DAYDREAMING, ABSORPTION AND HYPNOTIZABILITY

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Abstract: The revised form of the Absorption Scale extracted from Tellegen’s Multidimensional Personality Questionnaire (Tellegen, 1981; Tellegen & Atkinson, 1974) and the Short Imaginal Processes Inventory (Huba, Aneshensel, & Singer, 1981), a self-report questionnaire concerned with daydreaming activity, were administered to 2 samples of Ss (N = 479, N = 476), who also received the Harvard Group Scale of Hypnotic Susceptibility, Form A (Shor & E. Orne, 1962). In both samples, hypnotizability was significantly correlated with absorption (average r = .24) and with a subscale measuring positive-constructive daydreaming (average r = .13). Absorption and positive-constructive daydreaming were also highly correlated (average r = .57). Of the subscales of the positive-constructive daydreaming scale, only those relating to positive reactions to daydreaming, and problem solving in daydreaming, consistently correlated with hypnotizability. Daydreaming and absorption each share some features in common with hypnosis, but they appear to have more in common with each other.

The finding of relatively stable individual differences in response to hypnosis has led investigators of all theoretical persuasions to search for correlates of hypnotizability within the wider domain of personality. Because hypnosis involves imaginative activity, at least in part, attention has focused on vividness of mental imagery and the frequency and intensity of involvement in fantasy. Thus, response to hypnotic procedures generally correlates with scores on such scales as the Tellegen Absorption Scale (e.g., Tellegen, 1981; Tellegen & Atkinson, 1974) and Betts’ Questionnaire upon Mental Imagery (see Sheehan, 1979, 1982). Another ap-

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proach to this problem begins with the observation that hypnosis shares features with a wide variety of other subjective states (E. R. Hilgard, 1965; Kihlstrom, 1984). Many of these states, such as meditation and daydreaming, seem to draw on the same abilities for imagery and absorption that seem so important for hypnosis. For this reason, it seems reasonable to hypothesize that hypnotizability may be related to individual differences in various parameters of sleep, meditation, biofeedback, and daydreaming activity.

Daydreaming may be defined as stimulus-independent or task-irrelevant cognitive activity in which internally generated fantasy material intrudes on an individual's primary waking task of dealing with external events (Pope & Singer, 1978; Singer, 1974, 1975, 1978). Daydreaming and related forms of reverie often involve vivid mental images of the sort that can be elicited through suggestion in hypnotizable individuals. According to Singer's (1974, 1975, 1978; Pope & Singer, 1978) analysis, they also involve a passive, nonanalytic mode of attending similar to that involved in certain meditative states and hypnosis. Singer and Pope (1981) suggested that daydreaming was especially strongly related to self-hypnosis, on the grounds that both are primarily concerned with internally generated cognitive events. It seems, however, that no firm distinctions can be drawn between hetero-hypnosis (in which a hypnotist gives suggestions to an individual) and self-hypnosis (in which individuals give suggestions to themselves), because in both cases the person participates actively in constructing responses to suggestions (Kihlstrom, 1985; M. T. Orne & McConkey, 1981).

Although the hypothesis that hypnotizability is related to daydreaming activity is attractive, little empirical data has been generated to test it. J. R. Hilgard (1979), in an intensive interview study, found that the frequency of daydreaming during childhood was unrelated to hypnotizability. Crawford (1982) related hypnotizability to patterns of adult daydreaming activity, as measured by the long form of the Imaginal Processes Inventory (IPI) of Singer and Antrobus (1972). Overall, hypnotizability appeared to be correlated with 3 of the 28 rational subscales of IPI — those assessing the occurrence of visual and auditory imagery in daydreams, as well as a scale of hallucinatory vividness. These subscales (among others) load highly on the Positive-Vivid Daydreaming factor of IPI, leading Crawford (1982) to conclude that hypnotizability is associated with the use of daydreaming for planning and enjoyment.

Although Crawford (1982) employed optimal measures of hypnotizability (the individually administered Stanford Hypnotic Susceptibility Scale, Forms A and C, Weitzenhoffer & E. R. Hilgard, 1959 and 1962, respectively), the sample employed was relatively small (N = 56). For that reason, none of the three "significant" daydreaming correlates actually met her strictest criterion for statistical significance, after applying the
Bonferroni procedure to correct for the possibility of inflated Type I error. The purpose of the present study was to further investigate the relationship between hypnosis and daydreaming activity, using a larger sample size.

