Contemporary Hypnosis (2004)
Vol. 21, No. 4, 2004 pp. 161–168

THE FIVE FACTOR MODEL OF PERSONALITY AND HYPNOTIZABILITY: LITTLE VARIANCE IN COMMON

Joseph P. Green

Psychology Department, The Ohio State University, Lima, USA

Abstract

The present study examined the responses of N = 285 undergraduate students on the NEO-PI-R (Costa and McCrae, 1992) and the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor and Orne, 1962). Participants' gender and their scores across the five domain scales of the NEO-PI-R accounted for approximately 8% (6% adjusted) of the variance in HGSHS:A scores. Individual facet scores on the NEO-PI-R accounted for approximately 21% (12% adjusted) of the variance in HGSHS:A performance. Results are consistent with previous attempts to associate hypnotizability with a measure of the five factor model of personality.

Key words: five factor model, hypnotizability, personality

Introduction

Hypnotizability is purported to be a trait-like characteristic of personality (Hilgard, 1965) that is stable over time (Morgan, Johnson and Hilgard, 1974; Piccione, Hilgard, and Zimbardo, 1989). Given this conceptualization of hypnotizability, it is surprising that hypnosis researchers have been largely unsuccessful in identifying measures that reliably predict hypnotic responsiveness. Early reviews (e.g. Weitzenhoffer, 1953; Barber and Glass, 1962; Deckert and West, 1963; Barber, 1964; Hilgard, 1965, 1967) found little evidence that hypnotic responsiveness could be predicted from standardized measures of personality. While many studies have reported a correlation between a given personality trait and responsiveness to hypnotic suggestions, subsequent attempts to replicate the association have generally failed (see Barber, 1964). In a more recent review, Kirsch and Council (1992: 277) concluded that 'the search for dispositional correlates of hypnotizability continues to yield surprisingly meager results for a behavior that appears to be relatively stable'.

Over the last two decades, the five factor model [neuroticism (N), openness (O), extraversion (E), agreeableness (A), and conscientiousness (C)] has gained popularity as an acceptable tool for assessing a wide range of normal personality characteristics (Costa and McCrae, 1997). Soon after the publication of the five factor model, hypnosis researchers began investigating whether personality characteristics assessed by the five factor model were associated with hypnotizability.

Malinoski and Lynn (1999) were the first to examine the ability of a so-called 'Big Five' inventory to predict hypnotic responsiveness. Along with various other measures, they administered the 60-item NEO-Five Factor Inventory (NEO-FFI; Costa and McCrae, 1991) and the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor

and Orne, 1962) to N = 227 undergraduate students. While none of the five factors correlated with behavioural scores on the HGSHS:A, two of the factor scores were linked with subjective measures of hypnosis. The NEO-FFI's A factor correlated with subjective involvement and perceived involuntariness during hypnosis (r = 0.23, r = 0.24 respectively), and the E factor correlated with involuntariness (r = 0.25).

Recently, Nordenstrom, Council, and Meier (2002) administered the Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGS; Bowers, 1998) and the 44-item Big Five Inventory (BFI; John, Donahue and Kentle, 1991) to N = 182 undergraduates. Like the NEO-FFI, the BFI is a relatively short measure of normal personality based on the five factor model. Nordenstrom et al. (2002) found significant correlations between the BFI's O scale and the WSGS's behavioural and subjective involvement scores (r = 0.18, r = 0.16, respectively). Similar to the finding of Malinoski and Lynn (1999), the authors found a significant correlation between the BFI's measure of E and a measure of subjective involvement during hypnosis (r = 0.16). The remaining BFI scale scores did not meaningfully correlate with either the behavioural or subjective measures of hypnotic responsiveness.

Glisky, Tataryn, Tobias, Kihlstrom and McConkey (1991, study 3) examined the responses of N = 540 participants who completed the 48-item O scale of the NEO-PI-R and were hypnotized with the HGSHS:A. A correlation of r = 0.16 ($p < 0.001$) was obtained between the O domain and hypnotizability. When the O domain was broken down into its six subscales or facet scores, hypnotizability was found to correlate with the O1 ('fantasy'), O2 ('aesthetics'), and O3 ('feelings') facets (r's = 0.10, 0.14, and 0.16, respectively).

