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On the Degree of Stability of Measured Hypnotizability Over a 25-Year Period

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Conducted a longitudinal study of hypnotizability, as measured by the Stanford Hypnotic Susceptibility Scale, Form A, that yielded a relatively high degree of stability in hypnotic responsiveness over repeated testings spanning a 25-year period. The 50 Ss were retested in 1985, after tests when they were students, between 1958–1962 and again in 1970. The statistically significant stability coefficients were .64 (10-year retest), .82 (15-year retest), and .71 (25-year retest). The means did not change significantly, and the median change in the scores of individuals was only 1 point on the 12-item scale. A set of score measures and their intercorrelations are insufficient to resolve the issue of why stability occurs. The stability of hypnotizability over time compares favorably with that of other measures of individual differences.

In this article, we examine the degree of stability of scores on the Stanford Hypnotic Susceptibility Scale, Form A (SHSS:A; Weitzenhoffer & Hilgard, 1959) over a 25-year period. The study began in the fall of 1957 when the Stanford Laboratory of Hypnosis Research began the first phase of collaborative research examining individual differences in measured hypnotic susceptibility (E. R. Hilgard, 1965). The data on the relative stability of scores on a standardized hypnotic responsiveness scale, in this case over a period spanning a quarter of a century, bear importantly on varied investigations designed to understand hypnotic processes.

Domain of Hypnosis and Scale Construction

Tests attempting to measure hypnotizability appraise what has been variously called suggestibility, susceptibility, or hypnotic responsiveness. All of these descriptors can be considered synonyms of a person's measured talent or ability to produce behaviors and experiences falling within the complex domain of hypnosis (E. R. Hilgard, 1973).

The construction of a scale for the measurement of hypnotic responsiveness begins by selecting types of behavior and experiences characteristic of hypnosis. The items representing these types of experiences are then tried out on a large number of people inexperienced with hypnosis. Following an attempted induction of hypnosis by some standard method, the person is tested by being given the opportunity to respond to the various suggestions as a hypnotized person would. The test is but a sample of the broad range of possible hypnotic behaviors and experiences. The more of these suggestions the person "passes," the more hypnotizable that person is judged to be. Norms are derived through this empirical method. The method works because it is found that the various items (quite different in their surface structure) intercorrelate positively, and therefore represent a common phenomena.

The SHSS:A serves as one of the reference standards of measured hypnotic responsiveness. The SHSS:A is essentially a restandardization of the earlier Friedlander–Sarbin Scale (Friedlander & Sarbin, 1938), with some modifications in the wording and scoring of the items. Numerous other scales exist that sample other aspects of the domain (see E. R. Hilgard, 1979). The common factor in all of these scales is so prominent that Form A, although limited in the behaviors and experiences sampled, remains a test of hypnotizability whose scores correlate substantially with those from other adequately constructed scales.

Stanford Hypnotic Susceptibility Scale

The SHSS:A is a 12-item test, individually administered according to a standardized procedure. The eye-closure method of hypnotic induction used, as well as the verbal form of the suggestions used in other scored items, have been criticized as being somewhat directive (Wilson & Barber, 1978), but there is little evidence that this has affected the distribution of individual differences in scores as compared with tests using more permissive wording (Hilgard, 1978/1979). Some items on the SHSS:A permit the person to respond to direct suggestions, for example, the arm lowering item. Other items test for a loss or inhibition of motor control, as in the arm rigidity item. The participant is asked to extend his or her arm out and to make a tight fist, after which suggestions that the arm will become "as stiff as an iron bar which you can not bend" are given. The participant is then asked to test the stiffness and try to bend the outstretched arm. Additional items include a hallucination suggestion, amnesia, and a response to posthypnotic suggestion.

Each of the 12 items is scored pass–fail in terms of objective behavioral criteria. Passing an item adds 1 point, so the total

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Portions of the results were presented in 1987 at the meeting of the Society for Clinical and Experimental Hypnosis in Los Angeles.

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score on the SHSS:A can range from 0 to 12. Revised norms, serving as a standardization sample, were based on the scores of 533 Stanford University students. For this sample, the mean total score was 5.62, with a standard deviation of 3.27 (E. R. Hilgard, 1965).

