Experienced Involuntariness, Subjective Success, and Assessments of Hypnotic Response

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Abstract

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Response to hypnotic suggestions is typically evaluated in terms of overt behavioral response, but the experience of hypnosis goes beyond publicly observable actions. In the classic instance, hypnotic behavior is accompanied by the subjective conviction that the suggested state of affairs is real, and by the experience of involuntariness in response (Kihlstrom, 2008b). In particular, the experience of involuntariness has played an important part in theorizing about hypnosis (for thorough reviews, see Lynn, Rhue, & Weekes, 1989, 1990). Thus, from the point of view of Arnold's (1946) theory of ideomotor action, behavioral responses to hypnotic suggestions occurred whenever the subject vividly imagines the suggested state of affairs. In Hilgard's (1977) neodissociation theory, the experience of involuntariness reflects a division of consciousness, such that the internal processes that generate voluntary responses to suggestions go on outside phenomenal awareness (see also Shor, 1979). From this point of view, the experience of involuntariness is illusory (Kihlstrom, 1992). On the other hand, Woody and Bowers (1994) have suggested that the experience of involuntariness reflects a genuine shift in the hierarchy of executive controls – namely a disconnection of the supervisory system associated with the frontal lobe. From an alternative social-psychological point of view, the experience of involuntariness may reflect misattributions of behavior to external rather than internal causes (Spanos & Gorassini, 1984; Spanos, Rivers, & Ross, 1977; see also Lynn et al., 1989) -- or, perhaps, reports of involuntariness stem from strategic attempts to create an impression that they are deeply hypnotized (Spanos, Cobb, & Gorassini, 1985).

In view of the centrality to hypnosis of the experience of involuntariness, it is somewhat surprising that it is so seldom considered in the assessment of hypnotizability. Both the Stanford Hypnotic Susceptibility Scales, Forms A, B, and C (SHSS:A/B/C; Weitzenhoffer & Hilgard, 1959, 1962) and the closely related Harvard Group Scale of Hypnotic Susceptibility Scale, Form A (HGSHS:A; Shor & Orne, 1962, 1963), which have achieved status as the standard instruments in the field, rely exclusively on observed or self-reported behavioral response. This is also true of the Barber Suggestibility Scale (BSS; Barber, 1969), while its successor, the Creative Imagination Scale (CIS; Barber & Wilson, 1977, 1979; Wilson & Barber, 1978), includes only an assessment of the subjective reality of the suggested imagery. This wide failure to include an inquiry into the experience of involuntariness was criticized by Weitzenhoffer (1974, 1980a, 1980b, 2002), as part of his analysis of the *classic suggestion effect*. Following the argument of Bernheim (1886/1889), who noted that "The most striking feature of a hypnotized subject is his automatism" (p. 125), Weitzenhoffer asserted that only involuntary responses to suggestion should count as truly hypnotic in nature. Thus, at least in principle, assessments of hypnotizability that do not assess involuntariness may be contaminated by mere behavioral compliance.

In reply, Hilgard (Hilgard, 1981) argued that the vast majority of subjects experience their response to hypnotic suggestions as involuntary, so that the degree of contamination may not be great. Of course, the degree of such contamination is an empirical question. In a study of response to a single suggestion, arm rigidity, Spanos and his colleagues found that 45% of subjects who passed the item in one sample, and 54% in another, reported that their experience was primarily that of voluntary behavior (Spanos, Rivers, & Ross, 1977). On the other hand, Bowers (K. S. Bowers, 1981),

examining responses to an abbreviated version of SHSS:A, found that only 20% of passed items were experienced as voluntary behaviors. Moreover, subjects who experienced their response as involuntary scored higher on SHSS:A, and on a subsequent SHSS:C, than those who did not, regardless of whether they passed the item according to the behavioral criterion. Bowers's (1981) study indicates that most positive responses to hypnotic suggestions are, in fact, associated with the experience of involuntariness; this conclusion is supported by subsequent studies of scales of the "Stanford" type (P. Bowers, 1982; P. Bowers, Laurence, & Hart, 1988; Farthing, Brown, & Venturino, 1983). Still, the fact that *some* positive behavioral responses are experienced as voluntary, suggests that ratings of experienced involuntariness can be of value in the assessment of hypnotizability -- a point with which Hilgard (1981) concurred.

