

provide an explanation of the role played by the amnesic process in the persistence of hypnotically suggested effects beyond the hypnotic context.

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## INTRODUCTION

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It is well known that there are individual differences in responsivity to hypnosis. Repeatedly, it has been demonstrated that 10-15 percent of individuals are highly responsive to hypnosis (being capable of posthypnotic amnesia and usually of posthypnotic suggestion), a further 10-15 percent are totally unresponsive to hypnotic influence, while the remaining 70-80 percent are moderately susceptible to varying degrees (Bernheim, 1889; Faria, 1819; Hilgard, 1965). The very stability of this finding has led to two of the several major developments in contemporary hypnosis research. On the one hand, considerable effort has been expended in seeking out the personality characteristics and/or cognitive skills which differentiate the highly susceptible 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; for a review of the procedures see Sheehan and Perry, 1976). In essence, the real-simulator approach compares highly susceptible 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 procedure of an experiment which communicate the experimental hypothesis to the

subject.

Despite considerable experimentation using the real-simulator method, relatively few differences have been demonstrated between hypnotized high susceptible subjects, and insusceptible simulators (Sheehan & Perry, 1976). One reason for this may be that there are important individual differences among highly susceptible subjects themselves (Perry, Note 1). These differences could then help to account for the heterogeneity of responses demonstrated by this group of subjects when they are administered hypnotic items of high item difficulty.

A recent experiment (Laurence, 1979; Perry & Laurence, 1980) sought to investigate the possibility of differential response patterns among the highly hypnotizable. Ten highly susceptible subjects, who had been screened on the Harvard Group Scale of Hypnotic Susceptibility: Form A (HGSHS: A) of Shor and E. Orne (1962) and the Stanford Hypnotic Susceptibility Scale: Form C (SHSS: C) of Weitzenhoffer and Hilgard (1962) underwent a third hypnotic session, involving seven hypnotic items. The items were arm rigidity, delusion of a missing number, regression to age five, glove analgesia, the "hidden observer" effect, an uncancelled suggestion, and posthypnotic amnesia.

On only two of the seven items was any relationship found. Five of the ten highly hypnotizable subjects manifested Hilgard's "hidden observer" effect; the other five did not. The same five subjects manifesting a "hidden observer" reported duality (Perry & Walsh, 1978) during age regression in which they experienced being both adult and child either simultaneously or in alternation. None of the five subjects

who failed to manifest a "hidden observer" effect reported this duality. Despite extensive questioning, they all maintained that they really felt that they were five years old, and had no sense of being an adult. These findings suggested that two types of dissociative process might exist among highly hypnotizable subjects. The reports of subjects manifesting the "hidden observer" that they experienced duality during age regression describe the situation as it actually is; they are in fact adults in an experiment, re-experiencing childhood vividly. The reports of the remaining subjects that they really felt that they were five years old suggest a different dissociative process, in which the involvement in hypnosis appears to be so intense as to lead them to become unaware of their adult identities.

Before describing the present study, which followed from this initial finding, it is first necessary to review the literature on the "hidden observer" effect. The following sections outline the origins of this particular concept, the theory and the theoretical underpinnings on which it is based, and the experimental data that have thus far accrued.

#### Hilgard's "Hidden Observer" Effect

The "hidden observer" is a metaphor, devised by Hilgard (1973a, 1973b) in recent years. It is designed to draw attention to the possibility that multiple semi-autonomous cognitive control systems influence mental functioning. He maintains that some of these can be active out of awareness, but may be tapped by hypnosis. He believes that further, the phenomenon is not confined to hypnosis; rather, hypnosis merely provides a mean by which the "hidden observer" effect can be

evaluated under controlled laboratory conditions, by means of what Hilgard (1973a, 1973b) calls a reference experiment. On the basis of a number of such experiments, plus an integration of the 19th century hypnosis literature on dissociation, with the writings of several contemporary investigators in general psychology, Hilgard (1973a, 1977, 1979) has proposed what he calls a neo-dissociation theory which presents a pluralistic account of mental functioning both in the hypnotic context, and beyond it.

Origins of the Neo-Dissociation Theory

In 1974, in an influential paper, Hilgard (Note 2) discussed the difficulties of the "altered state" notion as it was then formulated as an attempt to account for hypnotic phenomena. He outlined four major difficulties with the "altered state" notion, and proposed neo-dissociation theory as an alternative.

He noted, firstly, that highly susceptible subjects may give most of the characteristic responses of hypnosis out of hypnosis, thus favoring a trait approach over a state approach. Further, he pointed to the well-known observation that posthypnotic responses are given after the subject has been dehypnotized, and no longer feels that he or she is hypnotized. He gave the example of a subject coming out of hypnosis unaware that the hypnotist has suggested that the arm be held high in the air. A state approach would have to maintain the contradictory position that such a subject was still in a hypnotic state, but that having responded to dehypnotization, believed that he or she was no longer hypnotized. A third objection to the altered state notion comes from self-hypnosis, where the person is both operator and subject. "Is he

then in two states at once?" (Hilgard, Note 2, page 2). A final objection to state theorizing in hypnosis stems from the fact that there are no physiological indices of hypnosis which would identify it as a distinct state. Further, subjective data indicate that hypnosis may occur as an experience of deep relaxation, or in the context of vigorous exercise such as riding a bicycle (Banyai & Hilgard, 1976). This observation raises the problem of there being more than one state if one holds to a strict state theory.

The validity of these objections to the altered state notion was accepted by most of its proponents as well as its critics. The problem at this time for proponents of an altered state notion was to find an alternative formulation which could better accommodate these observations made by Hilgard which go contrary to a conventional state theorizing. A serendipitous finding provided the impetus for the formulation of neo-dissociation theory. Hilgard (Note 2) writes:

I was demonstrating hypnotic deafness before a class of senior majors in psychology, using a subject who had previously shown himself capable of complete hypnotic deafness, not reacting at all to blank pistol shots fired near his head. I had indicated that when I counted to three, he would become completely deaf to all sounds until I restored his hearing by placing my hand on his upper arm. I then proceeded to make some loud sounds by clapping some wooden blocks together behind his head, and he showed no response whatever. He was, of course, indifferent to all questioning. At this point a student inquired whether or not some part of him was not hearing the sound, for surely his hearing apparatus was still normal. Taking a clue from some of the clinical workers who make a good deal of use of finger responses, I said that we might try to find out. Then, in a quiet voice, I talked to him as follows:

"Bob, you know that there are many things going on in our bodies of which we are unaware, such as digestive processes, the circulation of hormones, homeostatic processes. It may be that there are information processing systems also that go on out of awareness. If some part of you has been hearing what I am now



saying, perhaps that part can give evidence of it by having the index finger of your right hand lift up."

To my surprise, and that of the class, the finger rose, and immediately Bob spoke out: "Please restore my hearing. I felt my finger rise, and you must have done something to me. It was not an ordinary finger twitch, but a real movement, and I want to know what you did to make it rise."

I placed my hand on his arm, and then asked him what had been happening since he sat in the chair before the class. He remembered something about counting and him losing his hearing at the count of three, and my talking about the signal for restoring his hearing. He became tired of sitting there a long time with nothing happening, and so to keep from getting bored he had worked on a statistical problem that had occupied him earlier in the day, until suddenly he felt his finger rise; then he had asked that his hearing be restored. I told him what happened, and he was as puzzled by it as the rest of us. This gave us the clue, however, that we might have access to an experiencing part of the person that was behind some sort of barrier in hypnosis, and we began to do some pilot studies on pain. (pages 4-6)

This example suggested clearly the operation of a dissociative process in the hypnotized subject, or a "doubling of consciousness" (Prince, 1905/1957). Dissociation theory in hypnosis, though common in the late 19th century and the early decades of this century, fell into disfavor (White & Shevach, 1942) with the emergence of S-R models of behavior and with the wider acceptance of the psychoanalytic doctrines. The concept of repression for one, and the recognition, also, of the contingencies imposed upon the individual by the environment, slowly replaced the idea that phenomena like hypnosis and hysteria were elicited by a dissociation of the healthy individual's mental processes. Although some authors still maintain the extreme position (Spiegel & Spiegel, 1978) that the highly hypnotizable person is, in fact, an embryonic hysteric, the more general consensus is that high hypnotic susceptibility cannot be accounted for in psychopathological terms. Nevertheless, observations made in a clinical population have often provided important

insights into normal functioning, as is exemplified by the contribution of the literature on neurosis to the understanding of non-pathological or normal functioning. Hilgard (1973a) chose to label his approach neo-dissociation theory in an attempt to distinguish his approach from the hypnotic literature on hysteria and dissociation. At the same time, such a choice enabled him to draw upon this earlier literature without implying psychopathology.

The Dissociation Literature in Hypnosis

As Ellenberger (1970) has pointed out, the animal magnetism movement initiated by Mesmer in the late 18th century, created the initial interest in dissociation. It appeared to the early magnetists that when they induced what is now called hypnosis in a person "a new life manifested itself of which the person was unaware, and that a new and often more brilliant personality emerged with a continuous life of its own" (Ellenberger, 1970, page 145). The question of a coexistence between two mental systems, and their relationship, was a major pre-occupation of the entire nineteenth century, but it crystallized towards the last decades of the century in the writings of Janet and of Binet, and was influenced by factors additional to the interest in hypnosis. Hilgard (1973a) points to the general excitement created by Charcot's work at the Salpêtrière Hospital in Paris at around this period. Further, the trances of mediums also attracted wide public interest at this same time. In a paper of 1887, followed by a book (L'Automatisme Psychologique) of 1889, Janet used the term "subconscious" for the first time, and talked about ideas unavailable to consciousness becoming "dissociated" or "disaggregated" so that they could no longer be

synthesized in consciousness.<sup>1</sup> These ideas were taken up by such eminent psychologists as William James, Boris Sidis and Morton Prince in the United States, and in Germany, Dessoir wrote a book on the subject called The Double-Ego, one year after Janet's book (Hilgard, 1974). At the same time, Freud was interesting himself in hypnosis, and his first attempts to formulate the notion of an unconscious held that it consisted of repressed thoughts and wishes (Breuer & Freud, 1895).

Overall, the main intellectual debate on dissociation hinged around the question of whether mental organization was dipsychic or polypsychic (Ellenberger, 1970). The dipsychic view held that there were two layers of consciousness, where the second layer remained hidden, revealing itself occasionally through dreams, psychopathological symptoms, in hypnosis and occasionally, in unusual and unexpected creative outpourings. In this "closed" form of the theory (Ellenberger, 1970) the subconscious contained tendencies and memories stemming from the individual's experience which were no longer available to consciousness.

In the "open" (polypsychic) form of the theory, the subconscious was thought to be more extensive than the conscious; further, it had access to experiences that had never been in waking consciousness. In addition, notions of a subliminal self were posited by Myers (1885, 1903) and endorsed by James (1902). Jung's notion of the collective unconscious can be seen as a more recent instance of polypsychism, as can the Freudian division of mind into Id, Ego and Super-Ego. Interestingly, Freud moved from the dipsychic position of 1895 to a polypsychic position (Freud 1923/1927). It is also around that same period that Freud condemned the use of hypnosis and started using a "hand imposition"

technique to induce a suggestive state (Chertok, 1958). There is no reason apparent to Hilgard (1973b) as to why dissociation theory declined during the 1930's, other than that there was a general decline in the study of hypnosis as psychoanalytic and S-R theories of psychopathology came into vogue. Certainly, dissociation theory was never attacked; it seems rather to have lost its impact as other approaches became more interesting to psychologists. Some of these approaches, interestingly enough, ultimately incorporated notions that are not unlike the earlier doctrines of dissociation, and in gathering together the underpinnings of neo-dissociation theory, Hilgard has drawn upon these also.

#### Related Formulations from General Psychology

In his initial exposition of neo-dissociation theory, Hilgard (1973a) outlined and critiqued two alternatives to classical dissociation theory which stemmed respectively from psychoanalysis and from social psychology.

The neo-Freudians sought to extend the Freudian tripartite division of mind as Ego, Id, Super-Ego, by postulating various "ego mechanisms" which were involved in the organism's adjustment to the environment. They also developed a concept of partial and reversible regression, which in due course, became central in psychoanalytic attempts to account for hypnotic phenomena. Gill and Brenman's (1959) formulation of "regression in the service of the ego" saw hypnosis as a regressive state. Their main observation, upon which this regression hypothesis was based, stemmed from the seeming lack of critical thought processing manifested by the hypnotized person. This led them to think in terms of a

fractionation of the ego such that the dominant ego somehow receded from prominence, but never relinquished its overall functions of surveillance; it continued to observe the events of hypnosis, and to maintain a degree of control over the hypnotized person. In pointing to differences between his own theory, and that of Gill and Brenman (1959), Hilgard (1973a) points out that the latter can account for hypnotic dissociation post hoc, just as adequately as he himself can, and without relinquishing an analytic terminology. His preference for his own position, however, ultimately depends upon parsimony and utility; Gill and Brenman's theory is argued to be "so intertwined with a meta-psychology of five points of view (structural, dynamic, adaptive, genetic, and economic) that I am unable to apply it clearly to precise experimental findings" (1973a, p. 403). Other objections to the notion of a regressed ego-state are expressed elsewhere (Hilgard, 1973b, p. 207-208), and are not strictly relevant to the present exposition.

The role enactment theory of Sarbin (1950), which has been formulated more fully elsewhere (Sarbin & Coe, 1972) presents a second alternative to neo-dissociation theory, since it assumes that a person may enact several roles at once, or in sequence, both publicly and privately. Thus, a role metaphor enables Sarbin and Coe to provide an alternative account of dissociative phenomena. Their analysis of hypnotic analgesia is characteristic, and is cited by Hilgard (1973a).

They wrote:

In another case, a patient reported no pain after his hypnotherapist had burned his wrist as an experiment. The patient had to choose between disclosing that he felt the burn, thereby embarrassing and perhaps displeasing the therapist on whom he had become dependent, or not disclosing the private fact that he felt the burn and thus avoiding the risk of weakening the relationship.

With the antecedent conditions of the verbal report made clearer the "secret" metaphor helps to understand why the patient would not report: "You hurt me." (Sarbin & Coe, 1972, p. 136).

It may be true that some instances of apparent hypnotic analgesia can be accounted for in such voluntaristic terms of the patient deliberately suppressing a verbal report of pain so as to please the hypnotist, and to avoid the risk of a ruptured relationship. But, as Hilgard (1973a) points out, such an account would not be adequate to describe the behavior of one of his subjects who, finding that dental anesthetics provided insufficient pain relief, had abandoned them in favour of self hypnosis. In such a situation, no hypnotist is around to embarrass or please, and there is no likelihood that the subject would substitute the partial relief provided by dental anesthesia for pseudo-relief from self hypnosis.

If on the other hand the private experience of pain is so private as to be inaccessible to the hypnotized person's conscious awareness, there is little disagreement between dissociation and role theorizing, except in terms of whether the metaphor of keeping a secret from oneself is appropriate and viable. Role theory talks about role immersion and organismic involvement (though it is often unclear as to when these processes are deemed appropriate to explain the variety of psychological phenomena to which the theory addresses itself). But certainly, the immersion and involvement notions are used to account for such phenomena as psychic death, as in the bone pointing of the Australian aboriginals, and voodoo death. It is not apparent from their writings, however, that Sarbin and Coe consider immersion and involvement as relevant to the understanding of hypnotic analgesia, though obviously it could be applied

in this way so as to avoid the apparent voluntarism of the "secret" metaphor.

It can be noted that Hilgard (1973a, 1973b, 1977) sees links also between neo-dissociation theory and other formulations in General Psychology as diverse as Miller, Galanter and Pribram's (1960) formulation of TOTE's, Festinger's (1957) notion of cognitive dissonance, and Melzack and Wall's (1965) "gate control" theory.

