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What, if Anything, is Regressed About Hypnotic Age Regression? A Review of the Empirical Literature

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The concept of psychological regression is an important one for the fields of developmental and clinical psychology. Many have cited the dramatic and seemingly compelling childlike performances of hypnotically age-regressed individuals as evidence that under some circumstances, it is possible for an individual to return to a developmentally previous mode of psychological functioning. In the present article, I review 60 years of empirical studies that have investigated whether there is a reinstatement of childhood psychological or physiological faculties during hypnotic age regression. Results suggest that if regression is defined as the extent to which hypnotized subjects conform to childhood norms and control subjects do not, then the mental and physiological activity of hypnotically age-regressed subjects is not regressed; it appears to be essentially adult. Although findings might be more compatible with a broader definition of regression as the appearance of primitive mentation or the use of less sequential modes of information processing during hypnosis, there is no evidence for a literal reinstatement of childhood functioning during hypnotic-age-regression procedures.

In age regression, a hypnotized subject is typically given suggestions to relive an event that occurred at an earlier age and to "be and feel like" a child of that age. In the case of a highly hypnotizable adult, given suggestions to regress to childhood, the changes in behavior and demeanor are often dramatic. Early theorists embraced these performances as compelling evidence of an actual or at least partial regression to a past psychological or physiological state (Erickson & Kubie, 1941; Weitzenhoffer & Andre, 1957). Over the past 60 years, a great deal of research has examined hypnotically age-regressed subjects on a broad range of variables (see Barber, 1962; Gebhard, 1961; Yates, 1961, for earlier reviews). The question at issue is, Does hypnotic age regression enable subjects to exhibit developmentally previous modes of mental functioning?

This question is relevant not only to an understanding of hypnosis but also to the concept of psychological regression itself, as it impacts both developmental and clinical psychology. Working entirely outside the field of hypnosis, some developmental psychologists examining the cognitive functioning of children and elderly people have suggested that a genuine regression to a previous level of psychological functioning is possible and, in fact, quite common (Miller, 1976; Papalia & Beilby, 1974). Others disagree (Dasen, 1977; Glick, 1975; Piaget & Inhelder, 1969). Similarly, many psychoanalytic practioners and theorists hold regression to be a profoundly important curative factor in the process of psychotherapy (Balint, 1968; Fromm-Reichman, 1950; Tuttman, 1982; Winnicott, 1971). Yet other dynamic theorists believe that this type of psychological and physiological regression is simply impossible (Gill, in Tuttman, 1982, p. 189; Spitz, 1965) or certainly not a core curative factor in psychotherapy (A. Freud, 1969).

Hypnotically suggested age regression is one methodological vehicle for testing whether genuine psychlogical regression is indeed possible. If it could be shown that hypnotically age-regressed subjects reexperience the events of a suggested age with unusual accuracy and return to some developmentally previous mode of psychological or physiological functioning typical of that age, then the possibility of a psychological regression would be demonstrated. This finding would lend some support to those who contend that regression is possible and that it is an important feature of normal maturation and intensive psychotherapy.

All three reviews of the hypnotic-age-regression literature were written over 25 years ago and published within a year of each other (Barber, 1962; Gebhard, 1961; Yates, 1961). Even though these authors reviewed the same literature, their conclusions differed. On one hand, Barber (1962) concluded that there is no return of previous physiological or psychological functioning during hypnotic age regression and that the response of these subjects is no more childlike than is that of subjects who are role playing. On the other hand, Gebhard and, to a greater extent, Yates, concluded that there is some evidence for reactivation of archaic structures, especially in the realm of physiological response and cognition. Sound methodological advice by all three authors has proven enormously influential in improving the design and rigor of investigations published since these reviews. By systematically reviewing pertinent early and more recent empirical work in the present article, I aim to further clarify what (if anything) is regressed about hypnotic age regression.

In evaluating research on this question, one might refer to a concise two-part criterion for genuine age regression offered by

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Parrish, Lundy, and Leibowitz (1969); they stated that regression can best be established "when responses typical of children but not of adults are produced under (hypnotic) age regression, *and* when these same responses are not produced under a waking suggestion" (p. 699).

By accepting this criterion, one is essentially adopting Barber's (1962) reasonable notion that hypnotic age regression must enable subjects to transcend normal volitional capacity if it is to be considered genuine (i.e., hypnotic behavior must be observed to be more accurately childlike than is "normally" possible). But it is important here to comment on the subjective reality of regression for hypnotized individuals. An enduring finding in this literature is that when measures of subjective experience are taken, hypnotized subjects report that the experience of being a child is compellingly "real." These reports far exceed those of unhypnotized control subjects and have nothing to do with whether the hypnotic performance was observably and genuinely childlike (O'Connell, Shor, Orne, 1970; Orne, 1951, 1979). In fact, there is some reason to believe (Orne, 1951, 1959; Perry & Walsh, 1978; Young, 1940) that hypnotic subjects become so absorbed in their experience of being a child that there is a loss of critical judgment, resulting in anachronisms that are obvious to unhypnotized individuals (e.g., while regressed to the age of 6 years, a hypnotized subject writes, "I am conducting a psychological experiment which will assess my psychological capacity" in childlike printing but with perfect spelling; Orne, 1951). Although the "believed-in" quality of being a child is a fascinating and clinically useful aspect of hypnotic age regression, I follow the lead of other reviewers in examining whether there is a measurable return of childlike functioning during hypnotic age regression.