Kihlstrom, Glisky, and Trapnell (1992) found three fairly orthogonal dimensions underlying the NEO-PI-R's O factor: absorption, intellectance, and liberalism (or traditionalism). Culling items from various scales, they developed a 36-item absorption-intellectance-traditionalism (AIT) questionnaire. Glisky and Kihlstrom (1993) surveyed N = 651 undergraduates with the AIT and the HGSHS:A. Only the absorption subscale significantly correlated with hypnotizability (r = 0.15). Similarly, Radke and Stam (1991) obtained significant correlations between measures of openness and absorption, and between absorption and hypnotizability, but not between openness and hypnotizability. Despite the fact that absorption and openness are conceptually related constructs and that there is empirical evidence tying the two constructs together (see Glisky et al., 1991), measures of absorption appear to do a much better job of predicting hypnotic responsiveness than do indices of openness.

Collectively, these investigations have failed to secure evidence that the five factor model can predict behavioural responsiveness to standardized hypnotic suggestions in any consistent or meaningful way. However, all of these investigations are limited, to some extent, by the fact that they used shortened versions of the NEO personality inventory. The use of shortened or abbreviated scales invariably results in a trade off between precision of measurement and convenience, as noted by Costa and McCrae (1992), while the shorter NEO-FFI scales account for as much as 85%, *on average*, of the variance in convergent criteria as the full factor scores, 'the NEO-FFI scales are not equivalent to the full domain scales of the NEO-PI-R' (p. 54).

The present study set out to examine undergraduate students' responses to the entire 240-item NEO-PI-R and their performance on the HGSHS:A. Unlike previous investigations that have assessed personality and hypnotizability within the same testing session, participants were assessed with the NEO-PI-R and the HGSHS:A in two separate, purportedly unrelated, experimental sessions separated by several weeks. Finally, a Sum-

True index was calculated across all of the NEO-PI-R items to determine whether an acquiescence response bias on the personality inventory might predict hypnotizability. The inclusion of a Sum-True index builds on the work by Hilgard, Lauer and Cuca (1965) that previously linked Sum-True scores (on a shortened version of the MMPI) with hypnotizability.

Method

Participants

A total of N = 285 (n = 109 male; n = 176 female) undergraduate students (M age = 20.13; SD = 3.84) enrolled at The Ohio State University, Lima, completed both the NEO-PI-R and the HGSHS:A.

Procedure

Students enrolled in introductory psychology classes at The Ohio State University, Lima, were invited to complete the NEO-PI-R as a 'take-home' assignment. Students were given two days to complete the personality inventory as part of a study on personality and return it for extra course credit. Approximately three weeks later, the students participated in an in-class 'hypnosis' experiment where the HGSHS:A was administered (class size ranged from 18 to 65 students). Two different experimenters conducted each phase of the study and no mention was made linking the two sessions together.

Materials

The NEO-PI-R

The 240-item revised NEO personality inventory measures adult personality across five major domains: neuroticism (N), extraversion (E), openness (O), agreeableness (A), and conscientiousness (C). Six subscales, or facet scales, comprise each of the five domain scales and represent important constructs within each domain. The NEO-PI-R is a widely used measure of normal personality and has adequate reliability and validity data supporting its use (see Costa and McCrae, 1992, for a review of the psychometric properties of the instrument). A Sum-True score was obtained for each participant by summing the number of 'agree' or 'strongly agree' responses across each of the 240 items.

The Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A)

The HGSHS:A (Shor and Orne, 1962) is a 12-item self-report measure of responsiveness to standardized behavioural suggestions administered in a group format. The instrument has been shown to have adequate test-retest reliability ($r > 0.80$; Bowers, 1981) and to correlate in the $r = 0.60$ range (Bentler and Roberts, 1963; Evans and Schmeidler, 1966) with the so-called 'gold standard' of hypnotic susceptibility, the individually administered Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1965).

