HYPNOSIS
Scientific Status and Clinical Relevance

Hypnosis is a form of information processing in which voluntarily initiated suspension of peripheral awareness and critical analytic mentation can readily lead in some people to major changes in perception, memory, and mood that have important behavioral and physiological consequences. There are individual differences in how easily these voluntarily initiated changes in perception, mood, and memory can subjectively begin to seem involuntary or quasi-automatic. It appears that conditions of (a) sensory restriction and (b) very high, or (c) very low physiological arousal predispose all people toward the hypnotic mode of information processing (Wickramasekera, 1977b).

Hypnotic phenomena have been reported in all cultures across the world, across all periods of recorded history, and in various culturally conditioned forms. Manifestations of hypnotic behavior have typically occurred in either a religious or a healing (medical) context. It is important to recognize that hypnosis did not originate with the physician Anton Mesmer (1734–1815) in France 250 years ago; however, Mesmer deserves recognition as the first person known to propose a naturalistic rather than a magical or demonic explanation of hypnotic phenomena. Borrowing from contemporary physics, Mesmer formulated a theory of hypnotic behavior based on magnetism (animal) radiating from his own person.

The last 50 years of experimental hypnotic research has clearly and repeatedly established that the bulk of hypnotic response resides in the subject’s natural hypnotic ability, and not in any projection from the operator or from the operator’s hypnotic skill (Hilgard, 1982). In fact, a series of clever experiments done over 200 years ago, designed by a distinguished committee (Ben Franklin, Lavoisier, Guillotin, etc.) of the French Academy of Sciences appointed to investigate Mesmer, found no
evidence of animal magnetism in his procedures, but did not deny the empirical reality of his cures. Hence, Mesmer was wrong with respect to the mechanism of hypnosis and the sources of hypnotic response. The committee alternatively proposed that the mechanism of his cures was "mere imagination."

We know today that the committee was partly right with respect to the alternative mechanism of imagination it proposed to account for his clinical results, but it was seriously wrong with respect to the apparent implication that the potency of imaginative and cognitive effects are trivial. I refer to this as the error of the French Academy of Sciences. It is an error that is even today commonly made by many physicians, biomedical researchers, and other reductionistic thinkers who are committed to mind–body dualism. In fact, in certain subjects (high hypnotizables) and under certain conditions, beliefs can have potent, specific, and reliable biological consequences ranging from allergic reactions, warts, or congenital skin diseases to changes in mammary glands, burns, and the inhibition of bleeding (Barber, 1984). These effects in these subjects can be more specific and rapid than the effects of drugs. For example, one study (Maslach, Marshall, & Zimbardo, 1972) demonstrated that it is possible to suggest increases in peripheral skin temperature in one hand and to reduce it concurrently in the other hand. It would be hard to find a drug that can have such specific and arbitrarily selected effects on the body.

The English physician Braid (1795–1860) coined the term hypnosis or "nervous sleep," thereby proposing another naturalistic explanation of hypnosis, and he went on to demonstrate its clinical value in medical practice. This second hypothesized mechanism of hypnotic behavior has also been proved false by controlled EEG studies of hypnosis in the last 50 years. Hypnosis is definitely not sleep Stages 4, 3, or 2 (Evans, 1977).

The third naturalistic but pathological explanation of the mechanism of hypnotic behavior was proposed by the eminent French neurologist Charcot (1835–1893) of Paris. According to Charcot, hypnosis was associated with a psychopathological phenomena (hysteria) and was based on an abnormal CNS function. Bernheim, professor of medicine at Nancy, challenged Charcot’s theory and proposed that hypnosis was due to normal behavioral phenomena initiated by suggestion. Based on the last 50 years of experimental research, we know today that Charcot was wrong and Bernheim was more nearly correct. People free of major psychopathology are generally better hypnotic subjects (Graham & Evans, 1977; Hilgard, 1965; Horne, Evans, & Orne, 1982; Spiegel, Detrick, & Frischolz, 1982). Serious mental disorders appear to disrupt the attentional process, which is one of the crucial preconditions
for hypnotic behavior. In fact, normal (without serious psychiatric history) volunteer subjects and medical patients with circumscribed physical problems are in general probably the best adult hypnotic subjects.

The modern systematic study of hypnosis in the experimental laboratory can be dated to the psychologist Clark Hull, whose research at Yale led to a classic text, *Hypnosis and Suggestibility*, in 1933. Many physicians and psychologists are unaware of the fact that in 1955 the British Medical Association, recognizing that a large enough body of clinical observations and experimentally verified information existed about hypnosis, recommended its cautious teaching in medical schools and its use in clinical practice. In 1958, the American Medical Association went on record making a similar recommendation. In 1960, the American Psychological Association officially recognized the American Board of Psychological Hypnosis and its authority to examine and certify diplomats in either experimental or clinical hypnosis. There are now similar national boards in medical and dental hypnosis.