The coefficients of reliability for the SHSS:A have been found to be satisfactory. The internal consistency of the SHSS:A was estimated for the standardization sample to be .83 (K–R 20). Furthermore, the analysis of the responses obtained from a subsample of this larger group yielded correlations (between the individual item and the total score minus that item) ranging from .38 to .83 (N = 124). Retesting on the next day with a parallel form, the Stanford Hypnotic Susceptibility Scale, Form B (SHSS:B; Weitzenhoffer & Hilgard, 1959), produced correlation coefficients of .83 and .90 (Ns = 124 and 96, respectively).

Retest Study of Hypnotizability Over Time

The present study of SHSS:A scores over a 25-year period sheds light on the stability or instability of such scores over time when no special effort has been made to modify the scores by special procedures.

The 10-Year Retest Study

The design of the sample relies on later participation by the same subjects who engaged in an earlier study of a retest over many years, as reported by Morgan, Johnson, & Hilgard (1974). During 1970, members of the Stanford Hypnosis Laboratory retested a total of 85 Stanford alumni who had been tested as undergraduates with the SHSS:A or SHSS:B (parallel forms) between 1958 and 1962. For convenience, this is referred to as a 10-year retest, although the actual interval varied between 8 and 12 years. The mean age of the respondents was 19.5 years at the time of the initial test and 29.8 years at the 10-year test in 1970. The earlier study found a significant test–retest correlation coefficient of .60 over a 10-year period.

The 25-Year Retest

In the present study, we retested a subsample of the subjects from the first retest using the same measuring instrument, the SHSS:A. The subjects now had three complete protocols on this scale: the initial testing, Test 1, conducted while a Stanford University student in the early 1960s; the 10-year retest, Test 2, in 1970; and Test 3 when approximately 45 years of age in 1985. Our goal was to measure the retest stability or instability of hypnotizability, as measured by the SHSS:A, over a 25-year period.

Method

Subjects

A list of names and subject numbers of the 85 respondents in the 10-year retest was compiled by an assistant unaware of this research's purpose. We obtained the addresses of 77 potential participants from the Stanford Office of the Registrar, and letters of invitation were sent to the 62 individuals residing in the greater San Francisco and Los Angeles areas. All were informed that they would be retested on a standardized susceptibility scale. They were promised a copy of the Morgan et al. (1974) article on the 10-year retest after concluding their participation.

Table 1
Adequacy of Mean Hypnotizability of Later Samples as Representative of Earlier Testing

Measure of hypnotizability	Potential subjects in 1985	
	Tested	Not tested
SHSS:A, 1970		
N	50	35
M	6.0	5.8
SD	3.6	3.8
SHSS:A or B, 1960		
N	50	35
M	5.9	6.1
SD	3.5	3.1
SHSS:A or B, Norms		
N	533	
M	5.62	
SD	3.27	

Note. SHSS:A or B = Stanford Hypnotic Susceptibility Scale, Form A or B (Weitzenhoffer & Hilgard, 1959). The norms (revised) are from E. R. Hilgard, 1965, p. 215. No significant mean differences between tested and not tested samples by t test are present; $p > .05$, two-tailed.

We used no other incentive to gain their participation, and they were not paid for participating.

A 98% return rate was obtained from the 31 men and 31 women sent an invitation; of those who replied, only 5 decided not to participate. Scheduling difficulties prevented 7 of the available respondents from being tested. Therefore, 50 individuals comprise the total sample with three complete protocols. Thirty-five subjects in the 10-year retest study were not tested in the 25-year retest. The resulting subject sample consisted of 81% of the 62 individuals who could possibly have been tested and 59% of the 85 available subjects from the 10-year retest.

To assess a subject selection bias, we compared the SHSS:A mean scores for the participating subjects with those respondents in the 10-year retest who were not tested in 1985 (N = 35). As can be seen in Table 1, there appears to be no systematic bias in the participating sample. There are only trivial, nonsignificant differences between the means of those tested in both Test 2 in 1970, $t(83) = .05$, and Test 1 in 1960, $t(83) = .06$, and those not tested a third time.