Table 1 evaluates all age-regression studies reviewed on the basis of the Parrish et al. (1969) two-part criterion and organizes the literature into four processes that could conceivably be reinstated during hypnotic age regression—physiology, cognition, perception, and personality. The adequacy of experimental controls is evaluated according to guidelines for such research suggested by Barber (1961, 1962, 1965), O'Connell et al. (1970), and Orne (1971, 1979). Tables 2 and 3 summarize the results of these studies. Some studies assessed regression across different types of dependent measures. These cases are listed (and counted) more than once.

The Reinstatement of Childlike Physiological Responses

Reinstatement of Infantlike Electroencephalogram (EEG)

Several studies have examined the EEG patterns of adults regressed to the early months of life to determine whether there is a return of the slow, arrhythmic brain waves found during infancy. Three early studies found no change from the normal adult EEG patterns (McCranie, Crasilneck, & Teter, 1955; Schwartz, Bickford, & Rasmussen, 1955; True & Stephenson, 1951). In a recent work, a Russian investigator (Raikov, 1983) claimed that childlike EEG patterns can return during hypnotic regression, but this study was plagued with methodological difficulties, including inadequate childhood norms, small samples, noncounterbalanced designs, inadequate or nonexistent controls, and no report of statistical analyses. At present, there is no convincing evidence that infantlike EEG patterns are reinstated during hypnotic age regression.

Reinstatement of Previous Neuropathology

Early clinical reports of the return of abnormal EEG, shifts in visual field, and fainting during age regression (Erickson, 1937; Ford & Yeager, 1948; LeCron, 1952; Weitzenhoffer & Andre, 1957) have not been replicated in the laboratory (Mesel & Ledford, 1959; Schwartz et al., 1955). In Schwarz et al.'s study, 16 patients with organically based seizure disorders and 10 patients referred for EEG were hypnotized and regressed. During hypnosis, even though some patients displayed seizurelike behaviors, there were no changes in EEGs.

Reinstatement of Childlike Reflexes and Ablation of Conditioned Responses Learned as an Adult

Three studies (Gidro-Frank & Bowersbuch, 1948; McCranie et al., 1955; True & Stephenson, 1951) found that when hypnotized subjects were regressed to 1 to 5 months of age, there appeared to be a return of the Babinski response (upturning of the big toe in response to plantar stimulation, and fanning of the toes, usually associated with disturbances in the pyramidal tracts and seen in infancy because of incomplete myelinization of these tracts). But the Babinski response can be elicited with normal adults under conditions of depressed muscle tone, such as sleep, drowsiness, and narcosis (DeLong, 1958). The relaxation and decreased muscle tone elicited during hypnosis has been sufficient at times to produce a Babinski response without suggested age regression (Jolowicz & Heyer, 1931; Sarbin, 1956).

Some studies claimed the return of other childlike "reflexes" or the ablation of recently acquired conditioned responses by means of hypnotic age regression (Edmonston, 1960, Forrest, Stevens, & Dimond, 1973; Gakkebush, Polinkovskii, & Fundiller, 1930; LeCron, 1952; McCranie & Crasilneck, 1955; Raikov, 1980, 1982). All these studies failed to appreciate that subjects can voluntarily inhibit or perform supposedly "involuntary" responses without the aid of hypnosis (Hilgard & Marquis, 1940). In short, there has been no adequately designed investigation of the return of reflexes or ablation of conditioned responses during hypnotic age regression.

With examination of Table 2, it is clear that the design and methodology of studies using physiological indexes of regression are particularly weak. Of 14 studies using more than 1 subject, 6 found negative results, and 8 found positive results. All 14 studies failed to meet minimum standards for experimental control. With no rigorously controlled studies and the mixed results of extant investigations, it must be concluded that there is no research evidence for a return of childlike physiological functioning during hypnotic age regression.