**Current Theories of Hypnosis**

Because of prior empirical research, all scientific investigators of hypnosis are now essentially in agreement at an observational level (Spanos & Barber, 1974). For example, investigators of hypnotic ability, regardless of their theoretical orientation, report that approximately 70% of people with superior hypnotic ability can significantly reduce pain (by at least 50%) (Hilgard & Hilgard, 1975). However, at the level of explanation or mechanism there is still salient disagreement. At the explanatory level some theorists see the essence of hypnosis as motivation, or goal-oriented striving (Barber, 1969) that involves no discontinuous special state, whereas others (Hilgard, 1965; Orne, 1977), who are state theorists, see the essence of hypnosis as an altered state of consciousness (discontinuous from the waking everyday state) produced by a trait (hypnotic ability) and a procedure or induction. They consider motivation to be necessary but not a sufficient condition for the experience of profound hypnotic (e.g., amnesia, hallucinations, etc.) phenomena.

Experimental research has made it very clear in the last 25 years that hypnotic experience and behavior are primarily dependent on individual ability or talent and only secondarily on hypnotic procedure (Hilgard, 1982). In fact, most of the early controversy between state and non-state theorists was caused by the failure to control for hypnotic ability in the early studies. If subjects are not selected for hypnotic ability, no differences emerge between a hypnotic procedure and a task-motivated
procedure (Barber, 1969; Hilgard, 1965). The mere performance of a hypnotic induction ritual will not guarantee hypnotic behavior. To demonstrate the potency of hypnosis we need first to identify people with hypnotic ability. Hypnotic ability, like intellectual ability, exists independently of intelligence tests and hypnotic tests, but these tests enable us accurately to identify people with these abilities. Through the identification of these people and the analytic study of their abilities, we may come to understand the mechanism on which hypnotic phenomena are based, and eventually we may be able to teach these mechanisms to others who are deficient in hypnotic talent.

**Parameters of Hypnosis**

Several scales of high reliability (.80 to .90) and validity have been developed to measure hypnotic ability. (See Figure 7.) These scales include the Stanford, Harvard, and Barber Scales. The scales have shown measured hypnotic ability to be very reliable across different experimenters and very stable over periods as long as 10 years (Hilgard, 1965; Hilgard & Hilgard, 1975). The predictive validity of these scales is partly documented by the numerous studies showing a high correlation between clinical and experimental outcomes with responses mediated by the autonomic nervous system and measured hypnotic ability (Bowers & Kelley, 1979; Hilgard, 1982; Perry, Gelfand, & Marcovitch, 1979), but the evidence is weaker for a relationship between hypnotic ability and operant behaviors like cigarette smoking. For example, 61% of superior hypnotic subjects and only 3% of inferior hypnotic subjects can significantly reduce experimental pain (Hilgard & Hilgard, 1975). These scales

![Figure 7. Hypnotic responsiveness scores of 806 college students. The scores were earned on individual tests with the Stanford Hypnotic Susceptibility Scale, Form A; the least responsive scored 0, the most responsive 12. Most scores lie between these extremes. Unpublished data, Stanford Laboratory. From Hypnosis in the Relief of Pain by E. R. Hilgard & J. R. Hilgard, 1975.](image-url)
reveal hypnotic ability to be approximately normally distributed; approximately 10% of the population has superior hypnotic ability and an equal percentage is refractory to hypnosis (Barber, 1969; Hilgard, 1965). Hypnotic ability is also moderately and positively related to IQ, peaks in preadolescence (ages 10 to 12 years) and declines slowly with age (Morgan & Hilgard, 1973). (See Figures 8, 9.)

From studies of monozygotic twins it appears that hypnotic ability has a genetic component (Morgan, 1973; Morgan, Hilgard, & Dareri, 1970) approximately equal to that of IQ. There appears to be no significant sex differences in hypnotic ability (Hilgard, 1965) but at least one large-scale (N=653) study (Morgan & Hilgard, 1973) indicated that only for young (age 21 to 32) females who were mothers was there a temporary recovery of adolescent level hypnotic ability during their child-bearing age. If this finding is replicated it would be interesting to speculate that young mothers who do not show this temporary recovery of hypnotic ability may be at higher risk for developing stress-related psychophysiological problems either in themselves and/or in their infants. This speculation is based on the assumption that the empathic and other components (ability to regress and be playful with child or “regression in the service of the ego”) of hypnotic ability facilitates “bonding” and the implementation of good child rearing practices. Mothers who feel ineffective and frustrated in their parenting skills are probably at greater risk for developing mental or physical disorders in themselves or in their children.

Figure 9. Reduction of pain through hypnotically suggested analgesia as related to susceptibility to hypnosis. The subjects were fifty-four university subjects whose prior experience of hypnosis was limited to a standard test of hypnotic responsiveness following a standardized induction procedure. From *Hypnosis in the Relief of Pain*, by E. R. Hilgard and J. R. Hilgard, 1975.

Behavioral response to suggestion outside of hypnosis correlates with measured hypnotizability approximately .60 (Hilgard & Tart, 1966). This correlation implies that given (a) a cooperative subject with (b) good hypnotic ability, any verbal instruction or suggestions are likely to have a significant impact regardless of whether the instructions are called propaganda, psychotherapy, or public education. This implies that some of the benefits of suggestion are available to those with hypnotic ability even without a formal prior hypnotic induction, if their therapist or physician recognizes the subject's ability and mobilizes it positively to secure compliance with psychotherapy homework or medication usage. The benefits of suggestion constitute a good reason routinely to measure the hypnotic ability of all patients even if hypnosis *per se* is not formally used in therapy.