**METHOD**

**Subjects**

A total of 955 college students volunteered for a study concerned with individual differences in hypnotizability. Data were collected across two semesters, so the total actually comprised two samples, A ($N = 479$) and B ($N = 476$). In return for their participation, Ss received points toward the extra credit option in their introductory psychology course. The Ss were tested in group sessions (each consisting of approximately 120 Ss) lasting approximately 1 to 1.5 hours.

**Procedure**

At the beginning of the experimental session, Ss completed a questionnaire consisting of the revised form of the Absorption Scale extracted from Tellegen's Multidimensional Personality Questionnaire (TAS) of Tellegen (1981) and Tellegen and Atkinson (1974) and the Short Imaginal Processes Inventory (SIPI) of Huba, Aneshensel, and Singer (1981). The TAS assesses the degree to which an individual is emotionally responsive to sights and sounds and is readily captured by, and becomes absorbed in, environmental stimuli, memories, images, and fantasies. Scores on TAS correlate reliably with hypnotizability. The revised form is psychometrically improved over the earlier version (Tellegen, 1981). The SIPI is an abbreviated form of IPI, containing items representative of three second-order dimensions obtained in factor analyses of the 28 IPI scales: Positive-Constructive Daydreaming, Guilty-Dysphoric Daydreaming, and Poor Attentional Control. The SIPI was employed in the present study because it samples the essential dimensions of daydreaming activity in a more economical manner than does the original IPI (Huba et al., 1981; Tower & Singer, 1981). In Sample A, the SIPI items were rated on a 1-5 scale; those in Sample B appeared in the original SIPI dichotomous format.

Following completion of the questionnaire, Ss received a tape-recorded administration of the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGS:SHS::A) of Shor and E. C. Orne (1962). During the remainder of the semester, some Ss were invited to return to the laboratory for an individual administration of the Stanford Hypnotic Susceptibility Scale, Form C (SHSS::C) of Weitzenhoffer and E. R. Hilgard (1962). In Sample A, an attempt was made to recruit Ss from all levels of HGS:SHS::A for this second session; in Sample B, recruitment efforts were focused on those scoring on the highest range of HGS:SHS::A.

*See Footnote 4.
TABLE 1

<table>
<thead>
<tr>
<th>Scale</th>
<th>HGSHS:A</th>
<th>PAC</th>
<th>PCD</th>
<th>GDD</th>
<th>TAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGSHS:A</td>
<td>—</td>
<td>0.03</td>
<td>0.12**</td>
<td>0.11*</td>
<td>0.22***</td>
</tr>
<tr>
<td>PAC</td>
<td>—0.05</td>
<td>—</td>
<td>0.04</td>
<td>0.39***</td>
<td>0.01</td>
</tr>
<tr>
<td>PCD</td>
<td>0.13**</td>
<td>0.01</td>
<td>—</td>
<td>0.34***</td>
<td>0.66***</td>
</tr>
<tr>
<td>GDD</td>
<td>0.03</td>
<td>0.34***</td>
<td>0.19***</td>
<td>—</td>
<td>0.49***</td>
</tr>
<tr>
<td>TAS</td>
<td>0.26***</td>
<td>—0.01</td>
<td>0.46***</td>
<td>0.27***</td>
<td>—</td>
</tr>
</tbody>
</table>

Note.—TAS = Tellegen Absorption Scale; PCD = Positive-Constructive Daydreaming; GDD = Guilty-Dysphoric Daydreaming; PAC = Poor Attentional Control. Values above the diagonal are for Sample A; those below the diagonal are for Sample B.

*p < .05.

**p < .01.

***p < .001.

RESULTS

The mean HGSHS:A score (revised through addition of a reversibility criterion of posthypnotic amnesia; see Kihlstrom & Register, 1984) for Sample A was 6.57 (S.D. = 2.35); the mean for Sample B was 6.66 (S.D. = 2.46). Corresponding scores on TAS and SIPI were also similar to those typically obtained in large samples of college student volunteers.

Correlations with Absorption and Daydreaming

Table 1 presents the correlations between scores on HGSHS:A, TAS, and the three major SIPI scales. As expected, hypnotizability correlated significantly with TAS score in both samples (both p < .001). In addition, hypnotizability was consistently correlated with scores on the Positive-Constructive Daydreaming scale of SIPI (both p < .01). Sample A showed a significant correlation between hypnotizability and the Guilty-Dysphoric Daydreaming scale of SIPI (p < .05), but this was not confirmed in Sample B. Hypnotizability was not correlated with the Poor Attentional Control scale of SIPI in either sample. In both samples, the correlation of hypnotizability with absorption on TAS was significantly higher than that with Positive-Constructive Daydreaming (both p < .001).