Cognitive and Memory Processes

Over the past 60 years, investigators have focused a great deal of attention on two purported characteristics of hypnotic age

Table 1
Methods and Results of Hypnotic-Age-Regression Studies

Study	Dependent variable	Comment on methods	Adequate controls?	Regressed subject age appropriate?	Regressed subject more age appropriate than controls?
		Physiological processes			
Gakkebush, Polinkovskii, & Fundiller (1930)	Sucking and other reflexes	$N = 1$	No	Yes	None
Erickson (1937)	"Fainting" during hypnosis	$N = 1$	No	Yes	None
Ford & Yeager (1948)	Return of hemianopsia	$N = 1$, self-report only	No	Yes	None
Gidro-Frank & Bowersbuch (1948)	"Infant" reflexes (Babinski)	$N = 3$, no controls	No	Yes	None
True & Stephenson (1951)	EEG	$N = 6$, within subject	No	No	None
True & Stephenson (1951)	Infant reflexes (Babinski)	$N = 6$, within subject	No	Yes	None
LeCron (1952)	Improvement of refractive defect	$N = 1$	No	Yes	None
LeCron (1952)	Childlike eye movements	$N = 1$	No	Yes	None
LeCron (1952)	Ablation of CR	$N = 2$	No	Yes	None
McCranie, Crasilneck, & Teter (1955)	EEG	$N = 10$, within subject	No	No	None
McCranie, Crasilneck, & Teter (1955)	Infant reflexes (Babinski)	$N = 10$, within subject	No	Yes	None
McCranie & Crasilneck (1955)	Ablation of CR	$N = 6$	No	No	None
Schwarz, Bickford, & Rasmussen (1955)	EEG	$N = 5$, within subject	No	No	None
Mesel & Ledford (1959)	EEG	2 hypnotized and 2 waking control subjects	No	No	No
Edmonston (1960)	Recovery of CR	6 hypnotized and 6 waking control subjects	No	Yes	Yes
Forrest, Stevens, & Dimond (1973)	Ablation of CR	$N = 1$	No	Yes	None
Raikov (1980)	Infant reflexes	$N = 10$, within subject, no child norms	No	Yes	None
Raikov (1982)	Infant reflexes	2 hypnotized subjects, within subject, 2 actors and 2 low-susceptible controls, no child norms	No	Yes	None
Raikov (1983)	EEG	5 hypnotized and 10 control subjects, no statistics	No	Yes	Yes
		Cognitive and memory processes			
Young (1926)	Stanford-Binet	1 hypnotized, 2 waking control subjects	No	No	No
Young (1926)	Recall of childhood events	2 hypnotized subjects, within subject	No	Yes	None
Gakkebush, Polinkovskii, & Fundiller (1930)	Stanford-Binet	$N = 1$	No	Yes	None
Stalnaker & Riddle (1932)	Recall of past events in school (at least 1 year prior to hypnosis)	$N = 12$, within subject	No	Yes	None
Platonow (1933)	Stanford-Binet	$N = 3$	No	Yes	None
Young (1940)	Stanford-Binet	9 hypnotized and 7 role-playing subjects	No	No	No
Kier (1945)	Stanford-Binet	$N = 1$	No	Yes	None
Spiegel, Shor, & Fishman (1945)	Stanford-Binet	$N = 1$	No	No	None
Leeds (1949)	Stanford-Binet (Vocabulary)	$N = 1$	No	No	None
True (1949)	Recall of day of week during childhood	$N = 50$, within subject	No	Yes	None
Kline (1950)	Otis	$N = 10$, within subject	No	Yes	None

Table 1 (*continued*)

Study	Dependent variable	Comment on methods	Adequate controls?	Regressed subject age appropriate?	Regressed subject more age appropriate than controls?
		Cognitive and memory processes			
Sarbin (1950)	Stanford-Binet	$N = 12$, within subject	No	No	None
Best & Michaels (1954)	Recall of day of week during childhood	$N = 5$	No	No	None
Mesel & Ledford (1959)	Recall of day of week during childhood	2 hypnotized and 2 control subjects	No	No	No
Reiff & Scheerer (1959)	Piagetian and other tasks	5 hypnotized and 15 control subjects, poor child norms	No	Yes	Yes
Reiff & Scheerer (1959)	Recall of day of week during childhood	5 hypnotized subjects	No	No	None
Reiff & Scheerer (1959)	Recall of childhood events	5 hypnotized and 15 control subjects	No	Yes	Yes
Barber (1961)	Recall of day of week during childhood	$N = 9$, within subject	Yes	No	None
Barber (1961)	Otis	9 hypnotized and 9 task-motivated subjects	Yes	No	No
Hoskovec & Horvai (1963)	Speech patterns	10 hypnotized and 10 role-playing subjects	Yes	No	No
Greenleaf (1969)	Piagetian tasks	$N = 20$, within subject	No	No	Yes
O'Connell, Shor, & Orne (1970)	Recall of childhood events	10 hypnotized, 10 simulating, and 40 role-playing subjects and 30 children	Yes	No	No
O'Connell, Shor, & Orne (1970)	Piagetian and other tasks	10 hypnotized, 10 simulating, and 40 role-playing subjects and 30 children	Yes	No	No
Bynum (1977)	Moral reasoning	15 hypnotized and 15 role-playing subjects	Yes	No	No
O'Brien et al. (1977)	Kohlberg's moral reasoning	10 hypnotized, 10 task-motivated, and 10 waking control subjects and 10 children	Yes	No	No
Gard & Kurtz (1979)	Stanford-Binet	8 hypnotized and 8 simulating subjects	Yes	No	No
Roberts (1984)	Vane Kindergarten Test and Piagetian tasks	15 hypnotized and 15 task-motivated subjects and 15 children	Yes	No	No
Silverman & Retzlaff (in press)	Piagetian tasks	6 groups of controls, including simulating and child groups, and 8 hypnotized subjects	Yes	No	No
		Perceptual processes			
Parrish, Lundy, & Leibowitz (1969)	Ponzo/Poggendorf illusions	10 hypnotized and 10 waking control subjects, repeated measures	Yes	Yes	Yes
Asher, Barber, & Spanos (1972)—two studies	Ponzo/Poggendorf illusions	19 hypnotized, 19 waking control, and 19 simulating subjects	Yes	No	No
Leibowitz, Graham, & Parrish (1972)	Size constancy	10 hypnotized and 5 waking control subjects	Yes	Yes	No
Porter, Woodward, Bisbee, & Fenker (1972)	Ponzo illusion	8 hypnotized subjects, within subjects	Yes	No	No
Perry & Chisholm (1973)	Ponzo/Poggendorf illusions	9 hypnotized and 9 simulating subjects	Yes	No	No
Walker, Garrett, & Wallace (1976)	Eidetic imagery	20 hypnotized subjects, within subject	Yes	Yes	Yes
Wallace (1978)	Eidetic imagery	24 hypnotized and 24 waking control subjects	Yes	Yes	Yes