Suggestions used in hypnosis differ from simple verbal instructions in several important ways (Bowers, 1982; Wickramasekera, 1976): (a) Responses to instructions are not dependent on a subject's hypnotic ability. For example, “Pick up your pants, Jack!” is a verbal instruction that does not presuppose hypnotic ability. Positive response to hypnotic suggestions is dependent on subject characteristics (superior hypnotic ability). For example, the simple suggestion “You will be unable to feel pain” will be effective only if given to a person with hypnotic ability. (b) A suggestion is experienced as nonvolitional (classic suggestion effect) or occurring without the subject’s conscious participation. For example, “You will be unable to take your hands apart” is experienced by people with hypnotic ability as an involuntary inability to separate their hands. Instructions require only voluntary social compliance, for example in
complying with the request, "Pass me the salt." (c) Suggestions are particularly effective with autonomically mediated responses (Bowers, 1982), and less effective with skeletally mediated or operant behavior. For example, suggestion is less likely to be effective with weight loss or smoking than with nausea or vomiting. Because the good hypnotic subject, when positively motivated, is cognitively flexible and profoundly empathic, he or she is more likely to be agreeable and to even be seen as compliant. In fact, a preliminary study of the relationship between hypnotic ability and annual alumni giving (money) showed a modest relationship between making financial contributions and hypnotic ability (Graham & Greene, 1981). But several studies have shown that people of superior hypnotic ability are not particularly motivated by exhortation and, in fact, on motor tasks they do not try as hard as people of low-hypnotic ability (London & Fuhrer, 1961).

**Characteristics of High Hypnotizables**

Hypnotic ability is not significantly correlated with any known personality variable (Barber, 1964; Hilgard, 1965). Very recently the careful study of exceptionally responsive hypnotic subjects (Hilgard, 1977; Wilson & Barber, 1982) is leading not only to further convergence at the observational level but also at the explanatory level. For example, Wilson and Barber (1982), based on a study of very superior hypnotic subjects, recently claimed that the essence of hypnosis is fantasy involvement of hallucinatory intensity. But Hilgard, a state theorist, has pointed out that at best measures of fantasy yield only a correlation of about .50 with measured hypnotizability (Hilgard, 1982; Monterio, McDonald, & Hilgard, 1980). If fantasy is the ability to furnish the mind with rich and varied images, then another major factor in hypnosis is the ability to make the mind empty or blank. This second factor, which is orthogonal to the fantasy factor, correlates with posthypnotic amnesia (Evans, 1965; Hammer, Evans, & Bartlett, 1963) and seems related to the superior hypnotic subject's ability voluntarily to control states of consciousness.

The superior hypnotic subject can voluntarily control the switches of consciousness like waking, sleeping, remembering, forgetting, and dreaming. Most superior hypnotic subjects can reliably and voluntarily fall asleep during the day or night (Evans, 1977) in a variety of situations (e.g., in EEG sleep laboratory, at lectures and plays, on a train, plane, or bus). It is likely that many chronic insomniacs are in fact poor hypnotic subjects or good ones who have inadvertently suggested themselves into chronic insomnia. The superior hypnotic subject can also demonstrate
learning of simple environmental stimuli (e.g., motor response to simple verbal suggestion to touch nose) presented exclusively during EEG defined sleep (e.g., stage REM or Stage 1 alpha free sleep) and continue to show this state-specific learning for several weeks or for as much as 6 months later. In the waking state there is no evidence of state-specific learning (Evans, 1977). Superior hypnotic subjects can also often wake up at a specific preselected time before their alarm goes off. Superior hypnotic subjects can also voluntarily alter the content of their REM dreams (Stoyva, 1965). This ability voluntarily and reliably to control several important functions (sleep, waking, dreaming, etc.) or states of consciousness may have survival value. It may also permit some degree of environmental monitoring and even monitoring of stress within sleep. It may be the basis of individual differences in the ability to acquire coping skills like psychophysiological stress reduction techniques (e.g., meditation, progressive muscle relaxation). Flexibility in changing psychological states that permits a fresh look at an old problem may be a useful survival skill and an indicator of good mental health. For example, Rivers (1976) reported that superior hypnotic subjects learn meditation more rapidly than poor hypnotic subjects and they also appear to learn “lucid dreaming” very rapidly (Dane, 1984) Lucid dreams are now empirically verifiable events in which the dreamer controls the content of the ongoing REM dream (LaBerge, 1983). It may be useful routinely to screen patients for hypnotic ability even if hypnosis is never used formally in therapy, because hypnotic ability appears to be correlated with voluntary control and access to several important psychological functions like sleep onset, waking, and dreaming.