In order to provide a more fine-grained analysis of daydreaming activity, each 15-item SIPI scale was further broken down into its constituent subscales. The Positive-Constructive and Guilty-Dysphoric Daydreaming scales contain five 3-item scales each, while the Poor Attentional Control scale contains three 5-item scales. The subscales are: for Positive-Constructive Daydreaming, Acceptance of Daydreaming (A), Positive Reactions to Daydreaming (PR), Visual and Auditory Imagery in Daydreams (I), Problem-Solving Daydreams (PS), and Future Orientation in Daydreams (FO); for Guilty-Dysphoric Daydreaming, Frightened Reactions to Daydreaming (FR), Achievement-Oriented Daydreams (AO), Fear of Failure Daydreams (FF), Hostile Daydreams (H), and Guilt Daydreams (G); and for Poor Attention Control, Mindwandering (M), Boredom Sus-


TABLE 2

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Sample A (N = 479)</th>
<th>Sample B (N = 476)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive-Constructive Daydreaming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptance (A)</td>
<td>0.09*</td>
<td>0.10*</td>
</tr>
<tr>
<td>Positive Reactions (PR)</td>
<td>0.16***</td>
<td>0.09*</td>
</tr>
<tr>
<td>Imagery (I)</td>
<td>-.01</td>
<td>0.12**</td>
</tr>
<tr>
<td>Problem-Solving (PS)</td>
<td>0.14**</td>
<td>0.09*</td>
</tr>
<tr>
<td>Future Orientation (FO)</td>
<td>0.07</td>
<td>0.00</td>
</tr>
<tr>
<td>Guilty-Dysphoric Daydreaming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frightened Reactions (FR)</td>
<td>0.08</td>
<td>0.02</td>
</tr>
<tr>
<td>Achievement Orientation (AO)</td>
<td>0.09*</td>
<td>-.04</td>
</tr>
<tr>
<td>Fear of Failure (FF)</td>
<td>0.05</td>
<td>0.12**</td>
</tr>
<tr>
<td>Hostile (H)</td>
<td>0.01</td>
<td>-.03</td>
</tr>
<tr>
<td>Guilt (G)</td>
<td>0.14**</td>
<td>0.02</td>
</tr>
<tr>
<td>Poor Attentional Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mindwandering (M)</td>
<td>0.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Boredom Susceptibility (BS)</td>
<td>0.00</td>
<td>-.09*</td>
</tr>
<tr>
<td>Distractibility (D)</td>
<td>0.00</td>
<td>-.05</td>
</tr>
</tbody>
</table>

*p < .05.

**p < .01.

***p < .001.

ceptibility (BS), and Distractibility (D). These 13 subscales also appear in the longer IPI from which SIPI was derived.\(^5\)

Table 2 shows the correlations between hypnotizability and each of these subscales. It appears that the consistent correlation between hypnotizability and positive-constructive daydreaming is carried largely by three subscales — Acceptance of Daydreaming, Positive Reactions to Daydreaming, and Problem-Solving. No other subscales consistently correlated with hypnotizability.

**SHSS:C Subsamples**

A total of 138 Ss returned for SHSS:C (Sample A, N = 100; Sample B, N = 38). Because of the manner in which they were selected, with an emphasis on those Ss with the highest HGSHS:A scores, these Ss should not be considered representative of the general population, although they are probably fairly representative of the subpopulation of highly hypnotizable individuals. Table 3 shows the correlations between SHSS:C scores and scores on TAS and the major SIPI scales for both samples. In Sample A, hypnotizability was significantly correlated, as expected, with both absorption and positive-constructive daydreaming. These two scales were

\(^5\)IPI scales that are not represented on SIPI are: Past in Daydreams, Bizarre-Improbable Daydreams, Hallucinatory-Vividness of Daydreams, Interpersonal Curiosity, Need for External Stimulation, Self-Revelation, Absorption in Daydreaming, Present-Oriented Daydreaming, Sexual Daydreams, Heroic Daydreams, Impersonal-Mechanical Curiosity, Mentation Rate, Daydreaming Frequency, and Nightdreaming Frequency.
TABLE 3
CORRELATIONS BETWEEN SHSS:C Score, Absorption, and Daydreaming