(*table continued*)

Table 1 (*continued*)

Study	Dependent variable	Comment on methods	Adequate controls?	Regressed subject age appropriate?	Regressed subject *more age* appropriate than controls?
		Perceptual processes			
Spanos, Ansari, & Stamm (1979)	Eidetic imagery	60 hypnotized subjects	Yes	No	No
Crawford, Wallace, Katsuhiko, & Slater (1985)	Eidetic-like imagery	Three experiments: hypnotized age-regressed, hypnosis-only, and waking subjects	Yes	Yes	No
		Personality processes			
Gakkebush, Polinkovskii, & Fundiller (1930)	Rorschach	$N = 1$	No	Yes	None
Kier (1945)	Rorschach	$N = 1$	No	No	None
Spiegel, Shor, & Fishman (1945)	Koh block test, Rorschach	$N = 1$	No	Yes	None
Bergman, Graham & Leavitt (1947)	Rorschach, Goodenough drawings	$N = 1$	No	Yes	None
Mercer & Gibson (1950)	Rorschach	$N = 1$	No	Yes	None
Taylor (1950)	Goodenough drawings	12 hypnotized subjects, within subject	Yes	No	None
Kline & Guze (1951)	HTP	$N = 1$	No	Yes	None
Orne (1951)	Rorschach, Goodenough drawings, TAT	10 hypnotized subjects, within subject	Yes	No	None
Norgarb (1952)	Rorschach	$N = 1$	No	Yes	None
Kline & Haggerty (1953)	TAT	$N = 1$	No	Yes	None
Sarbin & Farberow (1952)	Rorschach	$N = 2$	No	No	None
Crasilneck & Michael (1957)	Bender-Gestalt	10 hypnotized subjects, within subject	Yes	No	None
Reiff & Scheerer (1959)	Word association, Hollow Tube Test	5 hypnotized and 15 control subjects, no child group or norms	No	Yes	Yes
Gordon & Freston (1964)	Word association	10 subjects; within subject; age-regressed, waking, role-playing child, and hypnosis only	Yes	No	No
Staples & Wilensky (1968)	Rorschach	6 hypnotized subjects (poorly screened for hypnotizability) and 3 simulating subjects	No	No	No
O'Connell, Shor, & Orne (1970)	Word association, Hollow Tube Test	10 hypnotized, 10 simulating, and 40 role-playing subjects and 30 children	Yes	No	No
Solomon & Goodson (1971)	Rorschach	6 hypnotized and 7 waking control subjects, 13 Rorschach protocols when subjects were children	Yes	No	No
Schofield & Reyher (1974)	Rorschach	10 hypnotized and 10 simulating subjects, within subject and between groups	Yes	No	No
Fellows & Creamer (1978)	Draw a person	20 hypnotized and 20 control subjects	Yes	No	No
Gard & Kurtz (1979)	Draw a person, Bender-Gestalt	8 hypnotized and 8 simulating subjects	Yes	No	No
Nash, Johnson, & Tipton (1979)	Interpersonally relevant affect	16 hypnotized and 15 simulating subjects	Yes	Yes	Yes
Nash, Lynn, Stanley, Frauman, & Rhue (1985)	Interpersonally relevant affect	16 hypnotized and 14 simulating subjects	Yes	Yes	Yes

Note. EEG = electroencephalogram; CR = conditioned response; HTP = House–Tree–Person Test; TAT = Thematic Apperception Test.