Highly hypnotizable people can reliably develop posthypnotic amnesia and on cancellation of the suggestion can accurately retrieve the lost memories (Kihlstrom, 1977). They can also readily create, mix, and merge memories (Laurence & Perry, 1983; Orne, 1986), but they can also have exceptional recall for distant events (Evans, 1983). Hence, the use of hypnosis in courtroom testimony to enhance witness recall is a complex affair and requires several control conditions beyond mere skill in hypnotic induction.

The complexity of the issue of memory creation is further documented by the fact that there is now good independently replicated evidence that superior hypnotic subjects generally score higher on a variety of standardized tests of creativity (Ashton & McDonald, 1982; Bowers & Bowers, 1979). In fact a preliminary study by Dave (1979) has shown that using the hypnotic technique of induced dreams, the creative resolution of academic, vocational, and personal problems could be enhanced over a control procedure. Unfortunately, unlike the pre-
vious authors, Dave (1979) did not control for hypnotic ability in his study.

There are three additional features of the experience of superior hypnotic subjects that have clinical implications. The first is the well-established fact that subjects in hypnosis underestimate the passage of time by about 40% of clock time (St. Jean & MacLeod, 1983). The second is the fact that subjects who score high on hypnotic ability tests generally experience the suggestions as happening to them outside their voluntary control or occurring without any personal effort on their part (Bowers, 1982). The third is that subjects of superior hypnotic ability appear to process information more quickly and efficiently than subjects of low hypnotic ability (Ingram, Saccuzzo, McNeil, & McDonald, 1979; Saccuzzo, Saftan, Anderson, & McNeill, 1982). These three features can make therapeutic learning seem simple and effortless.

It has also been found that superior hypnotic subjects respond more rapidly to various types of short-term psychotherapy (Larsen, 1966; Nace, Warwick, Kelley, & Evans, 1982), meditation techniques (Benson, Greenwood, & Klemchuck, 1975; Rivers, 1976), respondent conditioning (Das, 1958a,b), operant conditioning, and operant verbal conditioning (Weiss, Ullman, & Krasner, 1960; Webb, 1962; King & McDonald, 1976; Wickramasekera, 1970b) (see Figure 10). Good hypnotic subjects also show a superior hypnoterapeutic response to allergic skin reactions (Black, 1969), asthma (Collison, 1975), and migraine headaches (Cedercreutz, 1978). The previously cited cluster of findings jointly suggests that the superior hypnotic subjects learn, become physiologically

![Figure 10. Verbal conditioning as a function of hypnotic susceptibility. From "Hypnotic Susceptibility and Verbal Conditioning," by D. R. King & R. D. McDonald, International Journal of Clinical and Experimental Hypnosis, 1976, 24.](image-url)
aroused, and condition more rapidly than poor hypnotic subjects, particularly with respect to autonomically mediated functions.

**Psychopathology, Pathophysiology, Healing, and Hypnotic Ability**

Ironically the previously cited findings can have positive and negative consequences for the individual who has superior hypnotic ability. For superior hypnotic subjects, images, fantasies, anticipations, and ruminations can be so real as to reach hallucinatory intensity (Wilson & Barber, 1982), generating strong emotions and physiological changes. Several studies (Foenander, Burrows, Gerschman, & Horne, 1980; Frankel & Orne, 1976; Gerschman, Burrows, Reade, & Foenander, 1979; Kelley, 1984; Perry, John, & Hollander, 1982) have clearly shown that superior hypnotic ability may predispose individuals to the development of phobias. (See Table 2.) Developmental studies have also shown that in a subset of high-hypnotic-ability people there is a positive correlation with the perceived severity of childhood punishment (Hilgard, 1979) and even perceived child abuse (Nash, Lynn, & Givens, 1984). (See Table 3.) The ability of highly hypnotizable subjects to block out of mind or compartmentalize high intensity emotions may place them at higher risk for developing phobic and psychophysiological reactions (Wickramasekera, 1979). In the case of displaced fears, the actual phobic object may not be the object the patient reports he is phobic of. If a person is highly hypnotizable and also autonomically labile (sympathetically hyperactive) he may be at even higher risk for developing psychophysiological symptoms (Wickramasekera 1979, 1984) involving the ANS and certain types of psychological and behavioral symptoms.

<table>
<thead>
<tr>
<th>Hypnotic susceptibility</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phobic</td>
<td>0</td>
<td>4</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>Nonphobic</td>
<td>20</td>
<td>51</td>
<td>35</td>
<td>106</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>55</td>
<td>50</td>
<td>125</td>
</tr>
</tbody>
</table>

Table 3. Experiment 2: Frequency Data

<table>
<thead>
<tr>
<th></th>
<th>Low susceptible (HGSHS:A = 0–4)</th>
<th>Medium susceptible (HGSHS:A = 5–7)</th>
<th>High susceptible (HGSHS:A = 8–12)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonabused</td>
<td>76 (25.30%)</td>
<td>105 (35.00%)</td>
<td>119 (39.70%)</td>
<td>300</td>
</tr>
<tr>
<td>Abused</td>
<td>3 (18.80%)</td>
<td>0 (00.0%)</td>
<td>13 (81.20%)</td>
<td>16</td>
</tr>
</tbody>
</table>


(e.g., phobias, fugue, amnesia, and conversion symptoms). I believe it is that subset of high hypnotizables who are prone to excessive sympathetic reactivity and lack support systems and coping skills who develop clinical symptoms (Wickramasekera, 1979, 1984).