<table>
<thead>
<tr>
<th>Scale</th>
<th>SHSS:C</th>
<th>PAC</th>
<th>PCD</th>
<th>GDD</th>
<th>TAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHSS:C</td>
<td>—</td>
<td>0.05</td>
<td>0.20*</td>
<td>0.14</td>
<td>0.26**</td>
</tr>
<tr>
<td>PAC</td>
<td>-0.05</td>
<td>—</td>
<td>0.22*</td>
<td>0.48***</td>
<td>0.15</td>
</tr>
<tr>
<td>PCD</td>
<td>0.13</td>
<td>0.01</td>
<td>—</td>
<td>0.48***</td>
<td>0.66***</td>
</tr>
<tr>
<td>GDD</td>
<td>0.03</td>
<td>0.34*</td>
<td>0.19</td>
<td>—</td>
<td>0.60***</td>
</tr>
<tr>
<td>TAS</td>
<td>0.26</td>
<td>-0.01</td>
<td>0.46**</td>
<td>0.27</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. — TAS = Tellegen Absorption Scale; PCD = Positive-Constructive Daydreaming; GDD = Guilty-Dysphoric Daydreaming; PAC = Poor Attentional Control. Values above the diagonal are for Sample A; those below the diagonal are for Sample B.

*p < .05.
**p < .01.
***p < .001.

also the strongest correlates in Sample B, although neither was statistically significant due to the small sample size.

Multiple Regression Analysis

Although absorption was highly correlated with positive-constructive daydreaming, stepwise multiple regression analyses were performed to determine whether positive-constructive daydreaming would make any independent contribution to the prediction of hypnotizability. Because TAS is an established predictor of hypnotizability, this score was entered first, followed by the Positive-Constructive Daydreaming subscale of SIPI (in fact, TAS would have been the first variable entered in unconstrained solutions as well); the remaining SIPI subscales, which did not correlate with hypnotizability, were not employed in these analyses. In addition, the squares of the TAS and Positive-Constructive Daydreaming subscale values were also entered into the equation, in order to determine whether the relations between predictor variables and criteria might be nonlinear (in fact, they were not). In both samples, the multiple Rs obtained in the first step of the regression, with TAS alone, (.26 and .23, respectively) were not increased by the inclusion of any of the other variables. Thus, when absorption was taken into account, daydreaming activity made no independent contribution to the prediction of hypnotizability.

DISCUSSION

The findings of the present research are consistent with the hypothesis that hypnotic responsiveness is related to certain aspects of daydreaming style. Specifically, hypnotizability is significantly correlated with the tendency to enjoy daydreaming and to use it for recreational and planning purposes. These findings confirm the suggestion of Singer and Pope (1981) that daydreaming and hypnosis share certain features, and Crawford's (1982) finding of an empirical relationship between hypnotizability and subscale scores derived from an extensive survey of daydreaming activity.
Essentially the same results were obtained from both samples, indicating that the results generalize across questionnaire format. The only major discrepancy between them was with respect to the Guilty-Dysphoric Daydreaming scale of SIPI, where Sample A yielded a significant correlation with hypnotizability but Sample B did not. Inspection of Table 1, however, indicates that this scale showed higher correlations with positive-constructive daydreaming and with absorption in Sample 1 than in Sample 2. Because the Positive-Constructive Daydreaming subscale and TAS consistently correlated with hypnotizability, the anomalous correlation in Sample A might have been an artifact of the factor structure in that sample. In fact, when the TAS and SIPI scales were submitted to principal-components factor analysis, Sample B, which employed the original dichotomous SIPI response format, yielded a factor structure more closely conforming to the second-order factor structure of the original IPI obtained by Singer and Antrobus (1963; Huba et al., 1981) and built into SIPI. For this reason, it is probably safe to conclude, despite the results from Sample A, that guilty-dysphoric daydreaming does not correlate with hypnotizability. Again, this conclusion is consistent with Crawford's (1982) results.

The present results differ from Crawford's (1982) somewhat, however, in terms of the specific aspects of daydreaming activity that are associated with hypnosis. Crawford found that hypnotizability correlated consistently (i.e., in both men and women) with three subscales tapping imagery variables: the presence of visual and auditory imagery in daydreams and the hallucinatory vividness of daydream imagery. In the present study, the imagery subscale, including both visual and auditory items, did not correlate significantly with hypnotizability; unfortunately, the hallucinatory vividness subscale is not represented on the short form (SIPI) of the daydreaming questionnaire used in this study. Crawford (1982) did not find consistent correlations between hypnotizability and scales measuring acceptance, positive reactions, and problem solving—the subscales that consistently yielded significant correlations in the present study. Not too much interpretive weight should be given to any of the correlations between hypnotizability and daydreaming subscales, until a full replication with reliable subscale measurements (such as those provided by the long, original IPI) has been completed. The important point made by Crawford (1982), and confirmed in the present study, is that hypnotizability is related to positive-constructive rather than guilty-dysphoric daydreaming.6