Results

Preliminary analyses

Female participants (M = 6.23, SD = 2.91) scored significantly higher on the HGSHS:A than male participants (M = 5.15, SD = 3.02, $F(1,283) = 9.73$, $p < 0.010$). Results from a

multivariate analysis of variance (MANOVA) revealed that female participants scored significantly higher across the N (M female = 100.85, SD = 23.47; M male = 93.02, SD = 20.95), O (M female = 114.28, SD = 18.47; M male = 109.38, SD = 17.04), and A (M female = 115.28, SD = 18.76; M male = 110.28, SD = 18.25) domain scales, all F's (1,283) > 4.88, all p's < 0.05. Means and standard deviations for the E and C domain scales are reported in Table 1.

Primary analyses

A standard multiple regression analysis was performed with the five NEO-PI-R domain raw scores and participants' gender serving as predictor variables. Table 1 displays the correlations among the five domain scores, gender, and the HGSHS:A; the unstandardized regression coefficients (B) and the intercept; the standardized regression coefficients (Beta); the squared semipartial correlations (sr2); adjusted and unadjusted R2; and the means and standard deviations for the variables in question.

As can be seen in Table 1, zero-order correlations between gender, E, and A scores and performance on the HGSHS:A were significant. Results from the regression analysis showed that altogether about 8% (6% adjusted) of the variance in hypnotizability scores could be accounted for by knowing participants' gender and their scores across all five domain scales. Scores from the N, E, and A scales, along with gender, accounted for nearly all of the explained variance (0.078 / 0.082 = 95%).

Given that little is known about the relation between the other facet scores and hypnotizability, another regression analysis examined the ability of all 30 facets along with participants' gender to predict hypnotizability. Table 2 displays the correlations among the five facet scores that significantly predicted HGSHS:A scores. As before, the standard multiple regression statistics are listed in the table along with the means and standard deviations for the variables in question. As can be gleaned from this table, five facet scores (N6: 'vulnerability'; E6: 'positive emotions'; O6: 'values'; O3: 'feelings'; and A2: 'straightforwardness') accounted for approximately 12% of the variance in hypnotizability. An additional 10% of the total variance in HGSHS:A scores was shared among all 30 facet scores and gender (unadjusted R2 = 0.21).

Finally, there was no evidence suggesting that participants' tendency to agree with statements on the NEO-PI-R (i.e. Sum-True) was associated with performance on the HGSHS:A (r = 0.05). The correlation between Sum-True and HGSHS:A scores was not only small in magnitude but also indistinguishable among male (r = - 0.02) and female (r = 0.09) participants, Z = 0.82, p > 0.41.

Discussion

This present study obtained significant zero-order correlations between the E and A domain scores on the NEO-PI-R and hypnotic responsiveness as measured by the HGSHS:A. Furthermore, in the presence of E, A, and gender, scores on the N domain also contributed to predicting HGSHS:A performance. Unlike previous studies by Nordenstrom et al. (2002) and by Glisky et al. (1991, study 3), this study failed to find any association between the O domain and performance on the HGSHS:A. Consistent with previous investigations, the correlations obtained were small in magnitude. All five domain scores accounted for only about 8% (6% adjusted) of the variance in HGSHS:A scores. Whether personality is assessed by the NEO-PI-R (as was the case in this study), or by the NEO-FFI (Malinoski and Lynn, 1999), or the BFI (Nordenstrom et al., 2002) or by the singular use of the O domain scale (Glisky et al., 1991, study 3), the relation

Table 1. Standard multiple regression of the five NEO-PI-R domain raw scores and performance on the HGSHS:A

Variables	HGSHS:A (DV)	Gender	N	E	O	A	C	B	Beta	sr^2 (unique)
HGSHS:A										
Gender	0.18**							0.80	0.13*	0.015
N	0.10	0.16**						0.23	0.18*	0.022
E	0.13*	0.09	– 0.37**					0.03	0.19**	0.025
O	0.00	0.14*	– 0.16**	0.38**				0.02	– 0.09	0.007
A	0.12*	0.14*	– 0.32**	0.23**	0.22**			0.02	0.14*	0.016
C	0.01	0.12*	– 0.34**	0.21**	0.10	0.34**		0.00	– 0.02	0.000
								Intercept = – 1.36		
Means	5.85	–	97.85	120.50	112.41	113.36	110.19			R2 = 0.082a
Standard dev.	3.00	–	22.83	21.68	18.06	18.69	18.85			Adjusted R2 = 0.063
										R = 0.29 **

Note: Gender coded as 1 = male and 2 = female.