Just how valuable such ratings can be is provided by analyses of another measure of hypnotizability, the Carleton University Responsiveness to Suggestion Scale (CURSS;Spanos, Radtke, Hodgins, Bertrand, Stam, & Dubreuil, 1983; Spanos, Radtke, Hodgins, Bertrand, Stam, & Moretti, 1983; Spanos, Radtke, Hodgins, Stam, & Bertrand, 1983). While denying that the experience of involuntariness reflects any division of consciousness or other special processes, Spanos has incorporated assessments of both subjective success and experienced involuntariness into the procedure, so that the CURSS yields three scores: Objective (O), analogous to the standard scores of SHSS:A,B,C and HGSHS:A, and based on overt behavioral response; Subjective (S), which focuses on cognitions and feelings instead of behavior; and Involuntary (I), in which subjects rate the degree to which the suggested experience seemed to happen by itself, without deliberate effort on the part of the subject.

According to the Objective/Involuntary (O/I) scoring criterion, the subject must pass the objective criterion *and* rate the response as at least moderately involuntary (a variety of other scoring methods are also available). In the CURSS normative sample (Spanos et al., 1983a), application of the CURSS:O/I criterion cut the mean score in half, compared to the value obtained with the CURSS:O criterion alone, and the distribution was skewed dramatically to the right, forming a reverse-J-shaped function. Similar findings were obtained in several other studies (Spanos et al., 1983b; Spanos et al., 1983c, Studies 1 and 2).

Reviewing this literature, Kihlstrom (Kihlstrom, 1985) suggested that while the CURSS behavioral scores might be heavily contaminated with compliance, this was not the case with scales of the "Stanford" type. However, Spanos and his colleagues have argued that contamination extends to the "Stanford" scales as well. In their first study (Spanos, Salas, Menary, & Brett, 1986), they added subjective and involuntariness assessments to a modified version of the SHSS:C, and administered this scale and the CURSS to the same group of subjects. As with CURSS, SHSS:C O/I scores were about half of SHSS:C O scores, and formed a strongly skewed, reverse-J-shaped distribution. A second study obtained similar results (Spanos, Lush, Smith, & DeGroh, 1986). On their account, hypnotizability scales of the "Stanford" type are just as susceptible to contamination by voluntary responding as is the CURSS.

A similar issue has arisen around the role of subjective success ratings as correctives to behavioral scores. Thus, Ruch, Morgan, and Hilgard (1974) found that ratings of subjective experience corrected the behavioral scores of the Barber Suggestibility Scale strongly downward, but had significantly less effect on scores of SHSS:A. Similarly, in a study of task-motivation instructions commonly used with the

BSS in comparison with a standard hypnotic induction (e.g., Barber & Calverley, 1964), Bowers (1967) found that honesty demands corrected behavioral response downward; Spanos & Barber (1968) confirmed this result, but found that no such corrective was necessary in subjects who received a hypnotic induction.

The present research seeks to address this controversy. As with the studies by Spanos et al. (1986a, 1986b), it extends the logic of the CURSS to the HGSHS:A, which is by far the most commonly used assessment procedure in hypnosis research. In two studies, assessments of subjective success and experienced involuntariness are added to the standard behavioral criteria of response. The purpose of the research was to determine the extent to which behavioral response, subjective success, and experienced involuntariness covary; to estimate the incidence of voluntary responding to HGSHS:A items; to evaluate the psychometric properties of the subjective and involuntariness ratings; and to evaluate different procedures for adding such assessments to the conventional behavioral scoring of HGSHS:A.

Experiment 1

The first experiment is a secondary analysis of data originally collected for another purpose (Otto-Salaj, Nadon, Hoyt, Register, & Kihlstrom, 1992). Data collected in that study permitted an assessment of experienced involuntariness by means of conventional Likert-type rating scales of the sort used by K. Bowers (1981), P. Bowers (1982), and Spanos et al. (1983a, 1983b). Unlike these studies, however, subjects were not required to rate involuntariness in those cases where they did not respond to the suggestion in question. Obviously, where subjects did not feel they responded

positively to the suggestion, questions of involuntariness are irrelevant, and subjects' rating on this dimension are ambiguous.

Method

Subjects

This study is based on a total of 1269 University of Wisconsin students who volunteered for a study concerned with individual differences in hypnotizability. The subjects were tested in group sessions (average group size ≈ 105) lasting approximately 1-1/2 hours. In return for their participation, they received points toward the extra credit option in their introductory psychology course. The data for this study was collected over three academic semesters, with subjects tested near the beginning of each term.