#### A Reference Experiment

Before describing neo-dissociation theory it is useful to discuss the typical experiment from which evidence for a "hidden observer" phenomenon is derived, on the basis of which Hilgard has proposed his neo-dissociation theory. Following the serendipitous finding of a dissociative process of information processing out of awareness during the demonstration of hypnotic deafness previously described, Hilgard proceeded to seek empirical support for the phenomenon. His typical reference experiment has involved cold pressor pain, in which hypnotized subjects have been required to immerse a forearm in swirling ice water (although in one study, ischemic pain was investigated). The duration of the immersion has varied across experiments, but this has had no effect on the consistency of the findings.

After pain reports have been obtained for the hypnotic analgesic condition (and for a prior non-analgesic condition in order to obtain a baseline) the "hidden observer" instructions are administered. Since these instructions have proven to be controversial to some investigators, and since the procedures used in the study to be described departs in some respects from the procedures used by Hilgard, they are reproduced

in full. The subject is told the following:

You know that when you are hypnotized, as you are now, you can have many experiences that lie outside of ordinary reality. You can fail to smell or hear things that are actually there; you can have the experience of feeling much younger than you are, and so forth. While you are having these experiences, you are unaware of ordinary reality, for example, when you forget things in hypnosis that you ordinarily remember very well. The experiences in hypnosis are real; yet, even at the time you are hypnotized and experiencing these things, there is some part of your mind, a hidden part, that knows what is going on, your body knows in some way what is happening to it when it is stimulated. Many regulators of body processes are involuntary, not represented fully in awareness, like heart rate or blood pressure, or temperature control. Correspondingly, there are aspects of what is going on when you are deeply engrossed in hypnotic experiences that are unknown to you, but part of you is still registering what is happening.

When I want to speak with this hidden part of yourself, I will place my hand on your shoulder, like this (demonstrate). When I place my hand on your shoulder I will be in communication with this hidden part, and we can talk together; but the hypnotized part of you, the part to whom I am talking now, will not know that you are talking to me. It will not know what you are saying, or even that you are talking. When I then remove my hand from your shoulder you will be back in the hypnotic state you are now in, and you will not know what you said or even that you were talking to me. You will forget all about it until I say, after you are out of hypnosis: Now you can remember everything about the hidden part of yourself, what you said when I had my hand on your shoulder, and how you felt during the experiment when the events we talked about were taking place. Until then, however, everything will be as it was before I placed my hand on your shoulder, and you will forget everything that the hidden part of you revealed. Is this all clear?

The hypnotist then places his hand on the subject's shoulder and questions him about his experience, as follows.

"I am now placing my hand on your shoulder so that I can get into communication with that hidden part of you that knows everything that has been happening. Today your hand and arm were placed in the water following suggestions of numbness. Do you remember, now the highest pain that you reported?"

"Do you now agree that this was the highest pain that you felt (If "no," what was it?)."



"Do you now have access to information about your experience that was not available to you before?"

The hypnotist then removes his hand from the subject's shoulder, and arouses him from hypnosis. He is again questioned about his experience of pain and the events that followed. Whether or not the subject reports amnesia for the hidden observer, the amnesia release is given, and he is questioned further.

"When you recalled that you reported higher pain by your hidden part, did you remember the pain or did you just remember what you said? What is this split in awareness like?" This inquiry continues as appropriate, and the session is terminated. (Hilgard, Note 3, pages 1-2).

The typical finding is that the "hidden observer" reports a level of pain which is more similar to the report in the control condition than to that of the analgesia condition. For example, a typical report in the control condition will be from 9-10 (on a 10-point scale) and in the analgesia condition, it will be from 1-2. In the "hidden observer" condition, the pain report tends to be 7-8 although it often reaches the level seen in the control condition. This leads Hilgard to conclude that while the pain is barely felt during hypnotic analgesia, it is registered, nevertheless, at some other level, as evidenced by the "hidden observer" reports. While earlier studies utilized only subjects who appeared to manifest the "hidden observer" effect, more recent writings (Hilgard, 1977, 1979) emphasize that not all highly hypnotizable subjects experience a "hidden observer". This may ultimately lead to a modification of neo-dissociation theory, in order to take this observation into

account. For the present, it is sufficient to describe the main postulates of the theory as it presently stands.

### Neo-Dissociation Theory

Hilgard's main point of departure from classical dissociation theory is in terms of the nature of the dissociative splitting of cognitive systems. The earlier dissociation theorists held that if cognitive systems were dissociated, there should be no interaction between them. They maintained further, that if there was interaction between them, it should be reduced by hypnotic dissociation.

While arguing that this problem of separation, in awareness and behavior, is an empirical one, Hilgard (1973a) clearly prefers a notion of partial dissociation, and sees dissociation as a matter of both dimensionality and degree. As he puts it: "cognitive and behavioral systems that are separated in one dimension may be interacting in another, and the separation or interaction need not be sharp in order for some dissociative process to be demonstrated" (1973a, p. 404).

The classes of phenomena that neo-dissociation theory seeks to account for can be subsumed under the general title of cognitive processing out of awareness. Hilgard (1977) gives the example of a person driving an automobile while carrying out a conversation. He maintains that such behavior involves a fair degree of automaticity such as responding to road signs, traffic signals, and the ongoing traffic flow. Another example comes from the reports of some eminent scientists who after struggling with a problem, often for years, have had a dream in which the solution was reached, automatically and accurately.

In all of his expositions of neo-dissociation theory, Hilgard

(1973a, 1977, 1979, Note 1; Hilgard & Hilgard, 1975) resorts to a diagrammatical representation of the theory, which is reproduced in Figure 1.

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INSERT FIGURE 1, ABOUT HERE

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Hilgard (1973a) has emphasized, consistently, that the model, though derived from hypnosis, is not confined to it, and could be used to account for a wide range of cognitive phenomena. It can be seen that the model postulates a multiplicity of control systems, and that it is hierarchical in nature. The dominant system is an executive ego which is seen by the individual as the self that plans and manages his or her affairs. Its integrity is conceived of as being provided for largely through the continuity of personal memories rather than through self-consistency in awareness and/or behavior.

At the same time, Figure 1 emphasizes the notion that there is a multiplicity of subordinate control systems. Only three of them are presented in Figure 1, with the implicit assumption that there are probably many more. Further, the subordinate systems (Cognitive Control Structures 1, 2, and 3) are arranged so as to indicate that one of them is dominant to the others. The hierarchy is not, however, a rigid one. A major assumption of neo-dissociation theory, as with Freudian theory, is that the unity that apparently exists in personal cognitive functioning is somewhat precarious, so that hierarchical position can shift at any time. Thus in sleep, the system controlling dreams is dominant, but during waking, it is present in a subsidiary role, as evidenced by daydreams and waking fantasy production.

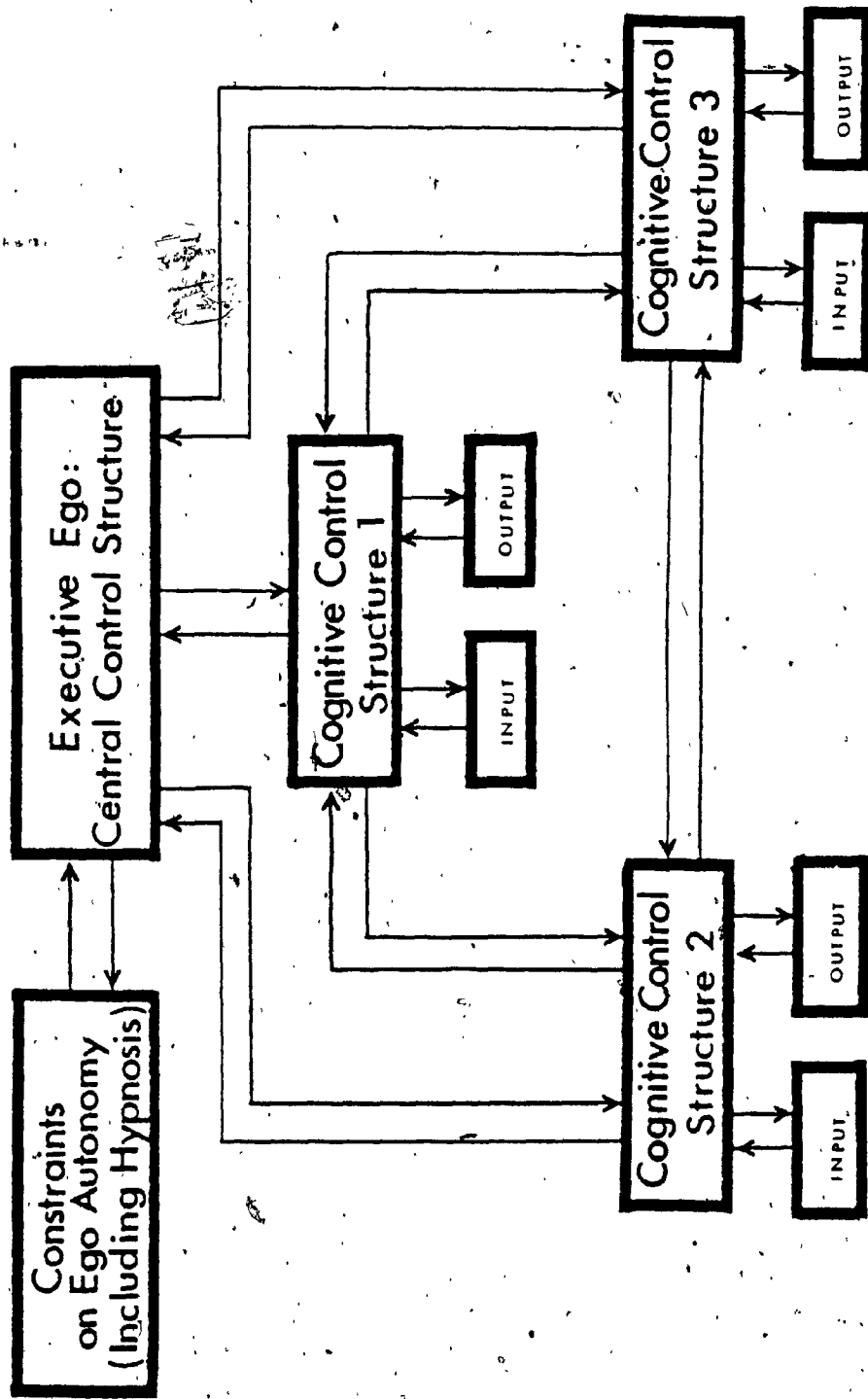


Figure 1. Schematic conception of multiple cognitive control systems. (Reprinted from Hilgard, 1973b, p. 405)

From the foregoing analysis, one might be tempted to think that the "hidden observer" phenomenon comes about as the result of one of the cognitive control systems diagrammed in Figure 1 becoming dominant, to the extent of it supplanting the Executive Ego as the major mediator of reality during hypnosis. Hilgard (1977) however, presents an entirely different account.

In hypnosis, he argues, executive functions are divided between hypnotist and subject. The subject retains a considerable degree of executive autonomy, as evidenced by him or her being able to answer questions, to accept or refuse instructions, to change body position, and to respond to specific suggestions. Nevertheless, the subject voluntarily relinquishes some of his or her executive functions to the hypnotist; the degree to which this occurs depends upon such factors as the subject's degree of hypnotic responsivity, the degree of hypnotic involvement, and perhaps most important, the degree to which the hypnotist is able to establish a relationship of trust.

Hilgard (1977) takes the fact of self-hypnosis as the strongest evidence for this division of executive function; here the individual fulfills the roles of both hypnotist and hypnotized. He sees the process in terms of a retained normal part of the person permitting the hypnotized part to become active. Nevertheless, initiative, in the form of directing the hypnotic instructions and of being able to terminate hypnosis resides with the nonhypnotized fraction of the person.

In addition, Hilgard (1977) postulates that the executive ego has monitoring functions also. It is as if, having accepted the hypnotic contract, the executive "issues an order" to the monitor to reduce the

amount of critical scanning, or to relinquish the usual "reality orientation" (Shor, 1970). The monitor may report what occurs, such as that "the arm is stiff", but will not question the cause of the stiffness. Certainly, the experience of hypnosis is often characterized, both by experimenters and subjects, as one in which critical and reality testing functions are suspended as the subject responds to fantasy suggestions as if they were in some sense real. Notions such as "believed-in-imaginings" (Sarbin and Coe, 1972), "involvement in suggestion related imaginings" (Spanos & Barber, 1974), and Sutcliffe's (1961) notion that the subject appears to misperceive and in some sense seems to be deluded about reality, are parallel formulations of Hilgard's notion of a monitor which can reduce its level of critical scanning.

The "hidden observer" is thought to be a part of the monitoring process. Although the executive ego has relinquished much of its autonomy to the hypnotist, and has also directed the monitor to reduce critical scanning, in each case the process is seen as one of fractionation. The executive retains some autonomy and control, and the monitor retains some critical and reality-bound functions. What Hilgard proposes here is that the "hidden observer" is actually a fraction of the monitor which exists behind what is variously termed an "amnesic-like" and an "amnesic barrier". It becomes accessible only through "hidden observer" instructions for automatic writing and automatic talking. The amnesic barrier plays a central role in the formulation of the neo-dissociation model. This barrier is seen as akin to posthypnotic amnesia but differs from it in one important way. In posthypnotic amnesia, the subject is amnesic for something that has already been present in

consciousness. In the "hidden observer" phenomenon, the subject is amnesic before the "to be remembered" information reaches awareness. Thus the information is processed by that part of the monitoring system which is isolated from the rest of the subjects cognitive substructures. Consequently, the subjects are not withholding anything, but rather do not have anything to report (Hilgard, 1973a).

It has been noted already that in hypnosis the executive ego is thought to relinquish some of its functions to the hypnotist; in addition, it directs the monitor to reduce critical scanning. Because the integrity of the executive ego is provided largely through the continuity of personal memories, any reduction in monitoring and scanning will produce lapses in the efficiency of the central structures. A discontinuity in the subject's memories is thought to favor the establishment of a barrier between the different parts that have now become dissociated or disaggregated. Once the constraints on the executive ego are lifted, that is, when hypnosis is terminated, the events surrounding the "hidden observer" phenomenon will reintegrate the memory continuum and persist as a memory of an event (Hilgard, 1977).

The amnesic-barrier is one of the more obscure points in Hilgard's model. Nowhere is it mentioned how the concept originated or if it is supported by experimental data. But at the same time, it has been found to be malleable. In Hilgard et al. (1975), although some subjects demonstrated the phenomenon of the "hidden observer", some were found who were only partially amnesic (they were aware of some of what was happening during the "hidden observer" item). Further, those who did not manifest the "hidden observer" effect were thought to be either too amnesic to

recall it or not amnesic at all.

Logically one may question the notion of an "amnesic barrier" since it appears to reify entities, and one may wonder how it is that a mental function, or 'part', can be amnesic to itself. An additional point here is worth mentioning. The amnesia-like barrier can, theoretically, only be broken by special techniques such as automatic talking and writing. However it is also broken by the usual preset cue used in posthypnotic amnesia. This would suggest that although different from a posthypnotic amnesia process, the amnesic barrier still responds to the same cue. Thus, it can be asked whether the amnesic barrier is in fact an artifact produced by demand characteristics. This question is not easily answered, and will require careful examination.

On the other hand, the formulation of this hidden part of the monitor system being isolated from the subject's awareness is descriptively consistent with what subjects who report experiencing the "hidden observer" phenomenon actually say. They regularly describe it as the part of them which is objective, reality-oriented and aware of the situation as it actually is. Indeed, Hilgard (1977, page 233) describes it as being "in all respects like the normal observing part as found in waking. It is objective and well oriented to reality".

Overall, one may or may not accept neo-dissociation theory in part or in full. Notwithstanding, its major strength lies in its emphasis on multiple cognitive control systems, and its attempt to provide a theoretical buttress for a number of empirically derived observations both within and beyond the hypnotic context. As such, it is addressed to one of the most paradoxical issues in epistemology, which has intrigued many



earlier investigators. It is not unlike the notion of a "knower that knows" (James 1890/1950), a Censor that is aware of what is acceptable to consciousness even though consciousness is not itself aware of this information (Freud 1900/1938) and the distinction between an observing ego and an experiencing ego (Fromm, 1968, Raginsky, 1969).