Recently it has been reported that those anorexia patients who purge and vomit, and most bulimic patients, are likely to have above average hypnotic ability (Pettinati, Horne, & Staats, 1985). These intriguing findings on certain eating disorders need independent replication but seem to illuminate factors that contribute to the etiology of these puzzling eating disorders. (See Table 4.) Perhaps people with high hypnotic ability learn too easily to voluntarily initiate reverse peristalsis.

Clinical experience (Wickramasekera, 1979) suggests that it is this subset of highly hypnotizables, who are also high on sympathetic reactivity (Eysenck, 1960), who are likely to become symptomatic under

Table 4. Hypnotizability of Anorectic Subgroups (Abstainers and Purgers) and Bulimic Patients

<table>
<thead>
<tr>
<th></th>
<th>Anorexic</th>
<th></th>
<th>Bulimic</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abstain</td>
<td>Purge (n = 46)</td>
<td>(n = 21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scaleb</td>
<td></td>
<td>(n = 19)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIP</td>
<td>4.66</td>
<td>(3.2)</td>
<td>7.13 (2.4)</td>
<td>4.58</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>HGSHS:A</td>
<td>6.11</td>
<td>(2.7)</td>
<td>8.05 (2.3)</td>
<td>2.74</td>
<td>&lt;.10</td>
</tr>
<tr>
<td>SHSS:C</td>
<td>5.00</td>
<td>(2.3)</td>
<td>7.71 (1.7)</td>
<td>6.97</td>
<td>&lt;.01</td>
</tr>
</tbody>
</table>


chronic stress. For example, there is some preliminary evidence (Stutman & Bliss, 1985) that people of high hypnotic ability, when placed under conditions of high chronic stress, such as warfare, are more likely to develop severe Posttraumatic Stress Disorder than people of lower hypnotic ability. (See Table 5.) The profound empathy and capacity for absorption of these superior hypnotic subjects (Hilgard, 1977) increases the probability that in significant interpersonal conflict situations their emotions are very likely to be hyperintense and associated with physiological consequences. The creativity of the superior hypnotic subject (Bowers, 1979) can also lead to potent negative cognitive elaborations (catastrophizing) that can further amplify fears and induce sustained levels of sympathetic hyperarousal. The superior dissociation abilities of the good hypnotic subject (Hilgard, 1977) may inadvertently be used to inhibit the psychological component of distress from consciousness and to transduce the psychological distress into a physiological presentation or somatization. (See case study, Chapter 8, p. 177). So that the psychological distress (e.g., fear, anger, etc.) may fade from consciousness and be replaced by a diffuse psychological feeling of emptiness or numbness, but be eventually replaced at a physiological level by a peptic ulcer, irritable bowel syndrome, or primary hypertension.

There is some uneven evidence (Bowers, 1979; Hilgard, 1977) that right-handed people of high-hypnotic ability during reflective thought

<p>| Table 5. Posttraumatic Stress Disorder, Imagery, and Hypnotizability among 26 Vietnam Veterans |
|-------------------------------------------|-------------------------------------------|
| Item                                      | Veterans with high posttraumatic stress disorder | Veterans with low posttraumatic stress disorder |</p>
<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SE</th>
<th>N</th>
<th>Mean</th>
<th>SE</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posttraumatic stress disorder</td>
<td>14</td>
<td>11.8</td>
<td>0.64</td>
<td>12</td>
<td>0.67</td>
<td>0.19</td>
<td>14.9</td>
<td>21</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Percent of post-traumatic stress symptoms on self-report</td>
<td>14</td>
<td>19</td>
<td>3</td>
<td>8</td>
<td>7</td>
<td>1</td>
<td>3.1</td>
<td>21</td>
<td>&lt;.005</td>
</tr>
<tr>
<td>Hypnotizability score</td>
<td>14</td>
<td>10.9</td>
<td>0.22</td>
<td>12</td>
<td>7.1</td>
<td>0.54</td>
<td>6.6</td>
<td>25</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>


*bRange = 6–15

*cPercent of 313 possible symptoms on self-report; range = 0–7; a score below 2 indicates high imaging ability.

