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PATTERNS OF HYPNOTIC ABILITIES

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Research on individual differences in the capacity to experience hypnosis indicates that, in addition to a general hypnotic susceptibility factor, there are elements of hypnotic ability that relate to specific hypnotic phenomena. The Revised Stanford Profile Scales of Hypnotic Susceptibility (SPS), Forms I and II (Weitzenhoffer and Hilgard, 1967) were developed to assess these differential abilities in subjects who are at least moderately hypnotizable. Scores obtained by a subject in each of the six content areas represented by the subscales of the SPS yield information about the subject's pattern or profile of hypnotic abilities. Although factor analysis has confirmed the separability of the six abilities assessed by the SPS (Hilgard, 1965; Lauer, 1965), little is known about the interrelationships among these abilities. Do particular abilities tend to co-occur? Are there groups of subjects with similar patterns of abilities? What is the relationship of various patterns to the difficulty level of the suggestions? Are there particular patterns associated with generally high or generally low hypnotizability? The present study employs hierarchical cluster analysis (Anderberg, 1973; Everitt, 1974; Johnson, 1967) to investigate the existence of patterns of

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to investigate the existence of patterns of differential hypnotic abilities.

Method

Sample

The study involves a reanalysis of data obtained during the standardization of the SPS in 1963-65. The sample consisted of 155 Stanford University students (85 women and 70 men) from an original pool of 374 who had achieved scores of four or more on the twelve-point Stanford Hypnotic Susceptibility Scale, Form A (SHSS:A; Weitzenhoffer and Hilgard, 1959) and who were thus considered to be at least moderately hypnotizable. After receiving SHSS:A, the subjects also completed the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1962) and then SPS:I and SPS:II.

Profiles of Hypnotic Abilities

The profiles employed in the present analysis are composed of six subscale scores, corresponding to the six factors represented by the Stanford Profile Scales: (1) agnosias and cognitive distortions (AG); (2) positive hallucinations (HP); (3) negative hallucinations (HN); (4) dreams and regressions (DR); (5) amnesia and posthypnotic compulsions (AM); and (6) loss of motor control (MC). Scores for the motor control items are derived from performance on SHSS:A. Amnesia scores are also obtained from SHSS:A and were supplemented in the present analysis by the amnesia item from SHSS:C. SPS:I and SPS:II provide the remaining item scores. Each item is scored 0 to 3 on the basis of well-specified behavioral criteria and each subscale is composed of 4 items. The raw subscale scores thus

range from 0 to 12.

The raw scores for each subscale were standardized so that the distribution of scores for each subscale had a mean of 50 and a standard deviation of 10. Then the raw subscale scores in each profile were converted to their standard score equivalents. The subsequent analyses are based on the resulting standard score profiles.

Measure of Profile Proximity

Profiles of subscale scores contain three types of information about a person's performance: (1) level, defined as the mean of the person's subscale scores; (2) scatter, defined as the variability of the subscale scores about their mean; and (3) shape, defined as the direction of the deviations of the subscale scores from their mean. Interprofile distance (Cronbach and Gieser, 1953; Osgood and Suci, 1952) was chosen as the index of profile proximity because it allows these three types of information to be separated from one another. Since one of the purposes of the present study was to discover patterns of abilities which were independent of level, the information about profile level was eliminated from the index by first calculating the deviation of each subscale score from the subject's mean subscale score. The measure of interprofile distance was based on these deviation score profiles.

Cluster Analysis

Before the cluster analysis was performed a set of 28 flat profiles (18% of the sample) with scatter values more than one standard deviation below the mean scatter for the sample of 155 profiles were eliminated because of their lack of differential patterning. A non-metric

hierarchical method of cluster analysis, called the maximum method (Johnson, 1967), was applied to the interprofile distances of the remaining 127 profiles. The maximum method defines a cluster as a group of entities in which each member is more similar to all members of the same cluster than it is to all members of any other cluster.

Results

Clusters from the Maximum Method

The solution from the maximum method of clustering produced 17 separate clusters. However, two of the clusters consisted of only single elements, and three more of the clusters contained fewer than five profiles each. These five clusters, accounting for only 11 cases (8% of the sample), were judged to be too small to represent reliable patterns. Application of the maximum clustering method to the set of 127 cases thus yielded twelve clusters which could be considered to represent twelve patterns of hypnotic abilities.

Interpretation of the Clusters

In order to determine the characteristics of the profiles comprising each of the clusters, the following information was calculated for each standard score profile in the cluster:

- (1) The mean SPS subscale standard score which provides a measure of profile level.

- (2) Profile dispersion or scatter = $\sqrt{\frac{6}{6} \sum_{i=1}^6 (\bar{X} - X_i)^2}$

which provides an indication of the variability of the SPS subscale scores about their mean.

- (3) A summary of the shape of the profile was derived as follows: If a subscale standard score was greater than the mean of all six of a subject's subscale scores, it was coded "P" (for positive deviation); if the subscale score was less than the mean subscale score, it was coded "N" (for negative deviation); and if the subscale score was equal to the mean of the subscale scores, it was coded ".", (dot).