Furthermore, the means and standard deviations of the total scores for this sample of 50 subjects do not differ significantly by t test from the standardization sample of 533 subjects from which the respondents in the 1970 retest were drawn. Thus it appears that the current participants are representative in their hypnosis scores of the population of students tested during the same period of time.

Procedure

Each subject was individually tested following the standardized procedures for the administration of the SHSS:A (Weitzenhoffer & Hilgard, 1959). After the initial attempts to establish rapport, the experimenter read the standard instructions from the manual and scored the subject's responses in accordance with the behavioral criteria established by the scale. All testing was administered by the same researcher, who was unaware of the test scores on previous administrations until after the last respondent was tested. The interrogatory associated with the SHSS:A completed the formal testing.

Every attempt was made to test the respondent in a quiet room with comfortable seating arrangements. The location of the testing and the facilities were arranged for the subject's convenience. These facilities were university and hospital testing rooms, the offices of colleagues, mo-

Table 2
Test–Retest Correlation Coefficients of Measured Hypnotizability (Stanford Hypnotic Susceptibility Scale, Form A) for Total Sample and by Sex

Retest	Total ($N = 50$)	Male ($N = 24$)	Female ($N = 26$)
25 year (1960–1985)	.71	.69	.73
15 year (1970–1985)	.82	.82	.81
10 year (1960–1970)	.64	.62	.67

Note. All correlations are statistically significant, $p < .01$, but no one correlation differs significantly from another, $p > .05$, two-tailed.

tel rooms, or the home of a participating subject. Data from all of the subjects tested were used in the analysis of the results.

Results

Group Changes in Total Hypnotizability Scores

Stability and change were judged by criteria both of correlations and mean scores.

Test–retest correlations over time. The correlation between test scores over time is limited by the reliabilities of the tests. In this case, the internal consistencies were high enough to give an expectation of significant correlations over time if what was measured did in fact show some stability. The estimate of the internal consistency for the three testings is .86 for Test 1, .87 for Test 2, and .88 for Test 3, as determined by K–R 20 (all Ns = 50).

The test–retest correlations over the 25-year period for the total SHSS:A scores are found in Table 2. For the 25-year, 15-year, and 10-year periods the retest correlations are .71, .82, and .64, respectively, all highly significant. A general chi-square test indicates that the three correlations for the total sample are drawn statistically from the same population, $\chi^2(2, N = 50) = 3.54$, $p > .05$ (Hays, 1973). None of the pairwise comparisons of the correlations was statistically significant by z-test, $p > .05$, two-tailed. The similarity between the test–retest correlation coefficients for the women and men in this study can also be seen in Table 2.

Mean score differences over time. Because this is a longitudinal study with repeated measures on the same subjects, it is appropriate to test the significance of mean score differences through analyses of variance (ANOVAs) based on this within-subjects variable.

A 2 × 3 (Sex × Test) repeated-measures ANOVA comparing the total SHSS:A scores of the men and women (sex) on each of the three tests (test) did not result in any statistically significant differences by test or sex. Table 3 presents the corresponding mean total SHSS:A scores for the group as a whole and separately for the women and men for the three tests at different ages. The mean total scores for the three tests over the 25-year period are not statistically different from each other, $F(2, 96) = 1.57$, *ns*. The absences of both a difference between the men's and women's total scores on the SHSS:A, $F(1, 48) = 0.00$, *ns*, and of an interaction effect, $F(2, 96) = 0.41$, *ns*, allow the data on sex to be collapsed.

Table 3
Retest Mean Hypnotizability Scores (Stanford Hypnotic Susceptibility Scale, Form A) for the Total Sample and by Sex

Test	Total ($N = 50$)	Male ($N = 24$)	Female ($N = 26$)
1985			
M	6.5	6.6	6.4
SD	3.6	3.7	3.6
1970			
M	6.0	5.8	6.2
SD	3.6	3.6	3.6
1960			
M	5.9	6.0	5.8
SD	3.5	3.8	3.4

Note. All differences between the means by sex and test are nonsignificant, $p > .05$.

