00	99.00	99.00	00	01	00	19.5
22	99.00	99.00	99.00	99.00	00	00	00	21.0
23	99.00	99.00	99.00	99.00	01	00	00	16.0
24	99.00	99.00	99.00	99.00	00	00	00	16.0
25	99.00	99.00	99.00	99.00	01	00	01	19.7
26	99.00	99.00	99.00	99.00	00	00	01	27.2
27	99.00	99.00	99.00	99.00	01	01	01	14.6

	Variables							
	<u>Ss: Group 2</u>	30	31	32	33	34	35	36
18	01	00	99	99	00	01	01	00
19	00	00	99	99	00	01	00	00
20	01	00	99	99	01	01	01	00
21	00	01	99	99	00	00	00	01
22	01	01	99	99	01	00	00	01
23	01	01	99	99	01	01	01	00
24	00	01	99	99	00	01	00	00
25	01	01	99	99	00	01	00	01
26	01	01	99	99	00	00	01	01
27	01	01	99	99	01	00	00	00