The issue raised by all of these authors, including Hilgard, has been most lucidly described by Thomas (1979) in discussing the mechanisms underlying the successful removal of warts by hypnosis. He writes:

Any mental apparatus that can reject a wart is something else again. This is not the sort of confused disordered process you'd expect at the hands of the kind of Unconscious you read about in books, out at the edge of things making up dreams or getting mixed up on words or having hysterics. Whatever, or whoever, is responsible for this has the accuracy and precision of a surgeon. There almost has to be a Person in charge, running matters of meticulous detail beyond anyone's comprehension, a skilled engineer and manager, a chief executive officer, the head of the whole place. I never thought before I possessed such a tenant. Or perhaps more accurately, such a landlord, since I would be, if this is in fact the situation, nothing more than a lodger.

Among other accomplishments, he must be a cell biologist of world class, sorting through the various classes of one's lymphocytes, all with quite different functions which I do not understand, in order to mobilize the right ones and exclude the wrong ones for the task of tissue rejection...

Well then, who does supervise this kind of operation? Someone's got to, you know. You can't sit there under hypnosis, taking suggestions in and having them acted on with such accuracy and precision, without assuming the existence of something very like a controller. It wouldn't do to fob off the whole intricate business on lower centers without sending along a quite detailed set of specifications, way over my head.

Some intelligence or other knows how to get rid of the warts, and that is a disquieting thought. (pages 63-65)

Neo-dissociation theory may not be fully successful in the primary task of determining the actual mechanisms underlying hypnotic and non-hypnotic dissociative phenomena; its significance appears to lie more in

it providing an heuristic model through which a diverse range of puzzling observations can be arranged and, hopefully, be rendered amenable to laboratory investigation.

Experimental Studies of the "Hidden Observer" Effect

Two early studies (Knox, Crutchfield & Hilgard, 1975; Stevenson, 1972) sought to demonstrate that cognitive effort was involved in maintaining hypnotic dissociation, so that keeping a task out of awareness appeared to use up some of the individual's attentive skill, and interfered with the performance of a simultaneous task. These studies, while highly relevant to neo-dissociation theory, are not strictly relevant to the "hidden observer" effect.

The first specific study aimed at documenting the effect is reported by Knox, Morgan and Hilgard (1974), using a 2x2x2 factorial design. The study involved eight highly susceptible subjects, exposed to ischemic pain, who were required to give reports of both pain and suffering in two conditions: hypnosis with and without hypnotic analgesia. In each condition they had to give both "open" and "hidden" reports of pain. In the "open" conditions, they were required to report the pain as it actually was experienced, and the "hidden" reports were obtained following administration of "hidden observer" instructions. For "open" pain reports during hypnosis with analgesia, the ratings ranged from 0-2 ( $\bar{M}=1$ ) whereas the "open" pain reports without analgesia ranged from 5-18 ( $\bar{M}=9.9$ ). There was a similar finding for "hidden" pain reports without analgesia, with subjective ratings ranging from 6-18 ( $\bar{M}=10.2$ ). In the hypnosis with analgesia conditions for "hidden" reports, the data was very similar to that obtained in the two non-analgesic conditions; subjective pain

reports ranged from 4-15 ( $M=8.0$ ). A similar pattern of findings held for the suffering reports of these subjects in the "open" and "hidden" conditions of hypnosis with and without analgesia suggestions.

There are some interesting aspects to this study. To begin with, it appears to have been predicated on an assumption; the investigators report that subjects were chosen for this study on the basis of their having "demonstrated their ability to make use of the automatic talking ("hidden observer") technique, with subsequent amnesia for what was said" (Knox et al., 1974, p. 841). In short, subject selection for the subjects manifesting the "hidden observer" effect seems to have depended entirely upon them succeeding on the automatic talking item. There had not been any study, however, demonstrating empirically a one-to-one correspondence between the "hidden observer" phenomenon and automatic talking. Indeed, one subject in the Knox et al. (1974) study was reported as not experiencing a "hidden observer" whose reports differed from the "hypnotized part". In discussing this subject, these investigators state that "the automatic talking reports for this subject never produced a difference of more than one point from her conscious reports, and she had trouble in detecting any difference owing to the hand on the shoulder after her amnesia was relieved. Hence, for her, the anesthesia worked as well according to her "hidden observer" as it had in the usual "open" hypnotic condition." With the wisdom of hindsight, one would suspect that the subject did not experience a "hidden observer" effect.

A posthypnotic automatic writing item was used to select 20 subjects for a study of the "hidden observer" effect, using cold pressor pain (Hilgard, Morgan & MacDonald, 1975). Here, the findings showed clearly

that such an item does not predict whether the subject will experience the "hidden observer" effect. Eight of the 20 subjects (40%) reported a "hidden observer", and 6 (30%) were reported as experiencing some subjective alteration on the "hidden observer" item, but no clear separation. The authors suggested that their responses could be more appropriately interpreted in terms of "divided attention" but it was not clear what the criteria for divided attention were. The remaining 6 subjects (30%) had no "hidden observer" experience.

From the table provided in this study (Hilgard et al., 1975, page 283) it is possible to compare these three groups, although it was not done in the actual study. The rearranged data are summarized in Table 1.

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INSERT TABLE 1 ABOUT HERE

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It can be seen that the subjects reporting a "hidden observer" had less pain in the baseline condition, had better hypnotic analgesia, and reported more pain in both of the "hidden observer" conditions. In only the "hidden observer" condition involving retrospective automatic talking is there a significant difference ( $H=8.52$ ,  $p < .02$ ) between the three groups. It is noticeable also, that there are no significant differences between the group reporting no "hidden observer" effect and the group described as having "divided attention". The most important finding of the study, however is that, of a group of subjects carefully screened for high hypnotic susceptibility, a minority of 40% manifested the "hidden observer" effect.

Table 1

Recompilation of the data of Hilgard, Morgan and MacDonald (1975) in terms of the means and ranges of analgesia scores for (a) subjects reporting a "hidden observer" effect, (b) subjects described as having "divided attention", and (c) subjects reporting no "hidden observer" effect.

		"Hidden Observer"			
		Hypnosis without Analgesia	Hypnosis with Analgesia	Concurrent automatic key-press	Retrospective automatic talking
"Hidden observer" report (N=8)	Mean	12.50	2.63	8.69	10.35
	Range	8.0-25.0	0.0-8.5	4.8-15.5	4.8-18.0
No "Hidden observer" report (N=6)	Mean	13.50	5.87	5.78	5.87
	Range	10.0-25.0	1.0-10.0	1.0-10.0	1.0-10.0
"Divided Attention" (N=6)	Mean	17.17	4.52	4.77	4.77
	Range	10.0-25.0	0.5-8.5	0.5-7.8	0.5-7.8

Two additional studies (Hilgard, MacDonald, Morgan & Johnson, 1978; Hilgard, Hilgard, MacDonald, Morgan & Johnson, 1978) have each sought to compare hypnotized highly susceptible subjects with insusceptible simulators during cold pressor pain, using Orne's (1959) real-simulator model. The first of these studies did not use "hidden observer" instructions, but sought to compare genuine and simulated analgesia performance. In the second study, "hidden observer" instructions were given to the real and simulating subjects. In this study 6 of the 12 highly susceptible subjects (50%) reported a "hidden observer" effect, as did 9 of the 12 simulators (75%). Subsequently, Hilgard et al. (1978) obtained honesty reports from both reals and simulators. On the basis of the simulators (but not the reals) changing their testimony that they had been analgesic, and that those of them reporting a "hidden observer" had not, in fact, experienced the phenomenon, the authors concluded that the effect was genuine. The fact is however that 75% of the simulators perceived the "hidden observer" instructions as requiring them to report increased pain. If the logic of the real-simulator model is strictly applied, one can only conclude the "hidden observer" effect may, at least, be partially determined by implicit cues in the design and/or procedure which communicates the experimenter's hypothesis. The evidence presented by Hilgard et al. (1978) does not rule out this alternative hypothesis, although Hilgard acknowledges its possibility (Hilgard, 1978).

The finding of this study that 50% of hypnotized subjects reported a "hidden observer" effect, squares with the finding of Hilgard et al. (1975) of 40% reporting the phenomenon. Overall, one is left with the impression that the reports of subjects not reporting the "hidden observer"

can be taken at face value, since such a report goes contrary to the demand characteristics of the "hidden observer" instructions. Clearly, however, other means need to be devised to evaluate the degree to which the reports of those subjects manifesting a "hidden observer" are influenced by demand characteristics. On the other hand, to the extent that the demand characteristics hypothesis can be entertained, the finding of from 40-50% of high susceptibles reporting a "hidden observer" effect as opposed to 75% of simulators, could mean that highly susceptible subjects are less responsive to demand characteristics. Another viable hypothesis is that the "hidden observer" effect is a true index of dissociation, but may be partially influenced by demand characteristics, as are many other hypnotic items. It is generally accepted, for instance, that posthypnotic amnesia is a genuine phenomenon of hypnosis. The regular finding throughout the 19th century of its spontaneous occurrence as compared to the rarity of spontaneous posthypnotic amnesia at the present, demonstrates how beliefs about the nature of a phenomenon can influence the manner in which it is manifested. Likewise, Braid's observations of hypnotism and hypnotic coma (Sheehan & Perry, 1976, page 31-32) are another instance of how the beliefs of subject and hypnotist can subtly influence hypnotic response.

In more recent writings, Hilgard, (1977, 1979) has given much more — emphasis to the finding that at best, 50% of highly hypnotizable subjects report a "hidden observer" effect. Hilgard (1977) reports that of a sample of 18 subjects, 50% reported a "hidden observer" effect, and 50% did not. This group however, was selected to represent clear cases of the phenomenon from a larger unspecified sample size, so that the figure

of 50% may be inflated. In his most recent paper (Hilgard, 1979) he has addressed himself more formally to this question. He reports that the two groups of subjects do not differ in terms of hypnotic susceptibility and of amnesia response. Based on interviews with subjects, he suggests two alternatives. One is that the subjects who do not respond to "hidden observer" instructions experience both levels all the time, without the "hidden observer" technique. They report that the "hidden observer" experience is forced out of attention during hypnosis, but can occasionally be sampled. From this, he concludes (for reasons that are not entirely clear) that with "hidden observer" instructions, there is nothing new to report. The second possibility he raises is that the amnesia for the experience may be too profound to be recovered. He reports some data to support this possibility. In one study on hypnotic analgesia, in which the "hidden observer" technique and automatic writing were used, it was found that "twelve out of twelve highly hypnotizable subjects recovered covert experience of the automatic writing, whereas only six of the same twelve recovered covert pain by this technique" (1979, page 62).

In summary, the evidence to date suggests that the "hidden observer" effect is manifested by from 40-50% of highly hypnotizable subjects (Hilgard et al., 1975; Hilgard et al., 1978). The apparent earlier assumption (Knox et al., 1974) that the effect could be predicted by an automatic writing item, has not since been substantiated by the same two studies cited above. The evidence for the effects of demand characteristics on the phenomenon's occurrence is equivocal. On the one hand, the majority of insusceptible simulators perceive the "hidden observer"



instructions as a cue to report higher levels of pain than in the analgesia condition (Hilgard et al., 1978). On the other hand, depending on which study is cited, from 50% to 60% of highly susceptible subjects report no subjective alteration when "hidden observer" instructions are administered. Thus, in terms of a demand characteristics hypothesis, one could argue that low susceptible subjects are more often likely to respond to them than are high susceptibles. Finally, there is no empirical data, only speculation, as to why some subjects respond to "hidden observer" instructions, and others do not. On the assumption that cold pressor pain must register at some level, even if it is out of awareness, Hilgard (1979) has proposed an "amnesic barrier", but it could be that those subjects reporting a "hidden observer" are simply using a different pain control strategy than those who do not. In short, those subjects not reporting a "hidden observer" effect may simply be reporting the actual state of affairs, that there is no subjective alteration to report when "hidden observer" instructions are administered.

#### The Present Study

The present study is, as stated in the initial section, an extension of a previous one (Laurence, 1979; Perry & Laurence, 1980). This earlier study sought to determine if there were differential patterns of response among highly hypnotizable subjects. A group of 10 highly hypnotizable subjects underwent a 7 item induction consisting of items of high item difficulty. It was found that when response to the items was examined, only two items showed any relationship. Five subjects who reported a "hidden observer" effect also reported duality in age regression when questioned post hypnosis. They reported either alternating between

feeling adult and experiencing childhood, or that they retained adult identity even though the experience of childhood was very vivid and subjectively real to them. The five subjects not reporting a "hidden observer" effect expressed puzzlement at the suggestion. Questioned post hypnosis by an independent experimenter about their experience of age regression; they reported that they had really felt five years old, and had no sense of an adult identity.

This finding was seen as of potential major theoretical significance, since it suggested two types of dissociative process among highly hypnotizable subjects during hypnosis. Further, it provided some evidence of the reality of the "hidden observer" effect in that the demand characteristics of the "hidden observer" item is to report a "hidden observer" effect, whereas the demand characteristics of the regression to age five item is to report feeling five years old, and to deny any sense of being an adult participating in a hypnosis experiment.

At the same time, one other item in the previous study had shown a borderline, non-significant statistical association with "hidden observer" and duality reports in age regression. During age regression the subjects were required to write the sentence: "I am participating in a psychological experiment". There was a tendency for subjects reporting a "hidden observer" to attempt to write the sentence (often without spelling errors) and for the remaining subjects to refuse to even attempt to write the sentence, with only two subjects (one in each group) departing from this pattern (Fisher's Exact  $p=.09$ ). It was thought that a relationship might emerge given a larger sample size.

At the same time, the strategy of the previous study was continued

in that additional highly susceptible subjects were sought, and a second testing session was constructed consisting of hypnotic items of high item difficulty. Specifically, the aims of the present study were:

- (a) To seek replication of the earlier finding of a relationship between duality reports and "hidden observer" reports, using a new sample of volunteer subjects;
- (b) To investigate further the near association found in the previous study between duality reports, "hidden observer" reports, and the attempt to write a complex sentence during a regression to age five item;
- (c) To test all subjects, both those in the earlier study and those recruited in the present study, on an additional set of hypnotic items composed of items of high item difficulty, in an attempt to find evidence of other differential cognitive patterns among highly hypnotizable subjects.

### Method

Subjects. 53 undergraduate students (31 males, 22 females) volunteered for the experiment over a 2 year period. Of these, 38 of them were enrolled in a laboratory course in Psychology, and the remaining 15 subjects were students in other areas, interested in participating in a hypnosis experiment. The procedures used to screen the subjects for hypnotic susceptibility are described in a subsequent section.

Of the 53 volunteers, 23 were found to be highly susceptible to hypnosis. The first 10 subjects, tested in 1978-79 (Laurence, 1979) consisted of 4 men and 6 women. They ranged in age from 19-47 years ( $M=25.15$ ). There were variations in their first language: 5 were English, 2 were French, 1 Greek, 1 Italian and 1 Hungarian. All were tested in English. The remaining 13 subjects (5 men, 8 women) were recruited during 1979-80. They were divided into 2 groups based on their first language; 8 received all their hypnosis sessions in English, and the remaining 5 in French. The subjects in the English group ranged in age from 18-44 years ( $M=26.50$ ), while those in the French group ranged from 23-34 years ( $M=28.8$ ). Since there were few differences between groups over the 2 years of testing, their data were pooled, so that the age range for the total sample of 23 subjects (9 men, 14 women) was 18-47 years ( $M=26.47$ ).

Screening procedures. The 10 subjects in the 1978-79 group and the 8 subjects in the 1979-80 English group were screened for hypnotizability on the Harvard Group Scale of Hypnotic Susceptibility: Form A of Shor and E. Orne (1962) as part of a laboratory exercise in a course they were enrolled in. Their HGSHS:A scores ranged from 7-12 ( $M=10.57$ ). They

were asked to volunteer for a second screening session using the Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C) of Weitzenhoffer and Hilgard (1962). They were specifically requested to volunteer only if, on the basis of their experience with the group screening on HGSHS:A, they thought they were highly susceptible. High susceptibility was defined in terms of having passed the amnesia and/or the posthypnotic suggestion item of HGSHS:A. They were told also that they might be highly responsive to hypnosis if they had remembered some of the items of HGSHS:A prior to amnesia being removed, but only with difficulty, and/or they had felt an urge to touch their ankle during testing of the posthypnotic suggestion item of HGSHS:A. By contrast, the French speaking group was screened only on SHSS:C.