Table 2
Research Findings For and Against the General Regression Hypothesis According to Type of Dependent Measure Examined and Type of Experimental Design Used

	$N = 1$ studies		$N > 1$ and inadequate controls[a]		$N > 1$ and adequate controls[a]	
Type of dependent measures	For	Against	For	Against	For	Against
Physiological processes (20 studies)	6	0	8	6	0	0
Cognitive and memory processes (28 studies)	2	2	7	7	0	10
Perceptual processes (10 studies)	0	0	0	0	3	7
Personality processes (22 studies)	7	1	1	2	2	9

Note. Studies were designated as supporting the general regression hypothesis if hypnotically age-regressed response was more childlike than control response (Parrish, Lundy, & Leibowitz, 1969, criterion). If inadequate or no controls were used, the study was designated as supporting the hypothesis if the authors claimed that hypnotically age-regressed response was childlike.
[a] The adequacy of experimental controls was assessed according to guidelines suggested by Barber (1961, 1962, 1965), O'Connell, Shor, & Orne (1970), and Orne (1971, 1979).

regression, (a) enhanced recall of remote events and (b) reinstatement of earlier cognitive processes.

Enhanced Recall of Remote Events

Although Young (1926), Stalnaker and Riddle (1932), True (1949), and Reiff and Scheerer (1959) reported dramatic increases in recall of childhood events for hypnotically age-regressed subjects, serious methodological weaknesses have been documented (Barber, 1962; O'Connell et al., 1970). Indeed, investigators who have carefully used conditions in which the experimenters do not know the hypotheses and proper motivational control groups have found no evidence for increased accuracy of recall of childhood events uniquely attributable to hypnotic-age-regression procedures (Barber, 1961; Best & Michaels, 1954; Mesel & Ledford, 1959; O'Connell et al., 1970).

Typical of this research was a series of studies examining the ability of hypnotically age-regressed adults to accurately recall the day of the week on which events in their childhood occurred. True (1949) regressed 50 hypnotic subjects to Christmas Day and to their birthdays at the ages of 10, 7, and 4 years. In 81% of the cases, subjects were able to correctly identify the day of the week on which these events occurred. Four subsequent studies, however, found hypnotically regressed subjects unable to correctly identify days of the week beyond chance (Barber, 1961; Burke, in Barber, 1961; Best & Michaels, 1954; Reiff & Scheerer, 1959). O'Connell et al. (1970) pointed out that an important feature of True's testing procedure was that the hypnotist/experimenter was aware of the correct date when questioning the hypnotized subject. The inquiry progressed as follows: "Was it Monday? Was it Tuesday? Was it Wednesday? . . ." Thus, verbal as well as nonverbal cues could be passed from experimenter to subject. Failure to replicate True's findings might be attributable to subsequent researchers' correcting this methodological flaw.

Although a review of the literature on hypnotic recall of more recently learned material (suggested hypermnesia) is beyond the scope of this article, most laboratory evidence to date seems to suggest that hypnosis does not yield meaningful increases in memory (Kihlstrom, 1985; Orne, 1979; Smith, 1983).

Reinstatement of Earlier Cognitive Processes

Standardized test procedures (IQ, spelling, and other achievement tests) have been used to determine whether there is a return of childlike patterns of cognitive functioning during hypnotic age regression. Typically, in the IQ studies, adult subjects are administered a standard IQ test while hypnotically age regressed (e.g., to the age of 7 years). Norms for the performance of 7-year-old children are then used to calculate an IQ. The IQ obtained during hypnosis is then compared with the subject's normal waking IQ. The rationale for these studies is that regressed and waking IQs should be similar if hypnotic age regression is genuine. Four early studies on intellectual performance reported appropriate childlike IQ performances during age-regression procedures (Gakkebush et al., 1930; Kier, 1945; Platonow, 1933; Stalnaker & Riddle, 1932), but four other studies found no evidence for this type of reinstatement (Leeds, 1949; Spiegel, Shor, & Fishman, 1945; Young, 1926, 1940). Later, better controlled studies almost uniformly obtained negative results, with hypnotically regressed subjects performing well above child IQ norms (Gard & Kurtz, 1979; Hoskovec & Horvai, 1963; Roberts, 1984; Sarbin, 1950). Kline (1950) found that 12 highly hypnotizable subjects performed age appropriately on an IQ test when they were regressed to 8, 10, and 15 years of age. Barber (1961) essentially replicated Kline's (1950) study but added a nonhypnotized control group motivated with money. His results indicated that hypnotized subjects were no more childlike than were motivated controls.