Prediction of later test scores from earlier ones. The scores on Test 1 and Test 2 can be weighted through a regression analysis to account for the variance of scores in Test 3. The best fit was found to be the following linear equation: Test 3 score = .85 + .328 (Test 1 score) + .622 (Test 2 score). When applied, this combination of scores from Test 1 and Test 2 led to $R^2 = .724$. In other words, 72% of the variance in Test 3 scores is accounted for by the scores in Tests 1 and 2.

Individual Changes in Hypnotizability Scores

Despite the high group correlations, there is still room for substantial changes in scores by individuals. It is therefore important to analyze the flux in hypnotizability scores by individuals over time.

The absolute differences between each participant's total hypnotizability scores on the three protocols can be seen in Table 4. All score distributions had standard deviations of 3.4 or greater (Table 3). Hence, those individuals whose scores changed 3 points or less had changed less than 1 standard deviation. Eighty-four percent fell in this group over the 25-year retest, 88% in the 15-year retest, and 86% in the 10-year retest. The median change for the 50 subjects over each interval was very close to a single score point, with 52%, 48%, and 52% of

Table 4
Individual Change in Total Hypnotizability Scores (Stanford Hypnotic Susceptibility Scale, Form A)

	Absolute change scores					
					Total	
Retest	Δ0	Δ1	Δ2	Δ3	Δ3 or less	Δ4 or more
25 year (1960–1985)	8	18	10	6	42 (84%)	8 (16%)
15 year (1970–1985)	11	13	14	6	44 (88%)	6 (12%)
10 year (1960–1970)	13	13	10	7	43 (86%)	7 (14%)

Note. $N = 50$. For the three tests used in the comparisons, the standard deviations are between 3 and 4 scale points. A change score of 4 or more is greater than 1 standard deviation for any test.

Table 5
Corresponding General Level of Hypnotizability Scores (Stanford Hypnotic Susceptibility Scale, Form A) on the 10-Year Retest by Individuals

	Test 2 (1970)			
Test 1 (1960)	Low	Medium	High	Total
High	1	3	**10**	14
Medium	4	**12**	5	21
Low	**10**	4	1	15
Total	15	19	16	50

Note. Numbers in boldface indicate agreement in scoring level on both tests.

Table 7
Corresponding General Level of Hypnotizability Scores (Stanford Hypnotic Susceptibility Scale, Form A) on the 25-Year Retest by Individuals

	Test 3 (1985)			
Test 1 (1960)	Low	Medium	High	Total
High	1	2	**11**	14
Medium	3	**12**	6	21
Low	**8**	6	1	15
Total	12	20	18	50

Note. Numbers in boldface indicate agreement in scoring level on both tests.

the cases showing either no change or a 1-point change over the 10-year, 15-year, or 25-year retest, respectively.

Only 2 subjects had the same score on all three tests. The remaining 48 subjects in our sample changed their total hypnotizability score at least once during retest.

The overall stability of the test scores as revealed by these correlations is not informative about where the failures of stability lie. To ascertain which subjects moved up and which moved down over test periods, we recast the data in a scatterplot. A convenient adaptation of a scatterplot, yielding some information in addition to that provided more precisely by regression analysis, can be found by a correlation plot reduced to 9 cells by grouping subjects into three scoring levels on SHSS:A—high (scores 9–12), medium (scores 4–8), and low (scores 0–3)—on both of the correlated tests. This is shown for the three retest correlations in Tables 5, 6, and 7.

The correspondence of hypnotizability scores between Test 1 and Test 2 for individuals categorized as high, medium, and low on Test 1 is presented in Table 5. The retest correlation was .64, as previously shown in Table 2. The 32 individuals in the diagonal cells (in boldface) scored within the same level on both tests. Of the rest, 10 individuals scored in a higher level of hypnotizability on Test 2 from Test 1; the scores of 8 participants moved to lower levels in the 1970 retest.

A similar comparison between Tests 2 and 3, presented in Table 6, showed an increase in the number of individuals consistently scoring in the same level of hypnotizability. The stability coefficient was .82 between these two tests using the identical measure of hypnotizability, the SHSS:A. A total of 35 individuals (representing 70% of the sample of 50) were consistent on both tests. In 1985, no participant moved from the low level to the high or from the high level to the low.