For this experiment, the SHSS:C was modified slightly. The anosmia item was deleted, and replaced by the posthypnotic suggestion item of the Stanford Hypnotic Susceptibility Scale: Form B (SHSS:B) of Weitzenhoffer and Hilgard (1959). For the English speaking subjects tested over the 2 years of the study, the SHSS:C score range was 9-12 ( $M=10.75$ ), whereas for the French group it was 10-11 ( $M=10.71$ ). For the total sample of 23 subjects, the SHSS:C score range was 9-12 ( $M=10.74$ ). All 23 subjects passed the amnesia item of SHSS:C, and 17 of them also passed the posthypnotic suggestion item. All were invited to participate in 2 further experimental testing sessions. The 30 subjects who did not score sufficiently highly on SHSS:C were reassured that they had considerable hypnotic skill, but that the experimenter was looking for individuals who were slightly more responsive to hypnosis.

All 53 subjects were paid \$5 for the SHSS:C screening session, and the 23 subjects who participated in the first testing session were each

paid \$10. One subject from the 1978-79 left the Province during 1980 and was not available for the second hypnosis testing session. The remaining 22 subjects were each paid \$10 for their participation in this session.

First experimental session. On arrival for the first experimental session, subjects were asked if they would agree to have the session videotaped. They were not told (following Sheehan, McConkey & Cross, 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 (C.P.). They were then administered a seven-item induction which was comprised of the following items: arm rigidity (Weitzenhoffer & Hilgard, 1959), delusion of the missing number (Evans, 1965, Note 4), 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 A. 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, the 10 subjects tested in 1979 were asked if they would participate in

a further session to be held during the winter 1980. The subjects tested in 1980 were asked to return for the second experimental session during the following weeks.

A note on the "hidden observer" item. Comparison of the "hidden observer" instructions in the previous section of this report (Hilgard, Note 3) with the instructions used in the present study (Appendix A) 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 3 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" phenomenon. (b) Hilgard typically places his hand on the subject's shoulder throughout the whole 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 reasons 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. In addition, since the experimenter was a graduate student and fairly similar in age to the subjects, it was felt that there was a risk of this gesture being perceived by some subjects as

sexualizing the situation. (c) Hilgard (Note 3) 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 3) 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): Experimental session 1. The Experiential Analysis Technique (EAT) was introduced recently to hypnosis research by Sheehan, McConkey and Cross (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 an



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 experience 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:

- (1) The questioner (E2) 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 5, 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 fades;
- (d) During the delusion of the missing number item, they were asked to describe their experience when they were presented with three arithmetic divisions, 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. A copy of the EAT questions is contained in Appendix B. The EAT protocols were

subsequently transcribed, and were used to evaluate the subjective accompaniments to the subjects' responses during the hypnotic session.

Second experimental testing session. Subjects were called in for a second experimental session, and it was possible to obtain 22 of the 23 subjects who had participated in the first session. Upon arrival, they were asked if they agreed to have the session videotaped and they were informed that the postexperimental inquiry would be performed by a second experimenter (C.P.). Before undergoing the hypnotic induction, subjects were introduced to the concept of dichotic listening. It was ascertained that they had not had any previous experience with this technique and they were then given a four-minute practice session to familiarize them with the task that they would have to perform during hypnosis.

The practice session was used as a baseline for their shadowing performance during the hypnotic session. After the practice session, subjects were asked to describe their subjective experience as well as any particular strategy(ies) they had used to perform the task.

They were then administered a seven-item induction which was comprised of the following items: hypnotic dream (Weitzenhoffer & Hilgard, 1962), compulsive responsivity item (Sheehan, 1971), dichotic listening task (especially constructed for the experiment), source amnesia (Evans & Thorn, 1966), rapid reinduction of hypnosis (Weitzenhoffer, 1957), posthypnotic amnesia (Weitzenhoffer & Hilgard, 1962) and posthypnotic suggestion (Weitzenhoffer & Hilgard, 1959). A complete transcript of the induction can be found in Appendix C. Immediately following the hypnotic session, a short postexperimental inquiry was conducted and tape-recorded to test the amnesia item, the source amnesia item and the post-

hypnotic suggestion item. Subjects were then introduced to the second experimenter (C.P.) who interviewed them using the EAT procedures. A description and rationale of each of the 14 items used in the two hypnotic induction sessions is included in Appendix D.

Experiential Analysis Technique: Session II. Again the original EAT procedures were modified in order to better serve the purposes of the investigation. These modifications were identical to those of the first session. As before, an emphasis was placed on different points of this second session. The points where this was done were standardized and were as follows:

- (a) during the compulsive responsivity, subjects were asked to describe how voluntarily/involuntarily their response to the cue-word was.
- (b) during the dichotic task, they were asked to compare the practice session to the experimental session. They were also asked whether the task took all their attention and to what extent they had become involved in the task.
- (c) during the testing of the source amnesia item, they were asked to describe what was happening when they heard the questions and if it had affected in any way their posthypnotic amnesia.
- (d) during the cancellation of the compulsive response, subjects were asked when they had decided to stop their responses to the cue-word.

In that way it was possible to obtain standardized interview data at each of these designated points during the induction. The relevant sections of each interview were then transcribed and used, as with the previous EAT interview to evaluate the subjective components of subjects' responses to the 7 hypnotic items.

Before leaving the laboratory, subjects were asked if they would participate in a further session to be held during 1980-81.

### Results

As indicated earlier, 23 highly susceptible subjects were tested on 14 items which are of high item difficulty for a population unselected for hypnotizability, over 2 experimental test sessions. Variable descriptions and scoring criteria for each item are presented in Appendix E and the raw data for the 23 subjects is in Appendix F.

It is to be recalled that the sampling for this experiment took place over two years of testing, and that the sample sizes obtained in each of the 2 years were small. Because of this, the data for the 2 years of testing have been pooled. Where there are differences between the samples obtained over the 2 years, they are described in the text.

Following the findings of the initial study (Laurence, 1979; Perry & Laurence, 1980), the main focus of the present study was upon replicating the initial finding of a strong relationship between "hidden observer" reports and reports of duality in age regression. Subsequent sections present other relationships found in the present study.

#### Duality Reports in Age Regression, and "Hidden Observer" Reports

In the previous study (Laurence, 1979; Perry & Laurence, 1980) 50 percent of 10 subjects reported a "hidden observer" effect. By contrast, 4 of the 13 subjects (30.77%) recruited for the second sample furnished similar reports, giving an overall rate of 9 subjects out of 23 (39.13%) for the entire sample. These rates for the two years of testing did not differ significantly ( $\chi^2(1) = .75; p > .05$ ), and the overall rate is comparable to the figure of 40% found by Hilgard et al. (1975) for 20 high susceptible subjects, and the 50% rate found by Hilgard et al. (1978) for 12 highly susceptible subjects.

Everyone of the nine subjects reporting a "hidden observer" effect also gave a duality report (Perry & Walsh, 1978) in age regression. When asked the question: "Did you really feel that you were 5 years-old?" these subjects reported a feeling of alternation between their normal adult age and 5 years old, or a feeling of division between feeling 5 years old and observing themselves. The remaining 14 subjects maintained that they really felt they were 5 years old and showed no sign of being an adult during this phase of the induction. Table 2 summarizes this relationship ( $\chi^2(1) = 18.99$ ;  $p < .001$ ).

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#### Verbal Reports of Duality in Age Regression

Reports of dualistic experience during age regression were obtained by a second experimenter during the EAT inquiry. The verbal reports of dualistic experience from subjects who manifested the "hidden observer" effect, and of quasi-literal regression, (in which there was no apparent awareness of an adult identity), from subjects who reported no "hidden observer" convey the flavor of the difference in findings reported in the previous section. As can be seen, the experience of hypnotic age regression is variable across subjects, and the subjects' reports reflect a number of themes.

Some of the reports were not unlike "hidden observer" reports; the subject described the experience as one of detached self observation. For some, it was a feeling of alternation between adult and childlike functioning, as the following two reports indicate:

Table 2

Chi square between the "hidden observer" effect and duality in age regression.

		Hidden Observer	
		Present	Absent
Duality	Present	9	0
	Absent	0	14

$\chi^2(1) = 18.99; p < .001$



(Subject 3) "The thing is... I was there, you know. It was as if I was there... but I wasn't very long, it came and went and it didn't stay.... I felt like I was... it sort of felt like "what am I doing there?" and then the next thing I'm back there, and then "what am I doing here?" It felt like that.

It felt like that I was looking at myself in a sense... something like you would do in a dream."

(Subject 22) "Au moment où j'ai commencé à écrire, j'étais là et j'étais pas là... C'était comme une ronde j'entraais et sortais tellement vite... J'avais comme un espèce d'observateur qui voyait la classe..." (As soon as I began to write, I was there, and I was not there... It was like a merry go round; I was in and out of it so fast... I had like a kind of observer, who was watching the class").

For other subjects, the duality was more of a simultaneous nature; the feeling of being adult and child co-existed, as the next two reports indicate.

(Subject 21) "Je redevenais petite, petite, petite. Physiquement... je me revoyais avec mes frisettes à l'école... Je me sentais à 5 ans, mais je me sentais à 23 ans aussi... Je savais que j'avais 5 ans à l'école, mais je savais que j'avais 23 ans aussi, que j'étais adulte... Je me sentais réellement 5 ans. Je n'aurais pu dire que j'avais uniquement 23 ans." ("I became small again; small, small. Physically... I saw myself again with my curls at school... I felt five, and I felt 23 also... I knew I was 5 years old at school, but I knew I was 23 years old also, that I was an adult... I really felt 5 years old. I would not be able to say that I was solely 23 years old").

(Subject 17) - "Did you really feel you were five years old?"  
- It was the same... it was... especially when it came to writing my name again. I felt... you know, I was two people, one standing off looking at the other, and the other that was standing was saying, you idiot, you can write your name, why are you taking so long? Yet the one that's writing it is struggling away, to form these letters... and one's saying you can do it, and the other one's saying: I can't. "I'm trying the best I can."

Occasionally, the feeling was expressed in terms of a mind-body duality.

(Subject 7) "I felt myself becoming mentally smaller. But not physically. I couldn't have been able to go through a tunnel if he had asked me, because it would have felt awkward with this adult body... I felt awkward in my body, you know. It's like when you're obese and you feel stuck in your body. Well I had the same feeling. I felt huge all over,

but I was small inside."

The experience was not always pleasant, causing some subjects to doubt if they were hypnotized, as the report of one subject, when asked to write the sentence "I am participating in a psychological experiment", indicates.

(Subject 6) "It was kind of a conflict. I was going back to reality, but at the same time I was kind of reluctant to leave the kindergarden room behind. So it was kind of teeter-tottering. When I opened my eyes I know who the fellow was who was sitting beside me. And I was also aware of the fact that I was also in a psychological experiment. But I still had this feeling that I wasn't supposed to be here (in the experiment) I was there (age 5) but I actually hadn't finished the business I had started.

- What do you think he was expecting of you?
- I don't really know. It was kind of ambiguous to me because I was being pulled in two different directions. I feel now that I was under hypnosis at the time. But now that I've come out of it, I feel that had I been hypnotized I shouldn't have been able to write those words. But I know that when I was sitting there my hand just took over and wrote what he told me to write.
- So it was your hand that was more or less doing it?
- Uh huh. Like I was split in two.

These responses are qualitatively very different from those given by subjects who experienced no duality during hypnotic age regression, and who, subsequently did not manifest a "hidden observer" effect. The report of Subject 14 was typical of this group.

"- Did you really feel you were 5 years old?"

- I had the feeling I was going with my mother (this is strange) going with my mother. I wasn't going to school yet so I felt 5 and half sort of just on the verge of going for enrolment to school.
- Did you have any sense of being an adult at all?
- I didn't have any sense of being an adult, no.
- None at all?
- None at all.
- Not the slightest?
- Not a fraction. No, nothing.
- So you really felt you were 5 years old?
- Yes."

The reports of two other subjects elaborate on this experience of quasi-literal regression to age 5.

(Subject 1) "- Did you feel 5 years old?"

- Definitely something there that I don't feel now. At this point, I'm thinking as a 5 year old. It doesn't occur to me that maybe I'm saying well I'm a 25 year old, but this is how a 5 year old thinks. That kind of rationalization doesn't go on. It just happens that way. All of a sudden, this is the way I feel."

(Subject 19) - Oui, j'étais là, je me voyais avec un corps de petite fille. Quand il m'a demandé qui était le premier ministre, j'ai pensé : non mais, y'é tu assez niaiseux de me demander ça à un enfant de 5 ans, voir si je le sais moué.

- Donc tu étais assez adulte encore pour trouver ça niaiseux?  
 - Ah non, j'avais 5 ans et je trouvais ça niaiseux de demander ça à un enfant de 5 ans. ("Yes, I was there and I saw myself with the body of a little girl. When he asked me who the Prime Minister was, I thought you are really stupid to ask that of a 5 year old child, as if I know that.  
 - So you were still sufficiently adult to find that question dumb.  
 - No. I was 5 years old, and I found it dumb to ask that of a 5 year old child.")

As can be seen, there is no overlap between the duality reports of age regression to five years old in subjects reporting a "hidden observer" effect, and the sense of "literally" being 5 years old to the exclusion of any awareness of an adult identity for the duration of the age regression item. Combined with the verbal reports of the "hidden observer" effect; these data suggest that there may be two quite distinct dissociative processes in hypnosis.

#### Other Data from the Hypnotic Age Regression Item

During hypnotic age regression, the subjects were asked to perform three tasks: (a) to write their name, the date of their birthday, and "what year it is"; (b) to write the sentence "I am participating in a psychological experiment"; and (c) to verbally respond to the question: "Who is the Prime Minister of Canada?"

This latter question did not discriminate between the two groups. The majority of subjects reported not knowing; of the 6 who replied, 3 had the "hidden observer" effect, and 3 did not.

By contrast, for the first two items, results were identical; 7 of the 9 subjects who reported a "hidden observer" effect attempted to write on both occasions; 10 of the 14 remaining subjects did not write. The relationship was statistically significant ( $\chi^2(1) = 5.32$ ;  $p < .02$ ).<sup>2</sup>

The data for both items (a) and (b) were broken down in terms of whether the subjects did or did not write the entire sentence with correct spelling. The result in each case, was identical. It is presented in Table 3.

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INSERT TABLE 3, ABOUT HERE

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Although it is not possible to analyse this table statistically, it can be seen from Table 3 that the tendency is for subjects who reported the "hidden observer" to write the sentence, and to write it correctly. By contrast, and consistent with their statement that they "really felt five years old", the group reporting "literal" regression tended not to write. Of the few who did, nearly all made errors in spelling.

These differences between the two groups are highly consistent with their verbal reports of hypnotic age regression. Those subjects who had a "hidden observer" effect expressed a strong feeling of dualistic functioning during the age regression item. Their behavior during the two items where they were required to write is consistent with the verbal report; they wrote, usually with correct spelling, the things they were asked to, and saw no contradiction between spelling correctly and the fact that most of the words they spelled are beyond

Table 3

Contingency table showing the frequency of subjects reporting the "hidden observer" effect and their performance on the item of writing the sentence "I am participating in a psychological experiment" during age regression.

## Writing in age regression.

	spelling correctly	spelling errors	did not write
Hidden Observer present	4	3	2
absent	1	3	10

the capacity of most five year old children.

By contrast, nearly all of the subjects who had no experience of a "hidden observer" effect refused to even attempt to write when asked to. Their behavior is highly consistent with their verbal reports of a quasi-literal age regression, in which the sense of adult identity appears to have been lost.

The findings, overall, square with the impression of previous sections. There appears to be two distinct dissociative processes among highly hypnotizable subjects.