Some investigators turned to Piagetian-based measures of cognitive and moral development. Again, there were some initial positive findings, with regressed subjects apparently giving age-appropriate responses on Piagetian and other cognitive and developmental tasks (Reiff & Scheerer, 1959). Greenleaf (1969)

Table 3
Research Findings of Studies Examining Hypnotic Age Regression According to Type and Adequacy of Experimental Design

Experimental design	Studies supporting hypothesis		Studies not supporting hypothesis	
	No.	%	No.	%
$N = 1$ (18 studies)	15	83	3	17
$N > 1$ and inadequate controls (31 studies)	16	52	15	48
$N > 1$ and adequate controls (31 studies)	5	16	26	84
Total	36		44	

Note. Studies were designated as supporting the general regression hypothesis if hypnotically age-regressed response was more childlike than control response (Parrish, Lundy, & Leibowitz, 1969, criterion). If inadequate or no controls were used, the study was designated as supporting the hypothesis if the authors claimed that hypnotically age-regressed response was childlike, $\chi^2(2, N = 80) = 21.675, p < .00005$.

used 20 subjects as their own controls. The subjects were administered four Kolberg developmental tasks under conditions of simulation (faking hypnosis) and hypnotic age regression (to 4 years of age). The performance of hypnotically age-regressed subjects was significantly different from that of actual 4-year-old children. There was, however, a greater mean number of generally childish responses in hypnosis than in the simulation condition. Greenleaf embraced these findings as evidence of a mixed adult/child regression. The application of a within-subject design to the real–simulator paradigm compromises this conclusion to some extent.

More rigorously designed studies, using more exact child-normed data, found age-regressed cognitive and moral performance to be different from that of children and to be essentially adult in nature. Any childlike quality to the hypnotically regressed performance was matched or even exceeded by motivated controls who were not hypnotized (Bynum, 1977; O'Brien et al., 1977; O'Connell et al., 1970; Roberts, 1984; Silverman & Retzlaff, in press). As Table 2 shows, all 10 adequately designed studies on reinstatement of cognitive process obtained negative results.

Perceptual Processes

Another tack pursued by recent investigators has been to probe the perceptual processes of hypnotically age-regressed subjects to determine whether there is a return of childlike perceptual faculties. The first important study in this tradition (Parrish et al., 1969) appeared to suggest that hypnotically age-regressed subjects responded to the Ponzo illusion in a manner typical of children. Task-motivated control subjects were not able to match this performance. Four subsequent attempts have failed, however, to replicate these findings; in these four studies, regressed subjects' performance on the Ponzo illusion conformed to a familiar pattern—different from children and similar to motivated control subjects (Asher, Barber, & Spanos, 1972; Perry & Chisholm, 1973; Porter, Woodward, Bisbee, & Fenker, 1972).

A second series of studies generated renewed interest in perceptual processes. Walker, Garrett, and Wallace (1976) reasoned that eidetic imagery is relatively common in children but uncommon in adults. They proposed to determine whether eidetic imagery could be reinstated during hypnotic age regression in adults who were not eidetic. Hypnotic-age-regression suggestions were administered to 20 highly hypnotizable adults who had shown no signs of eidetic imagery in pretesting. Of these 20 subjects, 2 (10%) displayed eidetic imagery in the age-regression condition. (Walker et al. claimed that about 10% of children are eidetic.) Wallace (1978) successfully replicated these findings with 24 hypnotizable adults; he found no eidetic imagers among nonhypnotized task-motivated adults. Spanos, Ansari, and Stam (1979), however, were unable to find a single eidetic imager among 60 highly hypnotizable subjects. Citing developmental norms, they challenged the assumption that any children are actually eidetic imagers.

In three subsequent experiments, Crawford, Wallace, Katsuhiko, & Slater (1985) found eidetic-like imagery during hypnosis in high- but not low-hypnotizable subjects, thus replicating and extending the work of Walker et al. (1976) and Wallace (1978). Crawford et al. found, however, that suggestions for age regression during hypnosis were not necessary for production of the eidetic-like imagery; hypnosis alone was sufficient. They concluded that hypnotically age-regressed subjects in these and other studies experienced eidetic-like imagery, not because of a return of childhood functioning but because hypnosis itself may have a facilitative effect on imaginal processing of information, with a shift from a sequential, verbal, and logical mode during waking state to a more visual, holistic style during hypnosis. This finding is consistent with a psychoanalytic formulation of hypnosis as ego regression, but it fails to support the hypothesis that hypnotic age regression enables subjects to experience a reinstatement of functioning specific to the suggested age. One supposes that suggestions to regress to *any* age would result in eidetic-like imagery for some subjects, as long as they are hypnotized.

Personality Processes

Another sphere in which childlike functioning might be manifested is psychological assessment measures. When child norms are available, it is possible to compare the performance of hypnotically age-regressed and waking control subjects with

that of actual children. Some early studies using the Rorschach, Thematic Apperception Test, House–Tree–Person Test, Bender-Gestalt Test, and other projective tests seemed to suggest that the psychological protocols of age-regressed subjects are similar to those of actual children (Bergman, Graham, & Leavitt, 1947; Gakkebush et al., 1930; Kline & Guze, 1951; Kline & Haggerty, 1953; Mercer & Gibson, 1950; Norgarb, 1952; Reiff & Scheerer, 1959). All but one of these studies, however, involved observations of a single subject, sometimes without the minimal precaution of the subject's acting as his or her own control. Later studies that used appropriate within-subject, real–simulator, or task-motivated control procedures usually found the psychological protocols of age-regressed and motivated subjects to be easily distinguishable from those of actual children (Crasilneck & Michael, 1957; Gordon & Freston, 1964; O'Connell et al., 1970; Orne, 1951; Sarbin & Farberow, 1952; Schofield & Reyher, 1974; Staples & Wilensky, 1968; Taylor, 1950). For measures on which regressed performance was indeed childlike, motivated controls did just as well. In one study, test performance of hypnotically age-regressed subjects was significantly different from that of subjects simulating hypnosis, but it was also significantly different from that of children (Fellows & Creamer, 1978). In another recent investigation, simulators were actually more childlike than hypnotically age-regressed subjects were, although again both groups differed from actual children (Gard & Kurtz, 1979).