*dRange = 0–12; a score from 9 to 12 is very high; significantly different from score of 49 control subjects (6.6 = 0.37; p < .001).
are more likely to show left conjugate lateral eye movements (L-CLEMS) in the face-to-face situation. In fact, left CLEMs may be a crude biological test of the potential for superior hypnotic performance. It is interesting to note that the majority of the patients seen at the Behavioral Medicine Clinic at the Eastern Virginia Medical School (EVMS sample) demonstrate left CLEMs on the EVMS-CLEM test. It appears that our CLEM test data confirms the prediction from the high-risk model that more people with stress-related disorders are likely to have high-hypnotic ability. The good hypnotic subject may also be vulnerable to complex subliminal perception effects. A study (Sackelm, Packer, & Gur, 1977) has shown that under conditions of “unstructured” set, right-handed subjects of high hypnotic ability (defined as left conjugate lateral eye movers or CLEMS) are more likely to experience subliminal perception effects. Hence it appears likely that people of good hypnotic ability may be more vulnerable to subliminal perception effects and to “unconsciously” motivated effects. In this context it is worth noting that there is now growing empirical and logical evidence for a “psychological unconscious” (Bowers & Meichenbaum, 1984; Shevrin & Dickman, 1980). Based on clinical observation (Wickramasekera, 1976a), it is also likely that in high-hypnotic-ability subjects images in night dreams (REM) may be transduced into physiological dysfunctions that persist even after the triggering stressful psychological component has faded from consciousness and memory in the waking state. For example, it is common for patients prone to headaches and chronic pain to wake up at night or from morning sleep with an acute attack of pain. In summary, the superior hypnotic subject’s capacity for profound empathy, absorption, imagery of hallucinatory intensity, and relatively unfiltered perception may make him inadvertently more vulnerable to psychological pollution from incidental learning, dreams, and even weak sensory stimuli.

Clinical experience (Wickramasekera, 1979) and a recent study (Wilson & Barber, 1982) suggests that a subset of highly hypnotizable subjects are at higher risk for reporting parapsychological incidents. It is

1 The hypothesis underlying the conjugate lateral eye movement test (CLEM test) is that in right-handed people during reflective thought provoked by a combination of verbal and visual task questions (Appendix C) the movement of the subject’s eyes to the subject’s left indicated preferential activation of the contralateral (right) cerebral hemisphere. There are several studies that with some complications suggest a fairly reliable relationship between superior hypnotic ability and a predominant tendency during reflective thought to left CLEMS in right-handed people (Bowers, 1976; Hilgard, 1977). This tendency to predominantly left CLEMS during reflective thought appears to be independent of the content of the reflective thought (visual-holistic or verbal, quantitative analytic) when provoked by questions asked by an examiner in a face-to-face situation with a symmetrical physical background.
important to recognize that the previous statement does not in any way imply that these verbal reports have any objective validity, but that they are simply an interesting place (a pure culture) to start the empirical (validity) investigation of the reports of these incidents. A brief paper-and-pencil test that I developed (Wickramasekera, 1985b; Wickramasekera, 1986) to predict hypnotic ability in college undergraduates demonstrates that a large number (80%) of high-hypnotic ability people endorse previously unreported psychic experiences; whereas only a few (19%) people of low-hypnotic ability report having had these experiences. (See Table 6.) Wilson and Barber (1982) studied two matched groups of high- and low-hypnotic-ability subjects who were fully functional and nonpsychotic females. Over 90% of the high-hypnotic-ability subjects reported numerous psychic experiences (telepathic, precognitive, out-of-the-body experiences, etc.) and less than 15% of the low-hypnotic-ability subjects reported these experiences. It is likely that some of these high-hypnotic subjects learn to use their hypnotic ability to cope adaptively or maladaptively (phobias, chronic pain, etc.) with physical or sexual abuse or other types of childhood trauma (life-threat-

Table 6. Types of Test Items on the WAT Scale That Predict Hypnotic Talent and Percentage of Subjects of Low- or High-Hypnotic Ability Who Respond in Critical Direction to Eight Types of Test Items

<table>
<thead>
<tr>
<th>Type of test items</th>
<th>True responses</th>
<th>1984 study (N = 64)</th>
<th>1986 study A (N = 53)</th>
<th>1986 study B (N = 30)</th>
<th>Hypnotic ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parapsychological experience</td>
<td></td>
<td>19</td>
<td>32</td>
<td>42</td>
<td>Low</td>
</tr>
<tr>
<td>Absorption</td>
<td></td>
<td>71</td>
<td>80</td>
<td>90</td>
<td>High</td>
</tr>
<tr>
<td>Hypersensitivity to sensory stimuli</td>
<td></td>
<td>34</td>
<td>21</td>
<td>33</td>
<td>Low</td>
</tr>
<tr>
<td>Fantasy</td>
<td></td>
<td>84</td>
<td>70</td>
<td>85</td>
<td>High</td>
</tr>
<tr>
<td>Control of altered states of consciousness</td>
<td></td>
<td>65</td>
<td>69</td>
<td>90</td>
<td>High</td>
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<td>Hallucinations</td>
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<td>8</td>
<td>18</td>
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<tr>
<td>Empathy</td>
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<td>34</td>
<td>53</td>
<td>20</td>
<td>High</td>
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*As a percentage
*Low (Harvard: 8–3); High (Harvard: 9–12)
ening events, accidents, etc.). It is known that an unusually large proportion of physically abused people score high on hypnotic ability tests (Hilgard, 1979; Nash et al., 1984). They appear to have learned to use the natural superior hypnotic ability that children have to block out or psychologically exit the situation of mental or physical pain and abuse, I speculate that at other times adaptive hypnotic coping may sometimes occur, through high-hypnotic subjects using their profound capacity for emotional and cognitive empathy to identify the fears and superstitions of their aggressor. This information on fears and superstitions can then be used to manipulate the fears and weaknesses of the aggressor. Alternatively and less probably, the superior hypnotic subject may, by some still unknown mechanism, then cause the aggressor to perceive physical perturbations (telekinesis) in the environment as a means of frightening away the aggressor.