#### Reports of Analgesia

The subjects in the study received four electric shocks, three to the right hand (for which suggestions for analgesia had been given during the analgesia item) and one to the left hand (which served as control). Apart from the shocks given to the right and the left hand during analgesia, a further shock was administered to the right hand during the "hidden observer" item. In addition, the analgesia suggestion was not cancelled; following the termination of hypnosis a further shock was applied to this right hand in order to test for the posthypnotic persistence of uncanceled analgesia. Subjects were asked on all four occasions to rate their pain on a 1 to 10 scale, where 1 was described as painless, 10 as extremely painful and intermediate numbers representing moderate levels of pain.

The four pain reports of the 23 subjects, subdivided in terms of whether or not they reported a "hidden observer" effect, are set out in Table 4. It should be noted here, that one subject in each group did not furnish complete pain data. Subject 18 in the "hidden observer"

group reported the pain on the analgesic right hand was 7, but refused to permit the experimenter to apply the shock to the left (control) hand, on the grounds that the first shock "fucking hurt". He nevertheless experienced a "hidden observer" effect, and reported that the shock during analgesia was "at least 10". Another subject (subject 20), who had no "hidden observer" effect, became so anxious at the prospect of electric shock that after giving the first two shocks the experimenter decided not to administer the remaining two. Because their data are incomplete, they are not included in the calculation of means and ranges in Table 4.

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INSERT TABLE 4, ABOUT HERE

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A one-way ANOVA was performed on the analgesia scores for the total sample, followed by Scheffé's S method to compare the different means. Only the main effect of treatments was found to be significant ( $F(3,60) = 37.33, p < .01$ ). Table 5 summarizes the result for the Scheffé's tests.

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INSERT TABLE 5, ABOUT HERE

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Three of the six comparisons were statistically significant. ( $S(3,17) = 2.48, p < .01$ ). During analgesia, over the 21 subjects furnishing complete data, the right hand was reported as being significantly more analgesic than the left (control) hand. During the "hidden observer" item also, the right hand was reported as being significantly more analgesic than the left (control) hand. Finally, during the uncanceled suggestion item, the right hand was also found to be significantly more

Table 4

Raw scores, means, and ranges for four pain reports for subjects who reported, and did not report the "hidden observer" effect.

"Hidden Observer"

Subject	Right hand Analgesia condition	Right hand "Hidden Observer"	Left hand Control	Right hand Post hypnosis
2	2	7	7	7
3	2	10	10	2
6	5	10	9	1
7	3	4	8	6
11	2	3	9	3
17	2	4	8	5
18 <sup>a</sup>	7	10		
21	3	9	10	3
22	1	1	10	3
Mean	2.50	6.00	8.88	3.75
Range	1-5	3-10	7-10	1-7

No "hidden observer"

1	5	4	9	7
4	8	3	10	4
5	3	4	10	8
8	1	1	10	1
9	2	2	10	2
10	3	2	8	2
12	7	5	10	5
13	2	2	9	1
14	2	2	9	8
15	5	2	8	2
16	2	1	7	3
19	1	1	7	1
20 <sup>a</sup>	1		5	
23	2	2	10	10
Mean	3.31	2.38	9.00	4.15
Range	1-8	1-5	7-10	1-8
<u>Total Group</u>				
Mean	3.00	3.76	8.95	4.00
Range	1-8	1-10	7-10	1-8

<sup>a</sup> = See text.



Table 5

Differences between the means of the four analgesia reports for the total sample and their associated probabilities.

	Right Hand Analgesia	Right Hand Hidden Obs.	Left Hand Control	Right Hand Unc. Sugg.
Right Hand Analgesia	--	.76 (NS)	5.95 (.01)	1.00 (NS)
Right Hand Hidden Obs.		--	5.19 (.01)	.24 (NS)
Left Hand Control			--	4.95 (.01)
Right Hand Unc. Sugg.				--

analgesic than the left (control) hand. These findings replicate the findings by Laurence (1979) and Perry et al. (1980) for the same comparison of the analgesia item for the total group undifferentiated for the "hidden observer" effect. It should be noted that Table 5 sets out both the differences between the four different means and their associated probabilities.

When the total sample was divided according to their responses to the "hidden observer" effect, differences emerged from the dichotomy. A 2 x 4 ANOVA (hidden observer/no hidden observer; 4 conditions of analgesia) was performed. A main effect of treatment was again found ( $F(3,57) = 44.03, p < .01$ ), as well as a significant interaction between treatments and groups ( $F(3,57) = 6.42, p < .01$ ). Tests of simple main effects were conducted. A simple main effect for the groups was found between their respective reports of analgesia during the "hidden observer" item ( $F(1,72) = 15.30, p < .01$ ). There was no significant differences in the other three reports. Scheffé's tests were then performed for treatments within groups, and were also found to be significant.

In the "hidden observer" group, three of the six comparisons were significant ( $S(3,17) = 3.19, p < .05$ ;  $S(3,17) = 4.06, p < .01$ ). The right hand during analgesia was found to be significantly more analgesic than the right hand during the "hidden observer" suggestion. The right hand during analgesia was also significantly more analgesic than the left (control) hand. Finally the right hand during the uncanceled suggestion item was reported as being significantly more analgesic than the left (control) hand. Table 6 presents the differences between the four means and their associated probabilities, for the "hidden observer" group and Table 7 sets out the same results for the no "hidden observer"

group.

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INSERT TABLES 6 AND 7, ABOUT HERE

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In the subgroup of subjects who did not demonstrate the "hidden observer" effect, three of the six comparisons were also found to be significant ( $S(3,17) = 2.60, p < .01$ ). As had been found for the "hidden observer" group, both the right hand during analgesia and the right hand during the uncanceled suggestion differed significantly from the left (control) hand. However, contrary to the "hidden observer" group, the right hand during the "hidden observer" item was found to be significantly more analgesic than the left (control) hand. The differences are consistent with those reported by Hilgard et al. (1975). Subjects reporting a "hidden observer" effect report more pain in the right hand during the "hidden observer" item, than in analgesia. Further, the level of pain in the "hidden observer" item does not differ significantly from that reported in the left (control) hand. By contrast; for subjects not having a "hidden observer" effect, the levels of pain in the right hand, both for analgesia and for the "hidden observer" are almost identical and uniformly low; the right hand on both occasions is significantly more analgesic than the left (control) hand. These differential reports of analgesia and pain square with differences in subjective reports between the two groups.

#### Verbal Reports of the "Hidden Observer" Item

In considering the reports of the "hidden observer", it can be seen from the previous section that successful pain reduction following suggestions for hypnotic analgesia does not guarantee that the subject will

Table 6

Differences between the means of the four analgesia reports for the "hidden observer" group and their associated probabilities.

	Right Hand Analgesia	Right Hand Hidden Obs.	Left Hand Control	Right Hand Unc. Sugg.
Right Hand Analgesia	--	3.50 (.05)	6.38 (.01)	1.25 (NS)
Right Hand Hidden Obs.		--	2.88 (NS)	2.25 (NS)
Left Hand Control			--	5.13 (.01)
Right Hand Unc. Sugg.				--

Table 7

Differences between the means of the four analgesia reports for the "no hidden observer" group, and their associated probabilities.

	Right Hand Analgesia	Right Hand Hidden Obs.	Left Hand Control	Right Hand Unc. Sugg.
Right Hand Analgesia	--	.93 (NS)	5.69 (.01)	.84 (NS)
Right Hand Hidden Obs.		--	6.62 (.01)	1.77 (NS)
Left Hand Control			--	4.85 (.01)
Right Hand Unc. Sugg.				--

report a "hidden observer". In this study only 9 out of the 23 subjects experienced and reported a "hidden observer". The 9 subjects who reported a "hidden observer" reduced their overt pain by 71.20 percent while the remaining 14 showed a reduction of 62.60 percent, a non-significant difference. A similar finding is reported by Hilgard (1977). Of the 18 subjects that he tested, the 9 manifesting the "hidden observer" effect reported a 79% reduction in pain during analgesia. The no "hidden observer" group reduced theirs by 73%, a non-significant difference. Looking at the subjective reports, there is a striking similarity to those reported by Hilgard (1977) despite differences in the method used to elicit the phenomenon. The pain stimulus used in the present study was an electric shock; it constituted a much milder pain than the cold pressor method used characteristically by Hilgard. The electric shock is a discrete, momentary pain while the cold-pressor pain is slow-building, reaching its maximum in approximately 60 seconds. The instructions were also different. In Hilgard's (1977) studies, the "hidden observer" instructions appear to have been more heavily cued than the ones used in the present study.

Of the 14 subjects who did not report a hidden observer, six rated clearly that they did not know what to expect and were confused by the instructions. Five other subjects reported that they waited for the effect to happen, but that no subjective alteration occurred. The remaining three subjects did not expect it to happen and were not confused by the instructions. The nine subjects manifesting the hidden observer effect shared two qualities found in Hilgard's studies on the "hidden observer". Firstly the phenomenon was reported by them as occurring

involuntarily. The second quality is that the "hidden observer" manifestations are reported as objective, matter-of-fact, accurate observations of what is going on during the analgesia. They are reality bound: all of the subjects equated the "hidden observer" with reality testing and a few of them equated it with an observing ego. The verbal reports of the subjects best convey the flavor of the experience. First, on the involuntariness of the experience:

(subject 2) I didn't have to work on it. This second part is like when I'm talking to you right now. This is what is happening.

(subject 3) It was a sudden type of thing that just melted away and then I felt like I was two types of thing.

(subject 7) It did not surprise me. Cause I think everybody has another part of themselves. But it was surprising that they were separated. I usually have my other part inside.

(subject 11) ... reflecting on the differences in the sensations, that's what I was surprised at... when he put his hand on my shoulder I expressed surprise...

Further, on reality testing:

(subject 2) That part felt pain quite sharply. So he asked me to get rid of the first part that I am showing now and the part that really feels everything, the wake-up part, so that part felt the pain.

(subject 6) I felt more alert to what was going on, certainly a different level for me.

(subject 7) It is just an observing part. I was watching J.R. (the hypnotist) and watching myself.

(subject 17) All I feel is this dual thing that I have mentioned before.

(subject 18) That was like... that was the part that always had the base in this room talking... I know what's going on you can't do anything to me.

(subject 21) Je le sentais... que j'étais hypnotisée mais qu'il y avait vraiment une partie claire. (I felt it... that I was hypnotized but that there really was a clear side of me.)

(subject 22) Je me sentais différente, mais je ne savais pas pourquoi...

comme si il y avait eu une division, une division de moi. (I was feeling strange, but I didn't know why... it felt like a division, a division in myself.)

These reports are strikingly similar to those reported by Hilgard (1977), although the verbal instructions for the "hidden observer" item is, as indicated earlier, different in several respects. In particular the equation of the "hidden observer" with reality and with an observing ego is strikingly in accord with the subjective reports of the phenomenon documented by Hilgard (1977). The reports of these subjects are in contrast with those who did not experience a "hidden observer" effect. For these subjects, the prominent sentiment was one of confusion created by the "hidden observer" instructions and, occasionally, regret that the subjects might be disappointing the experimenter for being unable to experience the item suggested. Some subjects, also, conveyed a sense of annoyance at the instruction that there might be another "part" which was registering the pain of electric shock. The following examples sample the range of reactions to this item.

(Subject 1) - "Did you feel there was some other part of you?  
 - No, I don't think I felt that. I don't know. In that sense I opened my eyes and looked at him. I didn't feel the same as I felt when my eyes were closed... But in terms of who was doing all this, it was always me. He was asking me to say things. I did not like that. Didn't enjoy it too much.  
 - You think he was asking you to do something that you didn't like doing?  
 - I thought he was asking me to do something that had to come from me.  
 - And it wasn't in there?  
 - No, I guess not."

(Subject 5) "- Did you feel in any way different when he said there was going to be another part?  
 - Well, I was waiting for that other, but nothing, nothing came up, no.  
 - How did you feel about that?  
 - It didn't bother me, I don't know. I felt maybe that I had to disappoint J.R. (the hypnotist) but there was nothing else coming out of it.  
 - In other words if it wasn't there, it wasn't there.  
 - That's it."



(Subject 8) "- Did you feel any different when he touched your shoulder?

- No, not really

- Did you find that you were confused?

"Actually I didn't really know what he... it was kind of confusing... like I didn't know exactly what he wanted, I didn't understand him very well. Looking at it now, my shoulder was supposed to know what was going on in my hand, and so when he gave me the second shock, I was probably supposed to feel it and to report it but I didn't, you know."

(Subject 9) "- And the part, I don't know, I didn't relate to it very much, when he touched my shoulder and he said the other part of me, I must have been thinking of something else because I don't remember it. I don't know exactly what it was supposed to be. My mind must have wandered somewhere else... and when he said something about touching my shoulder, I was back again. This was really hard. He gave me the shock again. So I just rated it as I did before but I don't really know what it was supposed to be.

- How did it feel like to you? Did you feel there was another part of you there?

- No.

- Did it feel just the same?

- Yes

- And he gave you a shock?

- It was the same, still numb."

(Subject 16) "- When he gave you the instructions, what were you expecting?

- I didn't know what to expect, and there was no other person talking or no other part of me.

- You just didn't feel...

- Same thing."

(Subject 20) "- Quand il a commencé à dire, il y a quelque chose en toi qui arrive, il y a peut-être une deuxième partie, là je trouvais cela extrêmement compliqué. S'il attendait quelque chose de moi et bien, qu'il attende! Il n'y a personne là. C'était tellement pas ça." ("When he started to say there is something in you which will happen, perhaps another part of me, I found that extremely complicated. If he expected something of me; well, he could expect. There isn't anybody there. It just was not like that.")

(Subject 23) "- I didn't understand a thing. Was he asking me if a part of my body could experience something different? I can't remember anything. During that period I did not feel any different from the time when I'm profoundly in hypnosis."

Hilgard (1977, 1979) has postulated the existence of an "amnesic barrier" as a means of accounting for the failure of some subjects to experience a "hidden observer" effect. The verbal reports of subjects in

the present study suggests an alternative explanation; many of them found the "hidden observer" instructions mystifying and/or confusing, and most of them were quite definite that they did not experience the effect, even though they waited for it to happen. Some expressed regret that they were not able to please the experimenter, and others annoyance at the suggestion.

#### Convergence of Analgesia and "Hidden Observer" Reports

Earlier data from Hilgard's laboratory imply a strong convergence between analgesia reports and "hidden observer" reports (Knox et al., 1974; Hilgard et al., 1975). In both studies, subjects reporting a "hidden observer" effect gave analgesia reports during the "hidden observer" item which were more similar to those furnished in a non-analgesic condition than to an analgesic condition (without the "hidden observer" instructions). Those not reporting a "hidden observer" effect reported analgesia as being similar in both the analgesic conditions with and without "hidden observer" instructions.

Reference back to Table 4 indicates that a small number of subjects did not show this one-to-one congruence between verbal reports of pain and verbal reports of altered experience. Four of the subjects reporting a "hidden observer" effect and one who did not, showed a degree of discrepancy. For one of them, (Subject 7) the pain reported during the "hidden observer" condition was only slightly greater than in the analgesic condition. No reason can be found for this departure from the general trend of the "hidden observer" group; from earlier sections, it can be seen that this subject furnished unequivocal and clear reports of experiencing the "hidden observer" effect, and of duality in age regression. She was classified as having the "hidden observer" effect on the

basis of her verbal report of the experience.

Two further subjects (Subjects 11 and 17) rejected the notion of the "hidden observer" constituting another "part" of themselves, but reported that the instructions made them feel subjectively different. As can be seen from Table 4, their "hidden observer" reports of pain indicated that the shock was slightly more painful during this item than during analgesia without "hidden observer" instructions. Their comments during the EAT inquiry indicated that they equated the "hidden observer" effect more with altered experience than with a separate "part" of the person, where the pain registers. Subject 17's report of her reactions to the "hidden observer" instructions conveys this emphasis on altered experiencing as opposed to another "part". Further, she equated the "hidden observer" experience with the duality she had felt in hypnotic age regression.

"- So what happened there?

- There I was a bit confused. I didn't know what he wanted from me, I didn't know whether there should be another person inside me, screaming to get out to say something of great significance or not.

- So you felt that the instruction was a bit ambiguous?