According to Kihlstrom (1985), the only adequately designed studies that present some evidence for a more complete reproduction of childlike personality functioning during hypnotic age regression were carried out by Nash, Johnson, and Tipton (1979) and Nash, Lynn, Stanley, Frauman, and Rhue (1985). They gave hypnotized and simulating subjects suggestions to regress to the age of 3 years and asked them to imagine themselves in various home situations. They used dependent measures derived from object relations theory and germane to the interpersonal, affect-laden experience of the subject to index the regressive component of responses. Specifically, the experimental procedures assessed the subject's way of relating to his or her transitional objects (teddy bears, blankets, and so on). The way children interact with their transitional objects is well-defined: (a) The transitional object is necessary at times of loneliness or depression (*spontaneity*); (b) other objects are not accepted or required (*specificity*); (c) the transitional object is excitedly cuddled, loved, and sometimes mutilated (*intensity;* Gaddini & Gaddini, 1970; Rudhe & Ekecrantz, 1974; Winnicott, 1953). The hypnotically age-regressed subjects in the Nash, Johnson, et al. (1979) and Nash, Lynn, et al. (1985) studies behaved in a manner roughly appropriate to 3-year-old children across all three aspects of interaction with the transitional object. The performance of simulators was significantly different from childhood norms and was significantly different from the performance of the hypnotically age-regressed subjects. Nash, Johnson, et al. (1979) and Nash, Lynn, et al. (1985) suggested that under some circumstances, there may be a partial reinstatement of interpersonally relevant affective processes during hypnotic age regression.

But a follow-up study by Nash, Drake, Wiley, Khalsa, and Lynn (1986) defined some limitations on the nature of the presumed regression. To determine whether the transitional object reported by a hypnotically age-regressed subject was the one the subject actually had as a child, Nash, Drake, et al. independently interviewed the mothers of both the hypnotized and control subjects used in the Nash, Lynn, et al. (1985) study. Despite the similarity of children in their emotional response to transitional objects, hypnotized subjects were significantly less able than waking control subjects to correctly identify the specific transitional object used by them as children (23% accuracy for hypnotized subjects vs. 70% accuracy for control subjects). Further, all recollections obtained during hypnosis were incorporated into posthypnotic recollections, regardless of accuracy. Nash, Drake, et al. concluded that hypnotic age regression may enhance access to important emotional material but in no way implies an accurate reliving of a specific event.

Overview of Hypnotic-Age-Regression Research

Tables 2 and 3 summarize the findings of all 80 hypnotic-age-regression studies reviewed here. As Table 3 illustrates, there is a significant relation between experimental methodology and research findings on hypnotic age regression. Eighty-three percent of one-subject studies, 52% of inadequately controlled multiple-subject studies, and only 16% of adequately designed multiple-subject studies support the Parrish et al. (1969) criteria for genuine regression. This distribution of findings across methodologies is significantly different from chance, $\chi^2(2, N = 80) = 21.675$, $p < .00005$, with positive findings being more frequently claimed in poorly controlled studies.

The five positive findings in adequately controlled studies must be carefully examined. Three of the positive findings are in the perceptual sphere. One of these (the Ponzo illusion; Parrish et al., 1969) failed to replicate, despite four attempts. The other two positive findings in perception were in studies of eidetic imagery. Crawford et al. (1985) found the appearance of eidetic-like imagery not to be a manifestation of returned childhood perceptual faculties but a general effect of hypnosis as it affects the subject's mode of processing information. Finally, in the area of personality, the Nash, Johnson, et al. (1979) and Nash, Lynn, et al. (1985) studies appear to stand alone as evidence for reinstatement of childhood affective functioning, with the proviso that the regression does not involve the reliving of a past event. But, as with eidetic imagery, the enhanced access to emotion observed in these two studies might have been due to a general effect of hypnosis rather than a return of childlike functioning. Thus, it is not certain that group differences in the two studies can be attributed to a literal reinstatement of childlike modes of affective expression among hypnotically age-regressed subjects, as originally claimed by Nash, Johnson, et al. and by Nash, Lynn, et al.