Table 6
Corresponding General Level of Hypnotizability Scores (Stanford Hypnotic Susceptibility Scale, Form A) on the 15-Year Retest by Individuals

	Test 3 (1985)			
Test 2 (1970)	Low	Medium	High	Total
High	0	3	**13**	16
Medium	2	**12**	5	19
Low	**10**	5	0	15
Total	12	20	18	50

Note. Numbers in boldface indicate agreement in scoring level on both tests.

Over the 25-year period between Test 1 and Test 3 (with a correlation of .71), there were 31 individuals who scored at the same level of hypnotizability, as seen in Table 7. Unlike the 10-year retest, which had a similar number of individuals shifting their hypnotizability level upward or downward, from 1960 to 1985 there were more than twice as many individuals (13 to 6) with an upward shift in their levels of hypnotizability.

Retest Correlations and Means for Specific Items

As previously noted, a high coefficient of internal consistency is maintained subsequent to the repeated exposures to the SHSS:A. The retest correlations for the 12 specific items on the SHSS:A are also found to be positive and most of them significant, as shown in Table 8.

For a closer look at the results in Table 8, we have chosen to compare SHSS:A items in the 15-year retest, Test 2 versus Test 3. This is appropriate because SHSS:A was the only form used in both testings, whereas in Test 1 some of the subjects were given SHSS:B rather than SHSS:A.

Between Test 2 and Test 3, the tetrachoric correlation coefficients are above .45 and statistically significant for all of the 12 SHSS:A items; 9 of the items have a retest coefficient between .74–.95.

The changes or stability of the 12 items by percentage of subjects passing is also evidenced in their rank-order correlations (Table 8). The percentage of subjects passing each item resulted in some changes in rank order between Test 1 and Test 2 (10-year retest), yielding a positive but nonsignificant correlation between ranks (Spearman's $\rho = .49$), $t(10) = 1.78$, $p > .05$, two-tailed. The corresponding comparison between Test 2 and Test 3 (15-year retest) resulted in a statistically significant rank-order correlation (Spearman's $\rho = .95$), $t(10) = 9.50$, $p < .01$, two-tailed, possibly indicating a stabilization after the first retest. The third comparison, between Test 1 and Test 3 (25-year retest), yielded a significant rank-order correlation for item difficulty of .60 ($t = 2.37$, $p < .05$, two-tailed).

Table 8
Retest Measures on Specific Items of the Stanford Hypnotic Susceptibility Scale, Form A

Item	Percent passing			r_t		
	T1 (1960)	T2 (1970)	T3 (1985)	T1 vs. T2 (10-yr. retest)	T2 vs. T3 (15-yr. retest)	T1 vs. T3 (25-yr. retest)
Postural sway	64	68	70	.57	.60	.51
Eye closure	68^{a}	74	82_{a}	.58	.91	.72
Hand lowering	84	74	84	.60	.75	.47*
Arm immobilization	28	34	36	.48	.74	.57
Finger lock	36_{ab}	44_{b}	50_{a}	.73	.85	.73
Arm rigidity	32	50	50	.54	.93	.77
Moving hands	66_{b}	84_{b}	74	.46	.60	.54
Verbal inhibition	24_{ab}	46_{b}	46_{a}	.54	.81	.81
Fly hallucination	52_{b}	32_{b}	44	.91	.75	.44
Eye catalepsy	34	36	46	.64	.87	.75
Posthypnotic suggestion	54_{b}	32_{b}	36	.19*	.45	.04*
Amnesia	44_{b}	24_{b}	30	.57	.95	.71

Note. T1 = Test 1. T2 = Test 2. T3 = Test 3. All r_t are significant at $p < .05$ except as indicated. The test items whose differences in percent passing proved significant by z test are marked by a same-letter subscript, in these cases, $p < .05$, two-tailed.
* $p > .05$.

The results in Table 8 supplement the more general findings in earlier tables by indicating the extent to which scores on individual test items contributed to the relative stability of the total hypnotizability scores.

Discussion

Hypnotizability, as measured by the SHSS:A proved relatively stable over 25 years. This stability occurred despite the changes in life experiences between the college years and mid-adult life. The flux in subjects' lives over a quarter of a century, through marriage and child-rearing, occupational shifts, traumas associated with illness, death of loved ones, and loss by divorce, cannot be assumed to be trivial.