- Yes, when he said "Is there another part that wants to say something" all I feel in this thing is this dual thing I've mentioned before, that you're aware of what's going on, yet when suggestions are made to you, even though they're illogical, you still seem to do them."

Interestingly, this subject equated the "hidden observer" experience with her use of yoga for dental analgesia, due to adverse reactions to novacaine.

She said:

"... I went through a yoga phase, which I guess is a form of autohypnosis. They just say project yourself, so I've tried that at the dentist and it works. And you're aware of what he's doing, but you can bear it.

- You sort of just project yourself?

- Yeah. Out of the window, and into the trees somewhere.

- So is it almost as if it's happening to somebody else?

- Yeah. Again it's that dual thing which I should have remembered."

By contrast, subject 22 gave a quite different explanation of why her pain report during the "hidden observer" item was identical to that furnished during the analgesia item. She said:

- "Je sentais encore ma main. Et je me disais; si lui il pense qu'il va me donner un autre choc, il va y penser deux fois... Je me préparais pas pour prendre fuite mais pour me défendre... J'écoutais par bout, pas tout le temps... Je pensais à comment me défendre... Je savais ce qu'il voulait. C'est comme sauter de la première marche à la troisième d'un coup. C'est tout ce que j'ai ressenti à ce moment là." ("I felt once more the feeling in my hand. I said to myself: if he thinks he is going to give me another shock, he can think again... I did not prepare myself to escape, but to defend myself... I listened intermittently, but not all the time... I thought of how to defend myself... I knew what he wanted... it's like suddenly jumping from the first step to the third. That's all I was experiencing at the time.")

A previous section indicates that this subject had a clear experience of the "hidden observer" effect; her report of the shock during the "hidden observer" item suggests that she used her hypnotic abilities to prevent her experiencing the pain as strongly as it had been felt on the left (control) hand.

A final subject (Subject 5) had no "hidden observer" effect, and was the only subject in this group to rate the pain during this phase of the induction as more painful than in the analgesic condition. Her report indicated an altered perception of the electrical stimulus. She said:

"The second time it was a tiny bit stronger... Yeah... But I over rated it on both occasions... because it was still not a real shock... it was still not a real shock, just a certain feeling."

Overall, it can be seen that, contrary to Hilgard's data, verbal reports of the presence or absence of the "hidden observer" effect are not always paralleled by the subjects' pain reports. For 2 of the subjects (Subject 22 and 5) the verbal report clarifies the pain report; Subject 22, during the "hidden observer" item did not wish to re-experience the pain administered to the left (control) hand, and Subject 5

reported that both of the shocks to the right hand during hypnosis were not felt as shocks, and that the pain was over-rated each time.

As indicated already Subject 7 gave unequivocal reports of experiencing the "hidden observer" effect, and of duality in age regression. No apparent reason for her discrepant pain reports can be found.

Both Subjects 11 and 17 reported a subjective difference during the "hidden observer" item, but categorically denied that they were experiencing another "part". The pain reports of these subjects are similar to those reported by Hilgard et al. (1975) for subjects described by them as having an experience of "divided attention", but the criteria for "divided attention" are nowhere specified in this earlier report. Further, since the paper of 1975, Hilgard (1977, 1979) has reported only clear cases where pain reports and verbal reports of the "hidden observer" were congruent.

The data of the ensuing two sections, however, suggests that Subjects 11 and 17 have been correctly classified into the "hidden observer" group; their responses to the dichotic listening item are consonant with those of the other subjects in this group; further a stepwise discriminant analysis classifies these subjects into the "hidden observer" group on the basis of their pain data. The classification of subject 7, however, remains unclear, in terms of reports of pain during the analgesia and "hidden observer" items.

#### Dichotic Listening and the "Hidden Observer" Effect

An ANOVA for a split-plot factorial 2 x 2 design (practice/experiment, "hidden observer"/no "hidden observer") was performed on the shadowing task. The only significant effect was a main effect of the

response to the shadowing task ( $F(1,19) = 5.54$ ;  $p < .05$ ). This significant increase in percentage of correct shadowing appears at first glance to have been due to a practice effect. When the two subgroups were compared post hoc, however, only the no "hidden observer" group improved significantly from practice to experiment ( $F(1,14) = 8.36$ ;  $p < .01$ ). As can be seen from Table 8, the "hidden observer" group did not show any significant difference ( $F(1,19) = .22$ ;  $p > .05$ ) from practice to experiment. Further, the two groups did not differ significantly ( $F(1,19) = 2.16$ ;  $p > .05$ ) from one another in terms of their performance on the shadowing task, both during practice and during actual hypnosis.

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INSERT TABLE 8, ABOUT HERE

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The two groups did not differ either in their responses to the multiple choice questions; there was no significant difference in terms of the number of questions answered correctly. The whole sample, however, responded significantly better than a group of students who had not listened to the story for the dichotic listening task and had been asked to fill the questionnaire randomly. The mean percentage of correct response for the experimental group was 48.02% ( $S.D. = 21.77$ ) compared to 28.95% ( $S.D. = 14.94$ ) for the students who answered randomly ( $t(59) = 4.03$ ;  $p < .001$ ). This particular result suggests that more than guessing was involved in the response of these hypnotized subjects to the dichotic listening item.

#### Prediction of Group-Membership among High Hypnotizables

A discriminant analysis was performed in order to statistically discriminate between the two groups of high hypnotizable subjects. A

Table 8

Performance on the shadowing task during the practice and experimental session, for both subgroups expressed as a percentage of correct shadowing.

	Practice	Hypnosis
Hidden Observer	Mean 89.28	90.14
	Range 78-98	78-99
No Hidden Observer	Mean 81.50	86.78
	Range 60-97	71-98

step-wise method, maximizing RAO's  $V$  was used to identify the best linear set of discriminating variables. 4 subjects were deleted from the analysis because of missing data (1 from the no "hidden observer" group, 3 from the "hidden observer" group). Overall, the discriminant function found was significant ( $\chi^2(8) = 30.865$ ;  $p < .0001$ ). Eight variables were selected that best predicted group-membership. However only the first four are relevant since on closer examination, the last four steps did not increase the level of prediction. Table 9 presents for each step, its degree of significance and its percentage of accurate prediction.

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INSERT TABLE 9, ABOUT HERE

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It can be seen from Table 9 that after the second step, all subjects that did not manifest the "hidden observer" phenomenon were all correctly classified. It should be noted that the variable "duality in age regression" was not incorporated in this analysis since it seemed to measure exactly the same effect as the "hidden observer" item. Two hypnotic items, namely the pain reports during the analgesia item and the "hidden observer" item, were found to correctly classify all 13 of the "no hidden observer" subjects. After step 4, 6 of the 7 members of the "hidden observer" group were accurately classified. The one subject not classified at step 4 was rejected from the analysis during step 8 because of missing data. It is of interest however that she had been correctly classified by step 1. The subject rejected at step 4 was the one that could not come to the second experimental session.

For each of the discriminant variables, a standardized discriminant function coefficient was calculated. When the sign is ignored, each



Table 9

Discriminating Variables in Predicting Group-Membership

STEP	VARIABLE DESCRIPTION	PREDICTED MEMBERSHIP				% OF CORRECT PREDICTION	F	DF	P
		GROUP 0		GROUP 1					
		GROUP 0 <sup>a</sup>	GROUP 1 <sup>a</sup>	GROUP 0 <sup>a</sup>	GROUP 1 <sup>a</sup>				
1	PAIN, RIGHT HAND, HIDDEN OBS.	9	4	7	7	76.19	5.35	1 17	.03
2	PAIN, RIGHT HAND, ANALGESIA	13	0	4	4	80.95	7.46	2 16	.005
3	PAIN, RIGHT HAND, UNC. SUGG.	13	0	2	6	90.48	8.71	8 15	.001
4	PHS. SESSION 2	13	0	1	6	95.00	9.77	4 14	.0005
5	PAIN, LEFT HAND, CONTROL	13	0	1	6	95.00	9.79	5 13	.0005
6	DMN. SUBJECTIVE SCORE	13	0	1	6	95.00	10.31	6 12	.0004
7	UNCANCELLED, SUGGESTION	13	0	1	6	95.00	12.53	7 11	.0002
8	SHADOWING PRACTICE	13	0	0	6	100.00	12.17	8 10	.0003

<sup>a</sup> THESE COLUMNS INDICATE ACTUAL GROUP MEMBERSHIP.

coefficient represents the relative contribution of its associated variable to the discriminant function. The sign merely denotes whether the variable is making a positive or a negative contribution. Table 10 shows for each variable its standardized coefficient. In the Table, variables have been rearranged in order of their discriminating power.

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INSERT TABLE 10, ABOUT HERE

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It can be seen from Table 10, that variables 35, 36 and 32 are the most important predictors of the derived function. The remaining five variables have about the same relative weights in discriminating between the two subgroups of subjects.

Because only one discriminant function could be calculated in the present case, two group centroids were established. The group centroid represents the most typical location of a case from its group in the discriminant function space. A comparison of the group centroids for the function derived tells us how far apart the groups are along that dimension. The group centroids for the "hidden observer" and the no "hidden observer" groups were respectively 4.34 and -2.00.

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INSERT FIGURE 2, ABOUT HERE

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As can be seen from Figure 2, there is no overlap between the groups. The histograms clearly show the clustering around their respective group centroids of all the cases, and illustrate clearly the power of the discriminant function that was found.

Table 10

The standardized discriminant function coefficients associated with the eight predictor-variables.

Variables Number	Variables' Description	Coefficients
35	Pain, Right Hand, Hidden Observer.	4.13
36	Pain, Right Hand, Uncancelled Suggestion	-3.30
32	PHS, Session 2	-2.47
23	Uncancelled Suggestion	-1.70
17	DMN, subjective score	1.40
33	Pain, Right Hand, analgesia	-1.15
34	Pain, Left Hand, control	-0.97
38	Shadowing Practice, % correct.	-0.63

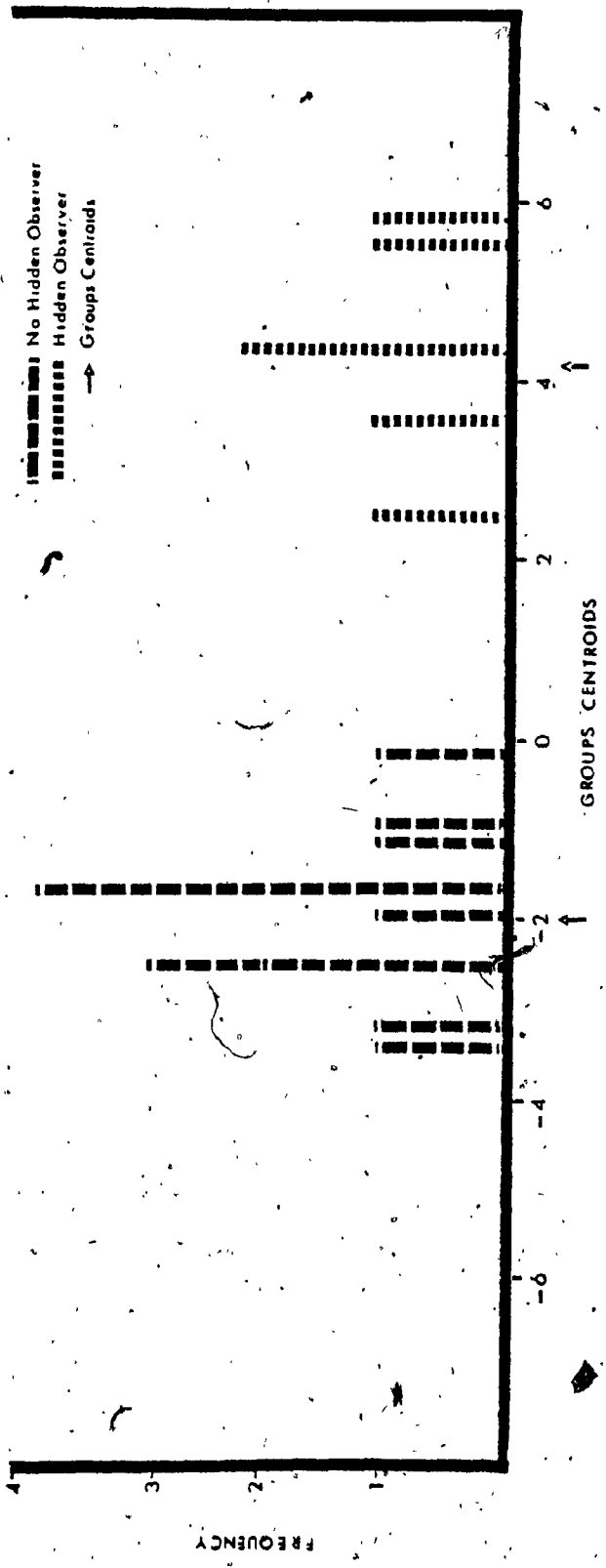


Figure 2. Histogram showing the clustering of each group of subjects around their respective group-centroid.

### Other Relationships

As was indicated at the outset of this report, the original aim of the present research program was to seek evidence for differential cognitive patterns in hypnosis. The initial study (Laurence, 1979; Perry & Laurence, 1980) found a relationship only between "hidden observer" reports and reports of duality during hypnotic age regression when 7 hypnotic items were compared. The addition of 7 further items in experimental session two did not change this picture in any substantial manner, except for the finding of a relationship between the "hidden observer" item and dichotic listening item of experimental session two. Nevertheless, some relationships were found between some of the 14 items tested over the two experimental sessions. While they do not appear, at this stage, to indicate any existence of other cognitive patterns in hypnosis, and even though they are not easily explained at the present time, the findings are reported since they may shed light on the nature of certain hypnotic items.

Posthypnotic persistence of an uncanceled suggestion. Very little is known about the conditions under which a suggestion which is not removed during hypnosis will persist posthypnotically. Most of what has been reported on this matter is in the form of clinical anecdote (Duncan & Perry, 1977); nevertheless, most texts on hypnotic induction (Penhoffer, 1957) emphasize the importance of the hypnotist always cancelling a hypnotic suggestion regardless of whether or not the subject has responded. Failure to do so is thought to lead to the suggestion continuing to operate and influence the person's behavior posthypnotically.

The first experimental studies to investigate this phenomenon in

the laboratory setting (Perry, 1977a; 1977b) found a low rate of posthypnotic persistence of an uncancelled analgesia item; only 20% of a group of 20 highly susceptible subjects manifested the phenomenon. The data (Perry, 1977a) suggested that subjects showing such posthypnotic persistence tended to have more intense analgesia, and to report greater hypnotic depth both during the analgesia item and throughout the entire hypnotic session. There was no difference, however, between subjects in terms of hypnotic susceptibility, possibly because subjects were screened only on HGSHS:A. It has been shown elsewhere (Hilgard, 1977) that HGSHS:A is not an especially sensitive instrument for determining which subjects are highly susceptible, even though its correlation with SHSS:C over an unrestricted range of subjects is satisfactory (Bowers, 1976).

In the first study of the present series (Laurence, 1979) subjects were screened on both HGSHS:A and SHSS:C; on these more stringent criteria for subject selection 70% showed posthypnotic persistence of uncancelled analgesia. Perhaps because of this more stringent screening, and other interpersonal factors discussed elsewhere (Laurence, 1979), the relationships reported earlier (Perry, 1977a, 1977b) were not reproduced.

The recruitment of an additional 13 subjects during the second year of the present program did not substantially alter the incidence reported by Laurence (1979). Combining the data of the two years of testing, it was found that 17 of the 23 subjects (73.91%) showed the effect. However, because subject 6 left the province before completing experimental session 2, her data have not been included in the ensuing analyses.

The data of the present study indicated that the posthypnotic persistence of uncanceled analgesia might be mediated by amnesic mechanisms. As shown in Table 11, a significant relationship was found between posthypnotic persistence of an uncanceled suggestion and posthypnotic amnesia following the first Experimental Testing Session ( $\chi^2(1) = 6.44$ ;  $p < .02$ ). By contrast no relationship between these two variables was found when posthypnotic amnesia of Experimental Testing Session 2 was compared with the posthypnotic persistence of the uncanceled suggestion in Experimental Testing Session 1 ( $\chi^2(1) = 1.04$ ;  $p > .05$ ). The data are presented in Table 12. Nevertheless, as Table 13 indicates, there was a significant relationship between amnesia performances for the two sessions ( $\chi^2(1) = 4.20$ ;  $p < .04$ ).

