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Patterns of hypnotic response, revisited

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ABSTRACT

It has long been speculated that there are discrete patterns of responsiveness to hypnotic suggestions, perhaps paralleling the factor structure of hypnotizability. An earlier study by Brenneman and Kihlstrom (1986), employing cluster analysis, found evidence for 12 such profiles. A new study by Terhune (2015), employing latent profile analysis, found evidence for three such patterns among highly hypnotizable subjects, and a fourth comprising subjects of medium hypnotizability. Some differences between the two studies are described. Convincing identification of discrete "types" of high hypnotizability, such as dissociative and nondissociative, may require a larger dataset than is currently available, but also data pertaining directly to divisions in conscious awareness and experienced involuntariness.

1. Introduction

The existence of wide individual differences in response to hypnosis was recognized even before hypnosis got its name (Laurence, Beaulieu-Prévost, & duChéné, 2008), and every serious laboratory employs standardized scales of hypnotizability (also known as hypnotic susceptibility or hypnotic suggestibility) to identify subjects who have a "talent" for hypnosis. These instruments, the prototype of which is the Stanford Hypnotic Susceptibility Scale, Form A (SHSS:A; Weitzenhoffer & Hilgard, 1959), consist of a hypnotic induction procedure including suggestions for focused attention and relaxation, followed by a series of typical hypnotic suggestions, such as arm lowering, arm catalepsy, and a hallucinated fly. Response to each of these suggestions is scored according to an objective behavioral criterion. To take an example: it is suggested that there is a fly buzzing annoyingly around the subject's head; if he or she makes any visible move to brush the fly away within 10 s, the subject is scored as passing the suggestion. Although many studies rely solely on the group-administered Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor & Orne, 1962), which is an adaptation of SHSS:A, the individual Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer & Hilgard, 1962), administered as a follow-up to SHSS:A or HGSHS:A, is generally considered the "gold standard" for the assessment of hypnotizability (Hilgard, 1965; Laurence et al., 2008). While SHSS:A and HGSHS:A are dominated by "ideomotor" suggestions, the SHSS:C contains a higher proportion of more difficult "cognitive" suggestions, such as hallucinations and age-regression.

2. The search for profiles of hypnotizability

Most current scales measure hypnotizability as a unidimensional trait, by analogy with IQ. For example, HGSHS:A and SHSS:C are both scored on a scale of 0–12, depending on the number of suggestions "passed" according to specific,

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dichotomous, objective, behavioral criteria. The distribution of hypnotizability, so measured, is quasi-normal, with a positive skew and perhaps a hint of bimodality (Balthazard & Woody, 1989). Fewer than 10% of the population qualify as "hypnotic virtuosos", commonly defined as those scoring 10–12 on SHSS:C (Register & Kihlstrom, 1986).

Despite the unidimensional scoring of the hypnotizability scales, it has been generally understood that hypnotic suggestions are not all alike. Judging simply by item content, there are two types of ideomotor suggestions – direct suggestions for the facilitation of some motor activity (e.g., arm levitation), and challenge suggestions for the inhibition of motor activity (e.g., arm catalepsy); perceptual alterations, such as positive and negative hallucinations; and cognitive alterations, such as age-regression, posthypnotic suggestion, and posthypnotic amnesia. Traditional factor analyses have generally converged on a three-factor solution, involving direct suggestions, challenge suggestions, and perceptual-cognitive alterations. A more sophisticated approach, employing item-response theory, yielded a four-factor solution, with posthypnotic amnesia splitting off from the rest of the perceptual-cognitive factor (Woody, Barnier, & McConkey, 2005). Whether there are three or four factors, or more, all the factors are correlated with each other, justifying the use of a single sum score to represent subjects' general hypnotizability. Still, the existence of separable factors suggests that hypnosis taps distinct component abilities – and, more important in the current context, that there might be different "types" of hypnotizable subjects, possessing these component abilities to differing degrees (Woody & Barnier, 2008).