Good hypnotic ability may also be related to good placebo responding. In spite of some initial negative findings (McGlashan, Evans, & Orne, 1969) there is evidence that in real clinical situations (Evans, 1967) and properly structured experimental situations (Knox & Gekoski, 1981), good hypnotic subjects will also be good placebo responders. There are also some theoretical reasons as predicted by the conditioned response model of the placebo (Wickramasekera, 1977a, 1980b) to expect a relationship between placebo responding and hypnotizability (Wickramasekera, 1980b, 1985a). There is some preliminary evidence that people with superior hypnotic ability may be more sensitive to pain (Shor, 1964) and perhaps have lower sensory or tolerance thresholds for noxious stimuli. But if their superior hypnotic ability is mobilized, their pain tolerance threshold can be raised to surgical levels (Hilgard & Hilgard, 1975) by the suggestion of a negative hallucination ("your hand is in a leather glove") or anesthesia. In fact, for some subjects with superior hypnotic ability, suggestions of hypnotic analgesia may be more effective than even morphine (Stern, Brown, Ulett, & Sletten, 1977).

If psychotherapy is a healing process that involves learning, then the ability objectively to learn quickly and efficiently, and subjectively to perceive the learning as occurring effortlessly and more quickly than actual clock time, provides ideal conditions for human learning. These advantages may be available to good hypnotic subjects with appropriate instruction in and out of the hypnotic state (Bowers, 1982; Das, 1958a,b; Ingram et al., 1979; King & Mcdonald, 1976; Saccuzzo et al., 1982; St. Jean & MacLeod, 1983; Webb, 1962; Wickramasekera, 1970b). Hence, the identification of the subject's ability can enable a teacher or therapist to make learning for the subject appear quick and easy. In fact, it is likely that the general population's fantasy quest for learning that is quick and
easy may be based on reports of learning in this small (10%) and highly select (high-hypnotic-ability) subset of the population who seem to learn more efficiently than the rest of us. The intermittent observation of the abilities of superior hypnotic subjects, by priests and physicians in the course of human history, has probably kept alive the belief in mind-body interaction. The dramatic effects that psychological variables (perception, memory, beliefs, imagination, information, etc.) can have on biological dependent variables in this small select group (10% of the population) of people is hard to miss observationally in religious or medical settings (Barber, 1984).

The previously cited cluster of empirical-clinical findings and speculations suggests that the good hypnotic subject's capacity for rapid learning and conditioning, profound empathy, absorption, creative mentation, role involvement, and subliminal perception may be a mixed blessing. A mixed blessing because this capacity for voluntarily accessing relatively unfiltered perceptions that can be creatively embellished makes the good hypnotic subject more vulnerable to psychological trauma and psychological pollutions (incidental learning) that can be compartmentalized (dissociated) from consciousness. But their empathic and creative capacities, their ability voluntarily to alter and program their states of consciousness (sleeping, waking, dreaming) and even perhaps adaptively to use their unconfirmed parapsychological ability, can make the superior hypnotic subject, who has good social and physical judgment and reliable discriminatory control of these hypnotic abilities, strong contenders in the struggle for survival.

The story is told that when Alexander the Great was a child in Macedonia, a powerful and magnificent stallion was brought to the court of his father. None of the great equestrians of the court were able to ride the bucking beast. Alexander, though still a child, was a keen observer and hypothesized that the animal’s instability was a function of the fear of his own shadow. Therefore, he hypothesized that if the animal’s face was turned toward the sun, its shadow would fall behind him and its energy could then be mobilized in a disciplined fashion. Alexander then turned the horse’s face into the sun and rode into history.

Like Alexander the Great’s horse, Bucephalus, when the highly hypnotizables’ imagination, sensitivity, and tremendous energy are disciplined, they can be towers of sustained strength; but if their shadow falls in front of them, their behavior can become dysfunctional, unstable, and fragmented. Therapy for them requires turning their face into the sun (transcendent goals and ideals) and keeping their shadow behind them. Their empathic, creative, and psychic talents can give them an edge over their contemporaries of lesser hypnotic ability. If our spe-
cies survives these perilous times, a subset of superior hypnotic subjects who are also high in IQ and have good social judgment, and are low on ANS lability (sympathetic reactivity) may learn to domesticate these hypnotic abilities in the services of superior adaptation and survival. Perhaps 20,000 years from now the percentage of humans with superior hypnotic ability may be 40% of the population and not 10% as they are today.