* $p < 0.05$; ** $p < 0.01$.

sr^2 squared semipartial correlation (reflects amount by which R2 would be reduced if variable eliminated from equation)

[a] Unique variability among four significant predictors = 0.078; shared variability among all five domain raw scores and gender = 0.004.

Table 2. Standard multiple regression of NEO-PI-R facet scores and performance on the HGSHS:A

Significant variables	HGSHS:A (DV)	N6	E6	O6	O3	A2	B	Beta	sr^2 (unique)
HGSHS:A									
N6	0.15*						0.17	0.26**	0.021
E6	0.16**	– 0.38**					0.20	0.33**	0.033
O6	0.12*	– 0.18**	0.16**				0.17	0.22**	0.032
O3	0.04	– 0.03	0.43**	0.26**			– 0.15	– 0.21*	0.018
A2	0.13*	– 0.16**	0.20**	0.05	0.04		0.09	0.16*	0.012
							Intercept = – 2.21		
Means	5.85	12.87	21.12	19.35	21.67	18.63			$R^2 = 0.212^a$
Standard dev.	3.00	4.51	5.09	3.87	4.20	5.15			Adjusted $R^2 = 0.116$
									R = 0.46 **

* $p < 0.05$; ** $p < 0.01$.

sr^2 = squared semipartial correlation (reflects amount by which R^2 would be reduced if variable eliminated from equation)

[a] Unique variability = 0.116; shared variability among all 30 facet scores and gender = 0.096.

between domain scores and hypnotic responsiveness appears to be quite limited. Indeed, findings from all of these studies are consistent in that the correlations between domain scale scores and hypnotizability failed to reach the r = 0.20 level.

Not surprisingly, using the 30 individual facet scores, relative to using the more broadly determined domain scores, resulted in improved prediction of hypnotizability (unadjusted R2 = 0.21). After adjusting for the number of independent variables in the equation, less than 12% of the variance in HGSHS:A scores could be accounted for by knowing participants' gender and their scores across the 30 facet scales. Finally, the present study failed to find any link between acquiescent response bias on the NEO-PI-R and performance on the HGSHS:A. It should be noted that including all 30 facet scores as predictor variables is close to stretching the limits of the integrity of the statistical testing relative to the sample size.[1]

An important aspect of the design of this study was the assessment of personality and hypnotizability in different testing contexts, separated by several weeks. It is unclear whether higher correlations would have been obtained between the NEO-PI-R and the HGSHS:A if the two measures were given in a single testing session, or if the assessment of personality was explicitly linked to the assessment of hypnotizability. Previous research has shown that assessing personality and hypnotizability within the same testing context may artificially inflate associations between the measures (see Council, Kirsch and Grant, 1996, for a review of context effects and hypnotizability assessment).

Conclusion

In conclusion, the results from the present study are consistent with findings from other laboratories showing that the traditional assessment of personality characteristics via the five factor model appears to capture very little of the variance in hypnotizability.

Note

1 As recommended by Tabachnick and Fidel (1996), the minimum sample size for standard multiple regression should be 8 times the number of predictors plus 50. According to this rule, the minimum sample size for predicting HGSHS:A scores from the 30 facet scores and gender should have been: 8(31) + 50 = 298.

Acknowledgement

The author wishes to thank Megan L. Snider and Rou Rasekhy for their assistance with data collection and data entry.

References

Barber TX (1964) Hypnotizability, suggestibility and personality: V. A critical review of the findings. Psychological Reports 14: 299–320.

Barber TX, Glass LB (1962) Significant factors in hypnotic behavior. Journal of Abnormal and Social Psychology 64: 222–8.

Bentler PM, Roberts MR (1963) Hypnotic susceptibility assessed in large groups. International Journal of Clinical and Experimental Hypnosis 11: 93–7.

Bowers KS (1981) Do the Stanford scales tap the 'classic suggestion effect'? International Journal of Clinical and Experimental Hypnosis 29: 42–53.

Bowers KS (1998) Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C. Manual and response booklet. International Journal of Clinical and Experimental Hypnosis 46: 250–68.