Discussion

The thrust of this review is that there is no evidence for the idea that hypnosis enables subjects to accurately reexperience the events of childhood or to return to developmentally previous modes of functioning. If there is anything regressed about hypnosis, it does not seem to involve the literal return of a past psychological or physiological state, as suggested by Erickson and Kubie (1941) and Weitzenhoffer and Andre (1957). Across

physiological, cognitive, perceptual, and personality processes, Parrish et al.'s (1969) criteria are not satisfied in well-designed studies: Hypnotically regressed subject response does not resemble that of children, and when it does, waking control subjects can do just as well. Thus, the position taken by two early reviewers (Gebhard, 1961; Yates, 1961), that evidence for genuine regressions might yet be uncovered, has been frustrated by 25 years of negative findings. It is Barber's position, as stated in his 1962 review, that seems justified: Hypnotically age-regressed subjects do not transcend normal volitional capacities to behave like children. We must note here that in virtually every area of hypnosis in which the issue of transcending volitional capacity has been addressed, adequately motivated control subjects are capable of replicating the behavior of hypnotized individuals.

Although it is impossible to prove the null hypothesis (that there is no regression in hypnosis), the asymmetry between reports of negative and positive findings in the hypnotic-age-regression literature is certainly remarkable. But my position is further buttressed by studies that have reproduced the earlier "positive" findings and shown them to be the result of motivational factors unrelated to hypnosis (Barber, 1961, reproducing Kline's, 1950, results; O'Connell et al., 1970, reproducing Reiff & Sheerer's, 1959, results). Table 3 underscores the methodological problems of studies claiming positive findings and further suggests that design considerations explain early claims of genuine regression. There is a significant relation between adequacy of design and study outcome, with claims for positive findings almost entirely limited to one-subject or inadequately controlled multiple-subject studies, $\chi^2(2, N = 80) = 21.675, p < .00005$.

The only replicated positive findings are the eidetic-like imagery studies (Crawford et al., 1985; Walker et al., 1976; Wallace, 1978) and the Nash, Johnson, et al. (1979) and Nash, Lynn, et al. (1985) studies on interpersonal and affective modes of responding. Given that the effects observed in these studies might not be a function of age-regression procedures, they cannot be interpreted as supporting the idea that hypnosis can facilitate a literal reinstatement of developmentally former modes of physiological or psychological functioning or both. In fact, both Crawford et al. (1985) and Nash, Drake, et al. (1986) dropped this claim. As Spanos et al. (1979) noted, there is a characteristic pattern to hypnotic-age-regression research. An early study reports some sort of dramatic reinstatement of childlike processes. But later, more carefully controlled studies either fail to replicate these findings or demonstrate that they are probably due to demand characteristics. Just as hypnotically suggested amnesia, deafness, blindness, and anesthesia are not equivalent to their organic counterparts, hypnotic age regression does not appear to be a return of childhood or a return of any particular component of childhood response. If regression is defined as the extent to which hypnotic subjects conform to childhood norms and control subjects do not (Parrish et al., 1969), there is no evidence that this type of regression is a function of hypnosis.

Although a comprehensive treatment of the matter is beyond the scope of this article, I must note here that the study of regression during hypnosis need not involve suggested age changes at all. A growing literature has examined whether there is something primitive or regressed about the hypnotic experience itself (without suggested age regression). These investigations do not claim a return of childhood functioning; more modestly, they assert that some aspects of hypnotic response are similar to manifestations of primitive thinking in a nonhypnotized adult population. In other words, hypnotized subjects are not adults who go back in time but adults who experience a shift toward more prelogical, primary process modes of thinking. Here the regression is topographic rather than temporal (S. Freud, 1917/1953; Jackson, 1969). Indeed, some evidence suggests that during hypnosis, there is an increase in primary process thinking and a more spontaneous and intense expression of affect, unburdened by logic and sequential thinking (Fromm, Oberlander, Gruenewald, 1970; Gill & Brenman, 1959; Gruenewald, Fromm, & Oberlander, 1979; Lavoie & Sabourin, 1976; Levin & Harrison, 1976; Nash, Johnson, et al., 1979; Nash, Lynn, et al., 1985; Orne, 1959; Shor, 1979). As noted earlier, the work of Crawford et al. (1985) and Wallace (1978) on eidetic-like imagery could be interpreted as suggesting that there is something primitive or different about thinking during hypnosis and that this involves a shift from sequential, logical thinking to more visual, holistic thinking.

Although hypnotically regressed subjects may undergo dramatic changes in demeanor and subjective experience, their performance is not accurately childlike. In fact, equally dramatic and subjectively compelling portrayals are given by hypnotized subjects who are told to progress to an age of 70 or 80 years (Kline, 1951; Rubenstein & Newman, 1954). Highly hypnotizable subjects also give believed-in and convincing renditions of prenatal life or even past incarnations (Bernstein, 1956; Kelsey, 1953; Wilson, 1982). Hypnotic age regression may be of the same ilk as hypnotic age progression or past-life regression: It elicits a profoundly believed-in experience that may have important diagnostic and therapeutic properties and may, because it is hypnosis, involve a different mode of processing information (e.g., primary process mentation), but it does not seem to involve a bonafide return to or reinstatement of childhood functioning.

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