Procedure

HGSHS:A consists of an induction of hypnosis accompanied by suggestions for a series of 12 representative hypnotic experiences. In the present study, subjects rated their response to these suggestions in three different ways.[i]

Subjective Success: First, the subjects were asked to indicate the extent to which they experienced each of the 12 suggestions as ”successful”. The meaning of "success" was not further defined for subjects. These ratings of subjective success were devised by Emily Carota Orne, and were commonly collected in Martin Orne’s laboratory at the University of Pennsylvania, originally in dichotomous (i.e., Successful-Unsuccessful) format (Register & Kihlstrom, 1986). In this study, the success ratings

were collected on a four-point Likert-type scale anchored by the verbal labels "Not at All" (at 0) and "Very Much" (at 3). Thus, total scores varied from 0 to 36.

Behavioral Reports: Next, the subjects rated their response to each suggestion according to the standard dichotomized behavioral criteria, except that posthypnotic amnesia was scored according to the revised criterion proposed by Kihlstrom and Register (1984). Total scores varied from 0-12.

Experienced Involuntariness: Following the procedure of Bowers (1982), the subjects were then asked to rate on a 4-point Likert-type scale the degree to which their behavioral response to each suggestion was experienced as deliberate, effortful, or voluntary (at 1) as opposed to automatic, effortless, and involuntary (at 4). Subjects were instructed to omit the ratings when they had not responded at all to the suggestion in question. In order to generate an involuntariness score for each item for all subjects, omissions were scored 0, to produce a 0-4 scale representing increasing degree of experienced voluntariness. Total scores on this transformed involuntariness scale varied from 0-48.

Finally, the subjects also completed two ratings of their response to the procedure as a whole (Register & Kihlstrom, 1986): a global evaluation of the "depth" of hypnosis achieved during the session, rated on a 10-point Likert-type scale (O'Connell, 1964), and an eight-item assessment of hypnotic experiences based on Field's (1965; Field & Palmer, 1969) Inventory Scale of Hypnotic Depth. These ratings are not considered further in this report.

Results

The mean HGSHS:A behavioral score was 6.79 (*SD* = 2.48), indicating that this sample was comparable to other contemporaneous samples of the college population. The mean success score was 21.23 (*SD* = 6.93), and the mean transformed involuntariness score was 29.87 (*SD* = 8.44). The reliabilities (Carmine's theta) of these scores were .68, .83, and .82, respectively. On the basis of their behavioral scores, subjects were classified as low (0-4, *N* = 221), medium (5-8, *N* = 711), or high (9-12, *N* = 337) in hypnotizability.

Behavioral Response, Subjective Success, Experienced Involuntariness, and Hypnotizability

Table 1 shows the percentage of subjects passing each item according to the standard behavioral criterion, and the item-to-total correlation for each item (i.e., the correlation of each item with the total HGSHS:A behavioral score, minus that item). It also shows the corresponding means of the success and involuntariness ratings, and their correlations with the corrected total HGSHS:A scale score. As would be expected, both subjective success and experienced involuntariness were positively correlated with overall hypnotizability. In fact, the item-to-total correlations for the success and involuntariness ratings were generally as high as, if not higher than, those for behavioral responses. Regardless of whether it is scored in terms of objective behavioral response, subjective experience of success, or the experience of involuntariness, response to the suggestions of HGSHS:A is correlated with overall hypnotizability.

Table 1

Behavioral Response, Subjective Success,
And Experienced Involuntariness for Items of HGSHS:A
(Experiment 1)

	Behavioral		Subjective		Involuntariness	
	%	*r*	*M*	*r*	*M*	*r*
01. Head Falling	80.6	.21	2.24	.38	3.13	.32
02. Eye Closure	79.8	.24	2.42	.35	3.18	.27
03. Hand Heavy	81.8	.18	2.58	.27	3.31	.24
04. Arm Immobilization	50.1	.33	2.01	.44	2.56	.38
05. Finger Lock	64.3	.46	1.81	.46	2.51	.37
06. Arm Rigidity	53.8	.40	1.76	.48	2.47	.37
07. Hands Together	79.8	.25	2.30	.33	3.09	.28
08. Communication Inhibition	50.4	.39	1.62	.51	2.37	.41
09. Fly Hallucination	22.6	.22	0.60	.38	1.10	.25
10. Eye Catalepsy	54.7	.45	1.74	.52	2.64	.43
11. Posthypnotic Suggestion	39.8	.17	0.79	.22	1.22	.19
12. Posthypnotic Amnesia	21.8	.25	1.36	.29	2.27	.20