It was to explore this possibility that Weitzenhoffer and Hilgard developed the Stanford Profile Scales of Hypnotic Susceptibility, Forms I and II (SPSHS:I & II; Hilgard, Lauer, & Morgan, 1963; Weitzenhoffer & Hilgard, 1963). These are intended to be administered only to subjects who prove to be at least moderately hypnotizable on SHSS:A or HGSHS:A, and consist of a number of suggestions for various kinds of perceptual-cognitive alterations arranged into six subscales:

1. Agnosia and other anomalies affecting semantic and procedural knowledge (AG).
2. Positive hallucinations (HP), or sensory-perceptual experiences occurring in the absence of appropriate environmental stimuli.
3. Negative hallucinations (HN), the lack of awareness of normally perceptible stimulation.
4. Dreams and regressions (DR), including hypermnesia.
5. Amnesia and posthypnotic suggestion (AM).
6. Loss of motor control (MC), derived from prior testing).

The SPSHS items are relatively difficult, in terms of pass percents, and so can be used to make further discriminations among subjects who have already been identified as highly hypnotizable by procedures such as SHSS:C. More to the point, the composition of SPSHS allows researchers to plot a profile of differential response to hypnotic suggestions, much like Thurstone's (1938) primary mental abilities, the subscale scores of the WAIS (Wechsler, 1939), or the profiles generated by the MMPI (Hathaway & McKinley, 1940) and CPI (Gough, 1956), which were the inspiration for the Profile Scales in the first place.

Based on the standardization sample, Hilgard (1965) identified some 62% of subjects who had profiles with substantial deviations from their own mean scores on one or more subscales. But given the data-analytic techniques available at the time, he was unable to determine the extent to which these patterns were shared within the group. The Profile Scales never came into wide use, even in the Stanford laboratory, and there the matter sat for some time.

The obvious solution to this problem – once the technology became available – was to conduct a cluster analysis (Aldenderfer & Blashfield, 1984; Allen & Goldstein, 2013). To that end, Brenneman and Kihlstrom (1986) submitted the SPSHS standardization data (Lauer, 1965), plus some additional data collected in the Stanford laboratory (both courtesy of E.R. Hilgard), to a non-metric hierarchical cluster analysis (maximum method), employing AGCLUS, a free-standing computer program developed at Harvard University by Donald C. Olivier. Beginning with 155 subjects (including the 112 subjects in the standardization sample), we eliminated 28 subjects (18% of the total) with obviously flat profiles (i.e., scatter values less than 1 *SD* below the mean scatter for the entire sample). Analysis of the remaining 127 profiles yielded 17 clusters, five of which, totaling 11 cases (9%), contained fewer than five subjects each. Eliminating these small, residual profiles left 12 profile clusters containing 5–15 subjects each. Eight of the profiles constituted mirror–image pairs, depicted in Fig. 1; the remaining four profiles, depicted in Fig. 2, including another 13 "flat" profiles, had no obvious complements.

Finding 12 profiles (including the "flat" profiles excluded *a priori* from the cluster analysis, combined with the additional "flat" profiles yielded by the cluster analysis itself) in 155 subjects, eight of which formed complementary pairs, seemed a reasonable solution to the problem of identifying patterns of hypnotizability: the clusters seemed to maximize homogeneity while representing widely shared patterns of hypnotic response. However, as Terhune (2015) correctly notes, cluster analysis is vexed by the problem of determining exactly how many clusters there are in any given data set. In principle, the solution is simple enough: partition the dendrogram at whatever level shows the greatest amalgamation distance from adjacent levels. This is not all that different from using the scree test to determine the number of factors in principal components analysis, or simply looking for eigenvalues greater than 1. Of course, amalgamation distances, like eigenvalues, are not perfectly reliable, which is what injects some uncertainty into the process. This problem seemed insurmountable in 1979 (Everitt, 1979), though more recent model-based approaches to cluster analysis may offer a solution (Fraley & Raftery, 1998).

In a new approach to this problem, Terhune (2015) has employed latent profile analysis, which apparently obviates the clustering problem. Employing the 112-subject standardization sample of the Profile Scales, he obtained the best fit with a four-class model. One of these classes (Pattern 3) consisted almost exclusively of subjects of moderate (rather than high)