Obtained Stability of Mean Hypnotizability

It would be possible for the retest correlations over time to be significant even though mean scores changed in some consistent manner with age. We found, however, that the means did not change significantly as a function of age.

Our finding of nonsignificant mean changes in hypnotic ability over 25 years conflicts with two major cross-sectional studies (Gordon, 1972; Morgan & Hilgard, 1973). In a study done with VA patients hospitalized for medical (nonpsychiatric) reasons, the decline between a group tested on the SHSS:A at ages 20–29 from one at ages 40–49 averaged 2.9 points (Gordon, 1972). Another study (Morgan & Hilgard, 1973) was based on 1,232 cases individually tested, including a large sample of students, and another sample of parents in the community. Morgan & Hilgard found a change of 2.1 scale points between the 265 subjects aged 17–20 and the 103 subjects aged 37 and older.

The advantage of a longitudinal study is that it deals with intraindividual modifications as a function of time rather than between individuals of different ages. Our findings suggest that, without special efforts at modification, hypnotizability may in fact be relatively stable between the college years and the early adult years. This result is tempered by the possibility that the retesting of the same individuals may accentuate stability. The absence of a decline in mean scores over the years has to be interpreted in line with these possibilities.

Stability of Hypnotizability Compared With Other Individual Difference Measures

It is pertinent to compare the stability of hypnotizability over longer time periods with the available evidence from other measures of individual differences.

Intelligence measurement. The stability of measured hypnotizability can be compared with the test–retest reliability of IQ scores. Over a retest period of similar length, the magnitude of the stability coefficients for the SHSS:A compares very well with those found for IQ. For a sample of similar size that was administered the Wechsler Adult Intelligence Scale at age 29 and again at age 42 (a 13-year interval) the test–retest correlations were .73 for the full scale IQ, .70 for Verbal IQ, and .57 for Performance IQ (Kangas & Bradway, 1971).

Personality tests. A comparison with a traditional personality assessment instrument is provided by the Study of Values (Allport & Vernon, 1931). The retest correlations ranged from .60 after a few years to an average of .50 after intervals spanning 10–25 years between testings (Huntley & Davis, 1983). The size of these correlations are representative of the more robust stability estimates of measures of personality (McCrae & Costa, 1984).

The stability of men's occupational interests as determined by scales on the Strong-Campbell Interest Inventory (SCII; Campbell & Hansen, 1981) provides yet another comparison. On the basis of data from an earlier version of the scale, the manual for the SCII reports a 20-year test–retest correlation of .72 for men 22–25 years old at first testing and .64 for those 19–21 years old at first testing.

The preceding comparisons indicate that the stability co-

efficients of the SHSS:A, despite its being only a 12-item test, compare favorably with the stability coefficients obtained with other measures of individual differences relevant to personality.

Issue of person versus situation. We are well aware of the attacks that have been made within personality theory against attributing relative stability of scores to persisting personality characteristics, such as aptitudes and traits, without recognition of the importance of the situation in which the behavior is observed. The significance of the interaction between person and situation is clearly recognized (Endler & Magnusson, 1976). If, therefore, we have called attention to the relatively high correlations over 25 years as an indication of a possibly persistent talent, a set of correlations and means cannot resolve the issue of why stability occurs.

There is, for example, the possibility of a hereditary component, as shown in studies of hypnotizability among twins and their parents. In this research all participants were hypnotized and tested separately but simultaneously, so that they had no opportunity to influence each other through discussion of their hypnotic performances (Morgan, 1973). However, as with the twin studies of intelligence, the data are subject to the same difficulties in estimating the effects of similarities in social and environmental influences.

Personality theorists would do well to attend to those aspects of human performance that override many situational influences. As far as our study is concerned, we can do little but point to the data that show a median change of but a single point over 25 years on a 12-item scale, despite the many situational changes that must have occurred over these years.