Costa PT, McCrae RR (1991) NEO-PI/FFI Manual Supplements. Odessa, FL: Psychological Assessment Resources.

Costa PT, McCrae RR (1992) Revised NEO personality Inventory (NEO-PI-R) and NEO Five factor Inventory (NEO-FFI): Professional Manual. Odessa, FL: Psychological Assessment Resources.

Costa PT, McCrae RR (1997) Four ways 5 factors are basic. In: DC Funder and DJ Ozer (eds) Pieces of the Personality Puzzle. New York: W.W. Norton.

Council JR, Kirsch I, Grant D (1996) Imagination, expectancy, and hypnotic responding. In: RG Kunzendorf, NP Spanos and B Wallace (eds) Hypnosis and Imagination. Baywood: New York.

Deckert GH, West LJ (1963) The problem of hypnotizability: a review. International Journal of Clinical and Experimental Hypnosis 11: 205–35.

Evans FJ, Schmeidler D (1966) Relationships between the Harvard Group Scale of Hypnotic Susceptibility and the Stanford Hypnotic Suggestibility Scale. International Journal of Clinical and Experimental Hypnosis 14: 333–43.

Glisky ML, Kihlstrom JF (1993) Hypnotizability and facets of openness. International Journal of Clinical and Experimental Hypnosis 41: 112–23.

Glisky ML, Tataryn DJ, Tobias BA, Kihlstrom JF, McConkey KM (1991) Absorption, openness to experience, and hypnotizability. Journal of Personality and Social Psychology 60: 263–72.

Hilgard ER (1965) Hypnotic Susceptibility. New York: Harcourt.

Hilgard ER (1967) Individual differences in hypnotizability. In: JE Gordan (ed.) Handbook of Clinical and Experimental Hypnosis. New York: Macmillan.

Hilgard ER, Lauer LW, Cuca JM (1965) Acquiescence, hypnotic susceptibility, and the MMPI. Journal of Consulting Psychology 29: 489.

John OP, Donahue EM, Kentle RL (1991) The 'Big Five' Inventory: Versions 4a and 54. Unpublished manuscript, Institute of Personality Assessment and Research, Berkeley, CA.

Kihlstrom JF, Glisky ML, Trapnell P (1992) Will the real fifth factor please stand up? The 'big five' structure of personality in language and behavior. Unpublished manuscript, University of Arizona.

Kirsch I, Council JR (1992) Situational and personality correlates of hypnotic responsiveness. In: E Fromm and MR Nash (eds) Contemporary Hypnosis Research. New York: Guilford.

Malinoski PT, Lynn SJ (1999) The plasticity of early memory reports: social pressure, hypnotizability, compliance, and interrogative suggestibility. International Journal of Clinical and Experimental Hypnosis 47: 320–45.

Morgan AH, Johnson DL, Hilgard ER (1974) The stability of hypnotic susceptibility: a longitudinal study. International Journal of Clinical and Experimental Hypnosis 22: 249–57.

Nordenstrom BK, Council JR, Meier BP (2002) The 'big five' and hypnotic susceptibility. International Journal of Clinical and Experimental Hypnosis 50: 276–81.

Piccione C, Hilgard ER, Zimbardo PG (1989) On the degree of stability of measured hypnotizability over a 25-year period. Journal of Personality and Social Psychology 56: 289–95.

Radke HL, Stam HJ (1991) The relation between absorption, openness to experience, anhedonia, and susceptibility. International Journal of Clinical and Experimental Hypnosis 39: 39–56.

Shor RE, Orne MT (1962) Harvard Group Scale of Hypnotic Susceptibility, Form A. Palo Alto, CA: Consulting Psychologists Press.

Tabachnick BG, Fidel LS (1996) Using Multivariate Statistics, 3rd edn. New York: Harper Collins.

Weitzenhoffer AM (1953) Hypnotism: An Objective Study in Suggestibility. New York: Wiley.

Weitzenhoffer AM, Hilgard ER (1965) Stanford Hypnotic Susceptibility Scale, Form C. Palo Alto, CA: Consulting Psychologists Press.

Address for correspondence:
Joseph P.Green
Psychology Department
The Ohio State University
Lima
Ohio 45804
Email: green.301@osu.edu