Increasing Hypnotic Ability

Even today it appears that certain promising psychophysiological procedures (Wickramasekera, 1977b) may temporarily produce large increases in the probability of hypnotic behavior by inhibiting that sequential critical-analytic brain program that is mediated by language and the left hemisphere. (See Figure 11.) These promising procedures include

Figure 11. Hypothesized hypnotic ability in general population as a function of the level of physiological arousal.
sensory restriction (Pena, 1963; Sanders & Rehyer, 1969; Wickramasekera, 1969, 1970a) low arousal EMG or EEG biofeedback training (Engstrom, 1976; Wickramasekera 1971, 1973, 1977b), and perhaps even high arousal induction (Gur, 1974; Wickramasekera, 1972, 1976b, 1980a). The level of physiological arousal (very low or very high) may be a critical but insufficient factor in increasing hypnotic and parapsychological susceptibility. Diamond (1974, 1977) has developed and presented in several well-controlled studies of “operant and informational control-based systematic training” procedures that appear to produce small but more stable and generalizable increases in hypnotizability. The magnitude of these generalizable increases have been modest and testify to the remarkable stability of hypnotic behavior in the laboratory situation (Perry, 1977) or to the general population’s relative inflexibility in switching their information processing programs under normal conditions. However, one must be cautious in assuming the cross-situational stability of personality and behavior traits (Mischel, 1968), including the hypnotic information processing style. For example, generalizing from a standardized test of hypnotic ability in a laboratory situation to a clinical situation can be hazardous. It may be much more heuristic to focus research on the mechanisms that mediate hypnotic behavior. It is very likely that the hypnosis-enhancing procedures mentioned earlier (Diamond, 1977; Wickramasekera, 1977b) will also potentiate other verbal and psychosocial influence procedures (e.g., preaching, psychoanalysis, counseling, psychotherapy, education, etc.) and even those not used for therapeutic purposes, like advertising (Wickramasekera, 1970a,c). This is particularly likely if during the course of the social-psychological influence procedures the subjects experience (a) profound absorption in and (b) a sense of involuntary compliance with the verbal and nonverbal instructions of the instructor or therapist. Under such conditions we may be inclined to label the behavior of such subjects as hypnotic.

The approach outlined earlier regards hypnotic behavior as not totally discontinuous from normal social compliance, but related to hypnosis to the degree to which certain subject variables are activated (absorption, ANS arousal, perceived involuntariness) and certain procedural variables (sensory restriction, low or high arousal induction) that inhibit critical-analytic brain functions are used in the social-psychological influence procedure (Wickramasekera, 1976a). This approach to hypnosis is important because it restores hypnosis to the field of general psychology and encourages the investigation of its relevance to experimental cognitive psychology (Neisser, 1967; Nisbett & Wilson, 1977). The approach is also relevant to social psychology and the investigation of perceptual and dissociative mechanisms (Hilgard, 1977) in normal and
psychopathological behavior (Kihlstrom, 1979) because it views the ability voluntarily to inhibit critical-analytic brain functions as the initial and most salient operation in hypnosis.

In conclusion, it is most important to stop thinking of hypnotic behavior as an event that only follows a hypnotic induction, in the same way one does not regard intelligent behavior as an event that only follows the administration of an intelligence test. The hypnotic mode of information processing on one hand and the rational critical-analytic mode of information processing on the other hand may be supplementary and complimentary forms of more general coping behaviors important at different stages of problem solving and with different problems.

In fact, it is likely that the hypnotic program for information processing and coping, although it is probably more primitive, has a larger channel capacity than the sequential analytic-critical brain functions program (left hemisphere) created by the development of language (Jaynes, 1977). There is some evidence that during hypnosis there is an inhibition of the left hemisphere (Gruzelier, Brow, Perry, Rhonder, & Thomas, 1984). Hypnotic ability may continue to have survival value at different stages of problem solving when judiciously blended with the objective sequential-analytic thinking characteristics of the dominant hemisphere.

Summary of Clinical Implications

What are some of the clinical implications of the experimental hypnosis research findings? First, hypnotic ability should be covertly and overtly assessed in all interpersonal healing situations regardless of whether hypnosis is formally used or not in therapy. Second, hypnosis should be presented to patients as a state of enhanced and focused concentration (like the beam of a flashlight in a dark room) in which peripheral awareness and critical-analytic mentation is temporarily suspended, in a way that permits a fresh perspective on old problems. Third, hypnotic capacity can be a positive talent or ability that has important coping and survival value for mental and physical health. But hypnotic ability can under some conditions be inadvertently used by the patient to potentiate psychosocial and other stressors. Fourth, the attainment of the hypnotic mode of information processing is the subject’s achievement and only secondarily facilitated by the hypnotist. Fifth, the identification of hypnotic talent prior to therapy will facilitate a more rational matching at a baseline level of salient patient features and clinical procedures. For example, people of high-hypnotic ability can be
engaged rapidly by relatively unstructured, verbally oriented therapies (gestalt, psychoanalysis, etc.) whereas people of low-hypnotic ability are more likely to be rapidly engaged by more technologically oriented and structured types of therapy (biofeedback, behavior therapy, etc.). Sixth, hypnotic ability can be an accurate predictor of the latency of symptomatic remission and a positive clinical prognosis with any interpersonal treatment modality (psychotherapy, surgery, chemotherapy, etc.), providing a good therapist–patient relationship exists. Seventh, all treatments that are learning based or have a significant learning component may profit from hypnotic-ability-enhancing procedures (Wickramasekera, 1977b).

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