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INSERT TABLES 11-13; ABOUT HERE

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It can be seen from Table 11 that 15 of the 16 subjects who showed posthypnotic persistence of uncanceled analgesia had posthypnotic amnesia, as opposed to 3 of the 6 subjects for whom the analgesia did not persist.

On a post hoc basis, this would suggest that amnesia may be somehow involved, perhaps as a mediating mechanism for the uncanceled suggestion's posthypnotic persistence. It should be noted, however, that one subject showed this persistence but was not posthypnotically amnesic, and that three subjects who passed the amnesia item did not show analgesia posthypnotically.

No additional inferences can be made about this finding; although amnesia performance was statistically associated for the two sessions

Table 11

Chi-squared analysis comparing the Uncancelled Suggestion item and the Amnesia item in Experimental Testing Session One.

Amnesia (Session 1)

		Pass	Fail
Uncancelled Suggestion	Pass	15	1
	Fail	3	3

$\chi^2(1) = 6.44; p < .02$

(NOTE): For the Uncancelled Suggestion item, Pass = that the uncanceled analgesia persisted posthypnotically, and Fail = that it did not.

Table 12

Chi-squared analysis comparing the Uncancelled Suggestion item and the Amnesia item in Experimental Testing Session Two.

Amnesia (Session 2)

		Pass	Fail
Uncancelled Suggestion	Pass	12	4
	Fail	3	3

$\chi^2(1) = 1.04; p > .05$

Table 13

Chi-squared analysis comparing the Amnesia items of Experimental Testing Sessions One and Two.

Amnesia (Session 2)

		Pass	Fail
Amnesia (Session 1)	Pass	14	4
	Fail	1	3

$\chi^2(1) = 6.24; p < .02$



(Table 13), the lack of relationship between the uncanceled suggestion item of Session One with amnesia performance in Session Two may have been contaminated by the source amnesia item of Session Two. Three subjects who were amnesic in this first session were not so for the second; prior to the amnesia suggestion being lifted in Session Two, they recalled that they had learned the information for the Source Amnesia item during hypnosis, and this in turn appears to have breached their amnesia for the events of the total hypnosis session.

Source amnesia. On the source amnesia item, it is of interest that 36.40% of subjects passed this item. This finding is consistent with those of Evans and Thorn (1966), Evans (1971), and Kihlstrom and Evans (1979), who all reported that approximately one-third of highly susceptible subjects manifest this effect.

The Source Amnesia item was unrelated to the Uncanceled Suggestion item ( $\chi^2(1) = 1.42; p > .05$ ); however, when the Source Amnesia data were reclassified in terms of whether or not subjects breached Source Amnesia, a significant relationship emerged. By breaching, it is meant that the subject recalled that he or she had learned the answer to the three questions during hypnosis when the questions were asked once more post-hypnotically prior to the removal of amnesia. The data are presented in Table 14.

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INSERT TABLE 14, ABOUT HERE

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It can be seen that the majority of subjects who passed the Uncanceled Suggestion item did not breach Source Amnesia, and that the majority of subjects who failed the Uncanceled Suggestion item breached

Table 14

Chi-squared analysis, comparing the uncanceled suggestion item and the breaching of source amnesia.

	Source Amnesia	
	Breached	Did not breach
Pass	4	12
Fail	5	1

Uncancelled  
Suggestion

$$\chi^2(1) = 6.16; p < .02$$

Source Amnesia ( $\chi^2(1) = 6.16; p < .02$ ).

The findings of this, and the previous section, suggest, on a preliminary basis, that a similar process may be involved in determining whether or not an uncanceled suggestion will persist posthypnotically, and amnesic processes. At the present time, there appears to be an insufficient number of subjects to determine what the nature of the relationship may be, but the issue deserves future scrutiny.

### Discussion

The main three hypotheses of the present study were supported. Each of them will be discussed in the present section. In addition, other findings that seem to bring some clarification to certain aspects of Hilgard's neo-dissociation theory of multiple cognitive controls in human functioning, will be examined.

Duality reports in age regression and the "hidden observer". The present study replicated an earlier finding (Laurence, 1979; Perry & Laurence, 1980) on the relationship between duality in age regression and the "hidden observer" effect. The fact that all subjects who manifested the "hidden observer" effect also reported dual functioning during age regression strongly suggests the existence of differential dissociative skills in highly hypnotizable subjects. It is a further step towards establishing and confirming the presence of multicognitive controls of consciousness (Hilgard, 1977). At the same time this finding is puzzling. There is a sense in which it could be said that the subjects who maintain that they really felt five years old during age regression are manifesting an even more profound dissociation than subjects who give duality reports. The subjects who experience age regression "veridically" are, after all, denying their adult identities. In addition, it is not clear why those subjects who report duality are the ones who report also a "hidden observer". Further, it is not clear why there are qualitative differences between these subjects and the ones who report feeling childlike to the complete exclusion of any sense of their adult self. Clearly the finding poses a problem for neo-dissociation theory in its present form. (Hilgard, 1977). If hypnosis is a

means by which these "dissociated" cognitive structures can be tapped, why should it be that some highly hypnotizable subjects manifest one type of dissociation, and the remainder exhibit another? Alternatively, if dissociation is only demonstrated by the group which manifests duality and the "hidden observer" what then can be said of subjective alteration reported by the remaining subjects? Can we just dismiss them by attributing their responses to some variation of selective attention or by saying that they must lack dissociative skills without getting into some circularity concept? Clearly, further work is needed to clarify what appear to be different dissociative processes in hypnosis, if indeed, this is what they are.

A second finding of the present study seems to give additional support to a hypothesis of differential dissociative processes in hypnosis. A significant relationship was found between the presence or absence of the "hidden observer" and writing the sentence "I am participating in a psychological experiment", when subjects were regressed to age five. Again, subjects who did not manifest the "hidden observer" effect and reported a quasi-literal regression were those who did not tend to write the sentence. These subjects acted as if they really were five years old and could not write. On the other hand, subjects manifesting the "hidden observer" effect and reporting dual functioning during age regression, tended to write the sentence either correctly or with some spelling errors. These differences in responses in the "hidden observer" group are interesting in themselves, and could be an indication of some further subdivision within this group. The fact that some of them wrote without errors could be an index that they had decided to

comply to the demand of the experiment. But if this were so, why should they report duality during age regression, which seems to be going contrary to the experimental demand of the age regression item? The remaining subjects in this group who wrote the sentence with spelling errors raise another set of questions. Not only could they be compliant to the demand, but having been placed in a dissonant situation, they may have tried to solve matters by making obvious errors in spelling. Even with such sophisticated behavior, they were still not able to figure out that the correct answer to "Did you really feel five years old?" in terms of complying to demand characteristics was to report feeling completely childlike with no sense of adulthood.

It is pertinent, at this point, to examine what appear to be the demands for the age regression and the "hidden observer" items. In the age regression item, every question is set up in such a way as to give the subject the impression that he or she is really reexperiencing the age of five. Even during the EAT inquiry, the experimenter emphasizes the question "Did you really feel you were five years old" so that the obvious answer in terms of a compliance hypothesis, should be positive. Subjects reporting duality actually go counter to the demands of that item, while those who report feeling five years old go along with the demands. In the "hidden observer" item, (although in the present study the phenomenon is not as strongly cued as in Hilgard's studies), the effect is still positively emphasized. Those giving evidence of the effect can be said to follow the experimenter's demands. However these same subjects behaved contrary to the demand characteristics of the age regression item. Similarly, those subjects not

reporting the "hidden observer" effect showed behavior contrary to the demands of that item. Nevertheless, these subjects followed the demands of the age regression item. Clearly there is some intricate phenomenon underlying the relationship between these two items that could be explored using Orne's real-simulator design and/or Barber's task motivation design. Nevertheless, the present data suggest that this result cannot be attributed to any simple demand characteristics hypothesis.

Verbal reports of the "hidden observer". As was already mentioned in the Introduction section, Hilgard's subjects typically described their subjective experience of the "hidden observer" as being something akin to an observing ego. The reports of the subjects experiencing the effect in the present study are strikingly similar to those reported by Hilgard (1977). These subjects also described it as being all-knowing, mature, logical, and possessing more information than the hypnotized part. This similarity in the description of the phenomenon is even more striking knowing that there were several procedural differences in eliciting the effect between the present study and Hilgard's studies. The instructions were less positively cued, the physical rapport between the hypnotist and the subject was minimized and the pain used was much less stringent than cold pressor or ischemic pain. These procedural changes could be responsible for some subjects in the "hidden observer" group (subject 11 and 17) reporting feeling uneasy with the idea of a second part of themselves. The word "part" did not seem to correspond to their subjective experience of duality. They equated it with a different level of consciousness, another type

of mental functioning that was certainly neither a different person nor a different entity from their hypnotized self. This, in turn, could indicate that the suggestion of a different part conveys too strongly the idea of an "homonculus" somewhere in the brain taking care of everything. If one is looking for some cognitive structures, it might be better not to anthropomorphize them when presenting them to the subjects.

Turning to the verbal reports of the subjects who did not manifest the "hidden observer" effect, it becomes clear that these subjects did not experience anything different from their usual hypnotized feelings. The reports square with their tendency to report increased analgesia during the "hidden observer" item in order to indicate that nothing was going on at that moment. Hilgard (1979) posits two ways of explaining the absence of the "hidden observer". Firstly these subjects could experience an unusually deep amnesia, and the techniques used to breach the amnesic barrier may simply be inefficient for them. Alternatively, they could feel this "hidden observer" effect all the time and in this case, they would not be amnesic for the experience. If this were so, however, they could not report anything more with the "hidden observer" instructions, and this may be why they did not feel any new and different part when it was suggested. In the light of the present study, the second explanation can be easily dismissed. If these subjects were continuously experiencing the "hidden observer" they should be the ones reporting duality during the age regression item. The evidence indicates clearly that they were not experiencing a continually conscious dual functioning.



The first explanation is more difficult to critique. The idea of an amnesic-like barrier has been inferred by Hilgard and, as has been pointed out earlier, it is difficult to know why: Hilgard never specifically tested for it. However on the grounds of his theorizing, if these subjects were manifesting too deep an amnesia, it would represent a second type of barrier, different from the one thought to be experienced by the "hidden observer" group; further, neo-dissociation theory does not postulate such a second amnesic barrier. The inference of an amnesic barrier may not be necessary to explain the presence or the absence of the phenomenon. Both groups could simply be using different cognitive strategies in coping with pain.

One last point is worth mentioning on the amnesic barrier. If the amnesic barrier is different from the amnesia suggested at the end of a hypnotic session, and it is thought to be by Hilgard, how is it that it responds to the cue for posthypnotic amnesia? One should expect that subjects should still not remember what happened during that item, even if the posthypnotic amnesia is relieved. One way to answer this question would be to propose that the amnesic barrier is a transient, momentary effect of hypnosis that fades after the subject has been dehypnotized, enabling him or her to remember what really happened. But then how could this explain those who do not show the "hidden observer" effect? It would probably be more parsimonious to think of these two different groups of subjects as using different cognitive modes when confronted with phenomena such as pain and age regression. Lewis (1979) has proposed a model of memory based on the activation and deactivation of neural substrates influenced by such factors, as context,

cognition and internal cues. His model of active and inactive memory could explain what is going on in hypnotic amnesia, or at least be amenable to laboratory investigation. Similarly, Bindra's (1976) model of the pexgo (presently-excited-gnostic-assembly) represents another line of research that could explain such phenomena as the momentary changes in the hierarchy of cognitive structures.

In the present study, a number of subjects who gave evidence of the "hidden observer" phenomenon showed discrepancies between their verbal reports and their pain reports. Although they subjectively experienced the "hidden observer" effect, their pain reports were similar to their pain reports during the analgesia item. Three reasons, based on the different methodology used in the present study, could explain these results. Firstly, Hilgard's apparent uniformity may be due to the fact that he kept his hand on the subject's shoulder throughout the item. This behavior could of course accentuate the demands for compliance in subjects who are already aware of what the phenomenon is. Secondly, the different instructions used in the present study are more ambiguous in terms of what should be reported; subjects are told that there may be another "part" registering the pain of electric shock. Finally, the different pain procedures may play a role in these apparent discrepancies. The electric shock is a transient stimulus, and is an all-or-nothing sensation. Cold pressor pain or ischemic pain mount slowly allowing the subject to really work on it. The pain stimulus is also given specifically during the "hidden observer" item rather than asking retrospectively for a pain report, or asking for quasi-simultaneous automatic writing, which could then act

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## Footnotes.

<sup>1</sup> As noted by Hilgard (1973b) the beginnings of the concept of dissociation are commonly attributed to P. Janet in 1887. Janet (1889) started talking of "désagrégation psychologique" (psychological disaggregation) to explain the appearance of the phenomenon of double consciousness in hysterical patients. James (1890) and later on, Janet himself, used the English word dissociation when talking about "désagrégation". In order to better understand why Janet used that term and the context in which he used it, a few points are worth mentioning.

(a) Firstly, Janet never used the term dissociation to signify a lack of association of ideas. In an article on the alterations of consciousness in hysterics, Binet (1889) refuted the idea that the mechanism underlying the phenomenon of double consciousness was one of a lack of association of ideas, a lack of communication between the elements of both consciousnesses. He was obviously attacking Janet's conception. However, in the same article (footnote 2, p. 169), following a letter by Janet, Binet rectified his position. He says:

M. Pierre Janet, que je vise dans le texte, et auquel j'ai communiqué mes observations, m'écrit que par dissociation, il n'a pas entendu désigner un phénomène contraire à l'association des idées; pour lui, un état dissocié est un état qui n'est point ramené à l'idée du moi et de la personnalité, et qui échappe à cette synthèse supérieure. M. Janet reconnaît lui-même que l'ambiguïté de l'expression dissociation mentale explique mon erreur. (Binet, 1889, p. 169)

(b) According to Janet, in the healthy normal individual, perceived sensations and their associated memories are continuously and actively synthesized and aggregated into a single main sensation that gives rise

to a new perception. This new perception, always changing with incoming new information, contains both memories and new sensations and is at the basis of self-perception. It is not an automatic association of ideas: it is an active synthesis that unites new phenomena in a continually newly-formed perception of self-unity.

(Janet, 1889, p. 295)

(c) If it is not a lack of association of ideas that gives rise to a double consciousness, what is it? Janet explains it in the following way. Because the ideal, perfectly healthy person does not exist, there is a number of sensations that are processed but not perceived. The synthesis, mentioned earlier, cannot be achieved completely all the time, leaving certain phenomena isolated and unperceived. There is an involuntary shrinking of the field of consciousness, a weakening of the power of perceptual synthesis. This process was naturally exemplified in sleep-walking individuals or the natural somnambulists. According to Janet, natural somnambulism could be a sign of a potential hysterical personality. In hypnosis (artificial somnambulism), individuals were seen as mimicking this natural phenomenon. In hysterics, in hypnotized individuals, and in natural somnambulists, this weakening is exaggerated so that they cannot join together in a unique personal perception a number of sensations that actually happen to them. In normal individuals, unperceived sensations will always reach consciousness at some point: the unconsciousness is only momentary, related to selective attention or distraction. In hysterics, following the increased weakening of the power of perceptual synthesis, one sensation will dominate and attract automatically associated memories, images and

sensations. Two processes can then be initiated: there will either be an automatic loop created that will only repeat the old synthesis or because of the weakening of the synthesis activity, only similar sensations will be perceived. Any other type of sensation will be continually ignored. It is this weakening in the power of perceptual synthesis that is at the origin of psychological disaggregation.