An examination of the scatter values and shape summaries of the individual profiles comprising each of the clusters indicated that the clusters were homogeneous with regard to these attributes and so could be meaningfully interpreted as consisting of shared patterns. The average of the profiles in a cluster was chosen as an appropriate representation of the pattern of hypnotic abilities shared by the members of the cluster. Accordingly, the mean standard score profile for each cluster was computed, along with its level and scatter. A summary of the shape of the average profile was obtained in the manner described above for the individual profiles except that a subscale score had to deviate at least five points (half the standard deviation of the standardized subscale scores) from the mean subscale score to be coded "P" or "N". The information about the average profiles, or patterns, representing the twelve clusters is presented in columns 1 to 5 of Table 1. The number of cases indicates the number of subjects in the cluster who share the cluster pattern. Each of the twelve patterns is unique.

Interestingly, pattern number 9 shows a lack of significant deviations from the mean, that is, it is flat. The scatter values for the profiles in this cluster are generally low, so its 13 members should

probably be classified with the 28 flat profiles which were removed from the sample before the cluster analysis was performed. Flat profiles would then account for 26 percent of all 155 cases.

Patterns of Hypnotic Abilities

The cluster analysis produced twelve distinct patterns of hypnotic abilities including the flat pattern. These patterns are shown in Figure 1. Some of the patterns show high performance on only one of the subscales relative to the others. For example, Pattern 4 has a very high score only on the motor control subscale which is associated with the primary (ideomotor) suggestibility component of hypnosis. However, most of the patterns are more complex.

Pattern 6 is interesting in that it shows high performance on both the positive hallucinations and the dream and regressions subscales. These abilities may be related to a more general cognitive capacity for vivid imagery.

Several of the complex patterns involve the amnesia and posthypnotic compulsions subscale. For example, pattern number 10 is characterized by high performance on the negative hallucinations subscale and the amnesia and posthypnotic compulsions subscale, and a very low dreams and regressions score. This pattern indicates an ability to dissociate aspects of one's experiences--in this case, memories, and stimuli that would ordinarily be perceived. On the other hand, pattern number 2 exhibits a profile of scores exactly opposite to that of number 10, and thus suggests the lack of dissociative abilities.

Relationship of Profile Patterns to Hypnotizability Level

Because the cluster analysis was performed on the basis of the deviation scores, information about profile level did not enter into the clustering itself. Any relationships between profile pattern and general hypnotizability level as assessed by mean pattern subscale score are thus independent of the method of deriving the patterns. Examination of column 3 in Table 1 shows that most of the mean pattern subscale scores differs only slightly from 50 (the mean for the entire sample). The exceptions are Pattern 11 which appears to be associated with relatively high general hypnotizability, and Pattern 12 which is associated with relatively low general hypnotizability.

Relationship of Profile Patterns to Difficulty Level of the Subscales

Coe and Sarbin (1971) have argued that apparent differential hypnotic abilities are merely a reflection of the difficulty level of the items on hypnotizability scales. The results of the present analysis offer an opportunity to test this hypothesis. The subscales of the SPS can be rank ordered according to level of difficulty on the basis of the distributions of raw scores obtained on each subscale (Lauer, 1965). The scales ranked in order of increasing difficulty are: MC, DR, AG, HN, HP, and AM. As an index of the relationship between the patterns of hypnotic abilities and the difficulty levels of those abilities, Spearman rank order correlations were computed between the ranks assigned to the SPS subscales on the basis of their difficulty level and the ranks assigned on the basis of the relative magnitudes of the subscale scores within each profile pattern derived from the cluster analysis. The resulting correlations are shown in column 6 of Table 1. Positive values indicate a positive relationship

between the profile pattern and the difficulty levels of the subscales. The fact that there are as many negative correlations as positive, and that most of the values do not differ significantly from zero (critical value for $N = 6$ is $Rho = \pm .886$, $p < .05$) indicates that the patterns of hypnotic abilities obtained by the cluster analysis cannot be accounted for by the difficulty level of suggestions.

Conclusions

The results of the analysis support the assertion that hypnosis, rather than reflecting a single ability, is composed of several separate abilities which have specific interrelationships. Groups of hypnotizable people share patterns of hypnotic abilities which are independent of the difficulty level of suggestions. The patterns of abilities themselves have important implications for the distinction between the dissociative and the suggestibility aspects of hypnosis.

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Note: The first analysis of the profile classes, based on unrevised SPS I and II (N=112), appeared in: Hilgard, E.R., Lauer, L.W. and Morgan, A.H. Manual for Profile Scales of Hypnotic Susceptibility, Forms I and II. Palo Alto, Ca.: Consulting Psychologists Press, 1963.

Table 1
Patterns of Hypnotic Abilities

(1)	(2)	(3)	(4)	(5)	(6)
Pattern	Number of Cases	Mean Subscale Score	Scatter	Average Profile Shape	Spearman Rho
1	15	50.97	12.59	PN....	.71
2	8	51.79	15.98	..NPNP	.94
3	11	48.62	14.34	..N..P	.60
4	5	47.13	14.77	N...NP	.60
5	11	48.88	11.80	..P..N	-.03
6	7	48.69	15.81	.P.P.N	-.43
7	11	47.93	16.03	..NPPN	-.49
8	13	52.42	13.38	...NP.	-.49
9	13	48.92	6.75	-.66
10	6	46.97	14.48	..PN..	-.66
11	8	55.90	14.56	.NP.P.	-.37
12	8	45.75	18.33	.N.N.P	.37