That hypnotizability scores remain resistant to modification with ordinary experiences normally encountered in daily life does not mean that scores are immutable through special interventions. The limits of score changes through special techniques directed at score modification are not, however, at issue in the present study. Most efforts to modify hypnotizability have resulted in very slight changes in test scores (Diamond, 1977; Perry, 1977). Large changes have been reported through the use of ingenious techniques to persuade and train the subject that everyone can learn to become highly hypnotizable (Gorassini & Spanos, 1986). Even with the generally successful manipulations of these efforts to raise scores of the initially low scorers, there are some limitations on success (Gfeller, Lynn, & Pribble, 1987). For example, in this study 14 of the 24 initially low scorers failed to score high on retest after training. Such large changes in test scores are subject to varying interpretations, just as enduring stabilities are.

Hypnotizability in Relation to Personality and Clinical Practice

With the introduction of the Stanford scales almost 30 years ago, numerous investigations have attempted to explain the individual differences found in hypnotic responsiveness, usually either by way of correlational studies or by changes in hypnotic procedures according to plausible hypotheses. Psychological processes that may be related include attention, imagery, daydreaming styles, psychophysiological changes, attitudes, expectancies, and many others investigated with limited success. (For a review, see Kihlstrom, 1985).

Measured hypnotizability and personality. Attempted correlations of hypnotizability scores with the Minnesota Multiphasic Personality Inventory (MMPI), the California Psychological Inventory (CPI), and projective tests such as the Rorschach have all resulted in trivial outcomes. Was this failure due to the limitations of the personality scales, or to the nature of hypnotic talent as perhaps something too unique to be captured by personality scales? Subsequently, the best evidence shows that the failure lay in the definition of personality implicit in these instruments and in their techniques of validation.

The study most relevant to a widely used personality inventory has proved illuminating (Tellegen & Atkinson, 1974). On the basis of efforts to predict hypnotizability from interviews, Josephine Hilgard (1970/1979) demonstrated the significance for hypnosis of what she called "imaginative involvement." Tellegen and Atkinson (1974) constructed a scale, based in part on what Hilgard had found in her interviews, that they called "absorption," which occurs in imagination in ordinary life with an altered sense of reality. Tellegen and Atkinson's hypnosis scale was a slight modification of the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor & Orne, 1962), a group form of SHSS:A. They conducted a careful study to select items representing absorption and the two prominent factors in the MMPI (stability–instability and introversion–extroversion). On cross-validation with a sample of $N = 171$, they found a modest but significant correlation between measured hypnotizability and absorption (.43, $p < .001$), but trivial negative correlations with the two MMPI factors (−.02 with stability–instability, −.18 with introversion–extroversion). They justifiably concluded that the MMPI, with its hundreds of items and validation on pathological populations, had failed to include items reflecting the personalities of the highly hypnotizable. Of course, the correlation of .43 is one of those significant but low correlations that plague personality measurement. However, the absence of even that much relation to hypnotic ability is more a weakness of the MMPI than it is of the hypnosis scale.

Some later support for the Tellegen and Atkinson (1974) findings, using other methods, has been reported (J. R. Hilgard, 1970/1979; O'Grady, 1980). O'Grady correlated the Tellegen–Atkinson absorption scale with a variety of personality measures and found, after a factor analysis, that one of the three factors (accounting for 17% of the total variance) was exclusively comprised of absorption. Although the correlation leaves much of the variance unaccounted for, a later study of exceptionally hypnotizable subjects confirmed that, independent of hypnosis, the highly hypnotic subjects were "fantasy prone" (Wilson & Barber, 1983).

Measured hypnotizability and clinical application. The results from this study support the findings on the functional utility of measured hypnotizability. For example, the predictability of the SHSS:A and similar tests has been established for the relation of hypnotic ability to the reduction of experimental and clinical pain (e.g., E. R. Hilgard, 1986; E. R. Hilgard & Hilgard, 1983; J. R. Hilgard & LeBaron, 1984). Because the effectiveness of psychological methods in clinical practice can depend on many aspects of the interpersonal relation between therapist and patient, it is desirable when that effectiveness is attributed to hypnosis to show that the modifications do indeed relate pos-

itively to measured hypnotizability. The heuristic of proposing and implementing the clinical treatment with the greatest probability of success depends on the use of reliable screening instruments. With these data supporting the stability of measured hypnotizability, the efficacy of clinical interventions using hypnosis can benefit from the predictive utility of hypnotic ability.

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