At the same time, however, it should be noted that hypnotizability was not as strongly related to positive-constructive daydreaming as it was to

6The two studies agree that absorption and hypnosis are not correlated with daydreaming scales reflecting poor attentional control. This is somewhat surprising: given the theoretical emphasis in both domains on the narrowing of attention and exclusion of potentially distracting input, negative correlations with this aspect of daydreaming might have been expected.
absorption. Whatever it is that absorption and hypnosis share, relatively little of that common variance is also shared with daydreaming activity. A good case can be made, however, for a strong tie between absorption and daydreaming activity of all sorts. Both require intense involvement in imaginative activity and the virtual exclusion of extraneous stimuli. Hypnosis, however, requires the individual to interact with the hypnotist in order to respond to suggestions for alterations in perception and memory. In the laboratory measurement of hypnotizability, for example, S is given only a relatively short time to become fully engaged with a particular suggested experience before it is time to move on to the next test item. And even with items that permit extended imaginative involvement, S may still be required to respond to E's instructions and queries.

Perhaps a stronger link will be found between daydreaming and a form of self-hypnosis, commonly found in the clinic, that closely resembles waking reverie (Fromm, Brown, Hurt, Oberlander, Boxer, & Pfeifer, 1981; Gardner, 1981; Sacerdote, 1981). In this technique, individuals use a standard induction procedure, and then are allowed to construct and administer suggestions to themselves, with little or no interference on the part of a hypnotist. Practiced in this manner, hypnosis apparently emphasizes relaxation and reverie, with individuals passively experiencing the flow of spontaneous ideas and images, rather than attempting to experience the kinds of suggestions offered on the standardized scales (Johnson, 1981; Kihlstrom, 1985; M. T. Orne & McConkey, 1981). As Singer and Pope (1981) have suggested, this form of self-initiated and self-guided hypnosis has much more in common with daydreaming and reverie than does hypnosis as it is understood in the laboratory. There is a general preoccupation with the individual's "private agenda," rather than the instructions and suggestions of some other person. Furthermore, attentional control is maintained by the individual experiencing the state, rather than shifted by the individual at the suggestion of someone else. A propensity for (and enjoyment of) daydreaming may well be a strong predisposing factor for successfully experiencing these sorts of reveries during hypnosis, even if they do not offer the individual much help in responding to the hypnotist's suggestions.

REFERENCES


Wachträumen, Absorption und Hypnotisierbarkeit

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Réverie, absorption, et hypnotisabilité

Irene P. Hoyt, Robert Nadon, Patricia A. Register, Joseph Chorny, William Fleeson, Ellen M. Grigorian, Laura Otto et John F. Kihlstrom


Ensoñación diurna, absorción y sugestibilidad hipnótica

Irene P. Hoyt, Robert Nadon, Patricia A. Register, Joseph Chorny, William Fleeson, Ellen M. Grigorian, Laura Otto y John F. Kihlstrom

Resumen: A dos muestras de sujetos (N = 479 y N = 476) se les administró la forma revisada de la Absorption Scale extractada de la Tellegen’s Multidimensional Personality Questionnaire (Tellegen, 1981, 1982; Tellegen y Atkinson, 1974) y el Short Imaginal Processes Inventory (Huba, Aneshensel y Singer, 1981) que es un cuestionario sobre las ensoñaciones del sujeto; además también recibieron la Harvard Group Scale of Hypnotic
Susceptibility, Form A (Shor y E. Orne, 1962). En ambas muestras la sugestibilidad estuvo significativamente correlacionada con la absorción (promedio $r = .24$) y con una subescala que mide ensoñaciones positivas-constructivas (promedio $r = .13$). La absorción y la ensoñación positiva-constructiva estaban también altamente correlacionadas (promedio $r = .57$). De las subescalas de la escala de ensoñaciones positivas-constructivas, sólo aquellas relacionadas con las reacciones positivas a la ensoñación y resolución de problemas en la ensoñación, se correlacionaron consistentemente con la sugestibilidad hipnótica. La ensoñación y la absorción comparten algunos caracteres comunes con la hipnosis, pero ambas parecen tener un mayor número de caracteres en común.