Success and Involuntariness in Subjects Passing and Failing the Behavioral Criterion

At the same time, as Bowers et al. (1988) noted, some degree of involuntariness was reported even by subjects who did not pass the item in question. This situation is clarified in Table 2, which shows the subjective success ratings for each item when subjects are classified by hypnotizability level as well as pass/fail status on that item (the hypnotizability scores were corrected by eliminating the item in question). In this analysis, of course, the numbers of hypnotizable subjects failing each item, or of insusceptible subjects passing the item, are relatively low; but with a sample of this size there are enough subjects in each cell (all $N > 15$) to permit statistical analysis. A separate 3x2 factorial analysis of variance (ANOVA) with three levels of hypnotizability (low, medium, or high) and two levels of behavioral response (pass or fail) was applied

to the success ratings of each item. For each item, the main effects of both hypnotizability and behavioral response were significant (all $p < .001$). The response x hypnotizability interaction was significant ($p < .005$) for six items (Head Falling, Eye Closure, Hands Together, Arm Rigidity, Fly Hallucination, and Posthypnotic Suggestion).

Table 2

Success Ratings for Items of HGSHS:A:
Subjects Classified by Hypnotizability and Behavioral Response
(Experiment 1)

Item	Behavioral Criterion	Hypnotizability		
		Low	Medium	High
01. Head Falling Forward	Pass	2.14	2.50	2.77
	Fail	0.85	1.59	1.58
02. Eye Closure	Pass	2.37	2.64	2.74
	Fail	1.36	1.95	2.27
03. Hand Heavy	Pass	2.62	2.82	2.92
	Fail	1.41	1.78	1.95
04. Arm Immobilization	Pass	1.66	2.38	2.65
	Fail	1.11	1.86	2.06
05. Finger Lock	Pass	2.00	2.21	2.61
	Fail	0.78	1.11	1.31
06. Arm Rigidity	Pass	1.72	2.30	2.67
	Fail	0.72	1.26	1.50
07. Hands Together	Pass	2.47	2.53	2.79
	Fail	0.86	1.48	2.00
08. Communication Inhibition	Pass	1.86	2.21	2.60
	Fail	0.41	1.13	1.81
09. Fly Hallucination	Pass	0.45	1.40	1.86
	Fail	0.12	0.30	0.75
10. Eye Catalepsy	Pass	1.66	2.28	2.60
	Fail	0.56	1.29	1.93
11. Posthypnotic Suggestion	Pass	1.20	1.62	1.86
	Fail	0.16	0.29	0.17
12. Posthypnotic Amnesia	Pass	1.47	1.70	1.84
	Fail	0.87	1.30	1.58

Table 3 shows the corresponding analysis for experienced involuntariness. In each case, the 3x2 ANOVA showed that the main effects of both hypnotizability and behavioral response were significant (all $p < .05$). The response x hypnotizability interaction was significant ($p < .05$) for only four items (Head Falling Forward, Eye Closure, Hands Together, and Posthypnotic Suggestion). Except in the case of the Posthypnotic Suggestion, the experience of involuntariness increased with hypnotizability, even for those who failed to meet the behavioral criterion of response.

Table 3

Involuntariness Ratings for Items of HGSHS:A:
Subjects Classified by Hypnotizability and Behavioral Response
(Experiment 1)

Item	Behavioral Criterion	Hypnotizability		
		Low	Med	High
01. Head Falling	Pass	3.15	3.38	3.70
	Fail	1.58	2.49	2.42
02. Eye Closure	Pass	3.26	3.41	3.56
	Fail	2.05	2.49	2.93
03. Hand Heavy	Pass	3.39	3.60	3.75
	Fail	1.88	2.28	2.42
04. Arm Immobilization	Pass	2.44	2.95	3.30
	Fail	1.62	2.36	2.51
05. Finger Lock	Pass	2.73	2.93	3.34
	Fail	1.54	1.72	1.69
06. Arm Rigidity	Pass	2.60	3.05	3.42
	Fail	1.49	1.87	1.95
07. Hands Together	Pass	3.36	3.37	3.69
	Fail	1.40	2.05	2.50
08. Communication Inhibition	Pass	2.32	3.00	3.39
	Fail	1.36	1.78	2.43
09. Fly Hallucination	Pass	2.00	2.28	2.76
	Fail	0.57	0.68	0.96
10. Eye Catalepsy	Pass	2.85	3.16	3.58
	Fail	1.50	2.15	2.40
11. Posthypnotic Suggestion	Pass	2.02	2.16	2.54
	Fail	0.46	0.58	0.50
12. Posthypnotic Amnesia	Pass	2.21	2.67	2.85
	Fail	1.85	2.18	2.43