(d) For Janet, memory ensures the continuity of mental life. All memories are constituted by simple sensations and images that are synthesized into a perception. Quite often, the perception will bear very little resemblance to its constituent parts. Images and sensations that are not consciously perceived continue to live subconsciously in the waking state and can be brought forth during artificial somnambulism. But because they are not conscious, they cannot be remembered in the waking state. The individual is then exhibiting alternating memories, or at least there is in him or her some latent disaggregated memories. In the hysteric or the hypnotized individual, this second set of memories will slowly build up, manifesting itself in the phenomenon of double consciousness. These sets are often complementary. For example, when a patient manifests a systematic analgesia (e.g. no sensation of pain in the right upper arm), the sensation is not abolished, but displaced from one consciousness to the other. (Janet, 1889, p. 275)

(e) Finally, the whole problem of double consciousness that preoccupied the investigators in the last decade or so of the 19th century stemmed from the phenomenon of spontaneous amnesia usually seen after an hypnotic "trance" or an hysterical crisis. For Janet, considerable

amnesia always accompanied acts performed under suggestion. For him, memory was linked to sensation in the same way as amnesia was linked to anesthesia. Because an individual cannot perceive a certain type of sensation, he or she cannot retrieve associated memories or create new ones. The processed sensation will remain unperceived; he believed that there is an actual ongoing amnesic process between the different parts of consciousness. It is only under particular circumstances that one can get in touch with the different memories. In the long run, there will be a kind of cooperation or coordination between the memories that will finally permit the reintegration of all memories. Unfortunately, as Janet points out, this last point is only theoretical: he reported that he never actually saw it happen.

<sup>2</sup> All  $X^2$  values reported are uncorrected for continuity. A recent study of Yates' correction for continuity by Camilli and Hopkins (1978) indicates that it is so conservative as to decrease the accuracy of probability statements, and that its use causes the proportion of Type 1 errors to be far less than the nominal value of alpha. These authors conclude: "The Yates correction is not recommended for either the chi-square test of homogeneity or the chi-square test of independence, since its use would result in an unnecessary loss of power". (1978; page 166)

## Appendix A

## 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 on 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... 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 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 your 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 length... left arm out at

shoulder-length... and imagine that the left arm is becoming stiff... and straight... and rigid... stiff and straight 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 feelings 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... your first impressions of the University start to become 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 highschool... right back to the beginning of highschool... closer and closer to the beginning of highschool... closer and closer as it becomes very vivid and real to you... right back to your very first day at highschool... your very first day at highschool... and just as you did before... to indicate its becoming vivid and real to you... just let the index finger rise once more.

---

PAUSE

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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

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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 you're 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 our eyes slowly and gently... just enough to see the pad... without 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 highschool... all the way through highschool... through to the last year of highschool... 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 I 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 that 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 Ss block 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 to open your eyes... just open them very slowly and gently... and look at the arithmetic divisions 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 anyless 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 divisions you can see on the pad...

PAUSE

That's fine... Now close your eyes again... and I'll take the pad and the 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 just 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 fibres... and 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 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'll 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 can not 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'll 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... 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 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 B

## The Experiential Analysis Technique: Questionnaire

Cognitive<sup>a</sup>

What were you thinking at that time?

What thoughts were you having about the hypnotist at that time?

Were you consciously thinking about what was happening then?

What was going on in your mind then?

Images

Were you having any fantasies at that moment?

Were any pictures, images, memories flashing through your mind then?

What were you imagining at that point?

Were you imagining anything to help you at that point?

Expectations

What did you want the hypnotist to say to you?

Were you expecting anything of the hypnotist at that point?

What did you want to happen next?

What were you expecting to happen next?

Perceptions

What do you think the hypnotist was wanting you to do?

Do you think the hypnotist was aware of your feelings and thoughts?

How did you think the hypnotist felt about giving you this problem?

Do you think that went the way the hypnotist wanted it to?

Image Presentation

How do you think you were coming across to the hypnotist?

How did you want the hypnotist to see you?

What message did you want to give the hypnotist?



What do you think his perceptions were of you?

Interpersonal

What type of relationship did you feel you had with the hypnotist?

How did you feel toward the hypnotist at that point?

Did you like what the hypnotist was doing to you at that point?

Do you think your relationship with the hypnotist changed at all?

Associations

What meaning did that have for you?

Did the hypnotist remind you of anyone else in your life?

How attractive or unattractive was the hypnotist to you?

Did this remind you of anything else you have experienced?

Unsettled Agendas

What would you have liked to have said or done at that point?

How were you feeling about your role as a subject at this point?

What did that realization do to you then?

What would you have liked the hypnotist to have done then?

End of Recall

Do you like the "you" you saw on the screen?

Did the equipment affect you in any way?

What things did you learn from this recall session on the video?

Were you satisfied with your behavior?

What do you think about this way of inquiring into your experience?

<sup>a</sup> Alternate questions for separate category.

## Appendix C

## Induction Procedures For Session Two

Relaxation

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, 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 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 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 on earlier sessions...

As you stare at the target you have chosen, you may find that occa-

sionally 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... 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 the 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... 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 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.

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... without losing any of your actual hypnotic depth... 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,

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 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 "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 RESPONSIVITYFORMAL 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....

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 accompany 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 a small questionnaire 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. On this pad there is a series of nine (9) multiple choice questions on the story you just heard.

In a few moments... very slowly and gently... you will open your eyes without losing any of your present hypnotic depth and you will start answering the questions... Do the best you can and when you will have finished... just close your eyes and relax... Ready? Then... just open your eyes and start answering the questionnaire.

---

PAUSE

---

That's Fine. Very relaxed now... Deeply hypnotized... enjoying the calm and pleasant sensations of relaxation.

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's the Prime Minister of the province of Québec? (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 and 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 the 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 the 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

Items Descriptions and rationale for the 14 items  
tested over the two 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 SHSS: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 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 A) 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, 4 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 answer the question 'Could you tell me who the Prime Minister...', and (d) whether or not they reported dual functioning during age regression. Each of these specific variables are described in Appendix E.

(c) Delusion of number 5. This item taken and adapted from Evans (1965, Note 4) 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 divisions 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, they were scored as subjectively passing the item. If they acknowledged using it voluntarily, they were scored as failing subjectively 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, 1963) 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 extensively described in the Introduction, Method and Appendix A.

(f) Uncanceled Suggestion. This item is taken from Perry (1977).

The persistence of an uncanceled suggestion posthypnotically is akin to the persistence of a posthypnotic suggestion which is seen as a compulsive, quasi-automatic response to the hypnotist demand. However very few studies have been devoted to this phenomenon (see Perry, note 2 for a review of the question and Laurence, 1979), 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 on that scale. Percent passing or the difficulty index of that item is generally about 27% (Hilgard, 1965, 1978/79) and it has become central in 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) 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-signalling 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 at the end of it. This technique is more permissive than the one used originally 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, or just thoughts or feelings without accompanying imagery.

(b) 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.

(c) 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 can not 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 where 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 a questionnaire on the story. Before the beginning of session II, all subjects had a practice session to familiarize them with the shadowing technique. The practice session also served as a baseline record for each subject. In the practice session, although they were also told to listen to the story, no specific test was given to ascertain their recall. After the practice session, 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 English texts were taken from series HG- 10/23, and the French texts from series GH- 4/8.

Both French and English practice session lasted 4 minutes. The experimental session lasted 6,50 minutes for the English group and 6,23 minutes for the French group. The texts were read by two native speakers at an average speed of 165 words per minute. The French and the English texts were equated for length and difficulty.

A list of random numbers was constructed using the digits 1,2,3,4; this list was used as the 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 practice session 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.

This item was scored in three ways: the percentage of correct shadowing during the practice session and the percentage of correct shadowing during the hypnosis session and the percentage of correct answers on the questionnaire.

(d) Source Amnesia. This item was taken from Evans and Thorn (1966). Again this item is seen as taping 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.



## Appendix E

Variable descriptions and scoring procedures

Variables 1 to 3 and 5 to 8 were identifying variables for each subject and will not be described here as they are not relevant to the data presented in Appendix F and to the statistical tests conducted in the present study.

Variable 4: 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 9: Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C) score.

Variable 10: SHSS:C amnesia suggestion

This variable was scored 1 if the subject could not remember more than 3 items following the end of the induction, but could recover at least 3 more items after the pre-arranged cue for lifting amnesia was given.

The variable was scored 0 if the subject remembered more than 3 items following the induction, prior to the removal of amnesia.

Variable 11: SHSS:B post-hypnotic suggestion

This variable was scored 1 if the subject actually got up and stretched on the pre-arranged cue. The variable was

scored 0 if the subject did not get up on the cue or only did some partial movement.

Variable 12: 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 alternance 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 13: "Who is the Prime Minister of Canada?" asked during the age regression to 5 years old.

This variable was scored 1 if the subject gave an answer whether the answer was right or wrong.

The variable was scored 0 if the subject did not give any answer.

Variable 14: Writing during age regression

This variable was scored 1 if the subject wrote either his/her name, age, date of birthday, the date of the day or anything he was asked to write.

Variable 15: "I am participating in a psychological experiment."

This variable was scored 1 if the subject attempted to write this sentence given during the age-regression item, either completely or partially.

The variable was scored 0 if the subject refused to write.

the sentence.

Variable 16: Delusion of number 5

This variable was scored 1 if the subject did not say or use number 5 during the counting task and the arithmetic divisions.

The variable was scored 0 if the subject used the number 5 at any point during the item.

Variable 17: Delusion of number 5, subjective score.

This variable was scored 1 if the subject used the number 5 once but expressed confusion or unawareness of doing so in the posthypnotic inquiry.

The variable was scored 0 if the subject either used 5 and acknowledged it in the posthypnotic inquiry or did not use 5 and acknowledged that he or she was still aware of it.

Variable 18: Hand Analgesia

This variable was scored 1 if there was a difference in reported pain between the analgesic hand and the control hand and a subjective report of analgesia.

The variable was scored 0 if there was no difference between the reported pain in the analgesic and control hand or if the subjective report did not corroborate the reported difference.

Variable 19: Pain report in the analgesic right hand following shock administration. (Scale of from 1 to 10)

Variable 20: Pain report in the left (control) hand (Scale from 1 to 10)

Variable 21: Pain report in the right analgesic hand during the "hidden

observer" suggestion.. (Scale from 1 to 10)

Variable 22: Pain report in the right hand after the hypnotic session is terminated (persistence of an uncancelled suggestion).  
(Scale from 1 to 10)

Variable 23: Uncancelled suggestion (analgesia to the right hand)  
This variable was scored as item 18.

Variable 24: Post-hypnotic amnesia, experimental session 1  
This variable was scored as variable 10, but the criterion was remembering 2 items or less before cue and recovering 2 or more after the amnesia suggestion was removed.

Variable 25: Post-hypnotic amnesia, experimental session 2  
This variable was scored as variable 24.

Variable 26: Hypnotic Dream  
This variable was scored 1 if the subject reported a dream that did not show any logical link to the hypnotic context and was not a succession of images, colors or feelings.  
Otherwise, it was scored 0.

Variable 27: Compulsive Responses, percentage of positive answers.

Variable 28: Shadowing practice, percentage of correct numbers shadowed.

Variable 29: Shadowing during hypnosis, percentage of correct numbers shadowed.

Variable 30: Multiple-choice questions following the dichotic listening task: percentage of good answers.

Variable 31: 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 posthypnotically did not know the correct answers or could give his/her source of information.

Variable 32: Post-hypnotic Suggestion, experimental session 2.

This variable was scored in the same way as Variable 11.

Variables 33 to 40 were actually variables 19-22 and 27-30 and their scoring procedures have been described in Appendix D. For the purpose of an analysis using step wise discriminant analysis, the numerical data for these variables were divided by median split, with 1= above the median and 0= below the median.

## Appendix F

Individual scores for each subject on all variables

<u>Ss</u>	<u>Variables<sup>a</sup></u>													
	4	9	10	11	12	13	14	15	16	17	18	19 <sup>a</sup>	20 <sup>a</sup>	21 <sup>a</sup>
01	0	12	1	1	0	0	0	0	1	1	1	05	09	04
02	1	12	1	1	1	1	1	1	1	1	1	02	07	07
03	1	11	1	0	1	0	0	0	1	1	1	02	10	10
04	0	11	1	1	0	0	0	0	0	1	1	08	10	03
05	0	11	1	1	0	1	0	0	1	1	1	03	10	04
06	1	10	1	0	1	0	1	1	1	1	1	05	09	10
07	1	09	1	1	1	1	1	1	1	1	1	03	08	04
08	0	10	1	0	0	0	1	1	1	1	1	01	10	01
09	0	10	1	0	0	0	0	0	1	1	1	02	10	02
10	0	11	1	1	0	0	0	0	1	1	1	03	08	02
11	1	11	1	1	1	1	1	1	0	0	1	02	09	03
12	0	10	1	1	0	0	0	0	1	1	1	07	10	05
13	0	12	1	1	0	0	1	1	0	1	1	02	09	02
14	0	11	1	1	0	0	0	0	1	1	1	02	09	02
15	0	12	1	1	0	1	0	0	1	1	1	05	08	02
16	0	09	1	0	0	0	0	0	1	1	1	02	07	01
17	1	10	1	0	1	0	1	1	1	1	1	02	08	04
18	1	11	1	1	1	0	1	1	1	1	1			
19	0	11	1	1	0	0	0	0	1	1	1	01	07	01
20	0	11	1	1	0	0	1	1	0	0	1			
21	1	11	1	1	1	0	1	1	0	1	1	03	10	09
22	1	10	1	1	1	0	0	0	0	1	1	01	10	01
23	0	11	1	1	0	1	1	1	0	0	1	02	10	02

## Appendix (continued)

<u>Ss</u>	<u>Variables</u>													
	22 <sup>a</sup>	23	24	25	26	27 <sup>a</sup>	28 <sup>a</sup>	29 <sup>a</sup>	30 <sup>a</sup>	31	32	33	34	35
01	07	0	1	1	1	60	96	86	66	1	1	1	0	1
02	07	0	0	0	1	40	98	99	33	0	1	0	0	1
03	02	1	1	1	1	30	89	93	55	1	1	0	1	1
04	04	1	1	1	0	45	80	87	44	1	1	1	1	1
05	08	0	1	1	1	45	83	81	44	0	1	1	1	1
06	01	1	1									1	0	1
07	06	1	1	1	1	45		75	55	0	1	1	0	1
08	01	1	1	1	1	50	90	97	55	0	1	0	1	0
09	02	1	1	1	1	40	82	92	44	0	1	0	1	0
10	02	1	1	1	1	25	72	79	33	0	1	1	0	0
11	03	1	0	0	1	10	81	83	44	1	1	0	0	1
12	05	1	1	0	1	50	60	71	33	0	1	1	1	1
13	01	1	1	1	0	15	72	80	55	1	1	0	0	0
14	08	0	0	1	0	25	97	98	11	0	1	0	0	0
15	02	1	1	0	0	20	75	83	89	0	1	1	0	0
16	03	1	1	1	0	30	86	87	00	1	1	0	0	0
17	05	1	1	1	1	55	78	78	33	1	1	0	0	1
18		0	0	0	1	10	96	91	55	0	1			
19	01	1	1	1	1	43	81	98	75	0	1	1	0	0
20		1	1	1	1	46	78	82	87	0	1			
21	03	1	1	1	1	33	94	98	62	1	1	1	1	1
22	03	1	1	0	1	30	89	89	50	0	0	0	1	0
23	10	0	1	0	1	42	89	93	37	0	0	0	1	0

## Appendix (continued)

<u>Ss</u>	<u>Variables</u>				
	36	37	38	39	40
01	1	1	1	0	1
02	1	1	1	1	0
03	0	0	1	1	1
04	1	1	0	1	0
05	1	1	0	0	0
06	0				
07	1	1		0	1
08	0	1	1	1	1
09	0	1	0	1	0
10	0	0	0	0	0
11	0	0	0	0	0
12	1	1	0	0	0
13	0	0	0	0	1
14	1	0	1	1	0
15	0	0	0	0	1
16	0	0	1	1	0
17	1	1	0	0	0
18		0	1	1	1
19	0	1	0	1	1
20		1	0	0	1
21	0	0	1	1	1
22	0	0	1	1	1
23	1	1	1	1	0