Success and Involuntariness Predict Hypnotizability

If subjective conviction and experienced involuntariness are part and parcel of the experience of hypnotic suggestions, as hypothesized, then those whose hypnotic response is characterized by these attributes should be more hypnotizable than those whose response lacks them. In order to test this hypothesis, separate 2x2x2 factorial ANOVAs were conducted of each item. In each analysis, subjects were classified according to their objective behavioral response, subjective success, and experienced involuntariness with respect to a particular hypnotic suggestion. Objective behavioral response was classified as pass or fail, according to the standard dichotomous behavioral criterion. Ratings of subjective success were divided at the midpoint of the 0-3 scale, such that subjects who gave ratings above 1 were considered to have successfully experienced the suggestion. Similarly, ratings above 2 on the 0-4 scale were considered to reflect the experience of involuntariness.

The results are displayed in Table 4 (minimum $n = 8$ per cells). For each analysis, the dependent variable was the total behavioral HGSHS:A score, corrected by eliminating the item in question. In most cases, the main effects of all three classification variables were statistically significant (as would be expected, given the item-to-total correlations displayed in Table 1). As expected, those who passed an item proved to be more hypnotizable, in terms of passing the *remaining* eleven items, than those who did not. The only exceptions to statistical significance ($p < .05$) were the two easiest items, #01 (Head Falling) and #03 (Hands Together), and the two hardest ones, #09 (Fly Hallucination) and #11 (Posthypnotic Suggestion). Similarly, those who experienced the item as successful were more hypnotizable than those who were not (no exceptions to statistical significance), as were those who experienced their

response as relatively involuntary (exceptions to statistical significance: #02, Eye Closure; #05, Finger Lock; #06, Arm Rigidity; #07, Hands Together; #09, Fly Hallucination; and #11, Posthypnotic Suggestion.]

Table 4

Mean Hypnotizability:
Subjects Classified by Behavioral Response,
Subjective Success, and Experienced Involuntariness
(Experiment 1)

Item Rating								
Behavior	**Fail**	**Fail**	**Fail**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**
Involuntariness	**Fail**	**Fail**	**Pass**	**Pass**	**Fail**	**Fail**	**Pass**	**Pass**
Success	**Fail**	**Pass**	**Fail**	**Pass**	**Fail**	**Pass**	**Fail**	**Pass**
01. Head Falling	4.14	6.05	4.81	6.25	4.38	6.00	4.97	6.48
02. Eye Closure	3.54	5.50	4.53	5.63	5.00	5.88	5.05	6.42
03. Hand Heavy	4.32	4.94	5.06	5.82	3.64	5.74	5.33	6.26
04. Arm Immobilization	4.53	5.85	5.28	6.45	5.00	6.71	6.24	7.46
05. Finger Lock	4.55	5.48	4.51	5.31	5.93	6.72	5.88	7.19
06. Arm Rigidity	4.91	6.37	4.72	6.15	5.59	6.79	6.08	7.38
07. Hands Together	3.78	6.58	4.62	6.21	5.57	5.96	5.54	6.42
08. Communication Inhibition	4.82	6.39	5.00	7.01	5.91	6.67	6.58	7.51
09. Fly Hallucination	6.13	7.96	6.48	8.10	6.70	7.86	6.94	8.65
10. Eye Catalepsy	4.44	6.05	5.10	6.43	5.48	6.93	6.59	7.43
11. Posthypnotic Suggestion	6.04	6.35	6.08	6.75	6.44	6.92	6.30	7.65
12. Posthypnotic Amnesia	5.65	6.96	6.14	6.96	6.91	7.58	7.51	8.11

Interestingly, the two- and three-way interactions were rarely significant (only three instances out of 48 comparisons), indicating that the effects of these variables were generally additive. Thus, among those who passed the behavioral criterion, those who experienced the item as successful were more hypnotizable than those who did not (mean difference = 1.29 points on a corrected 11-point scale); and among these same subjects, those who experienced the item as involuntary were more hypnotizable than those who did not (mean difference = 0.85 points). Of equal interest, this same pattern

held among the remaining subjects as well. That is, among the subjects who failed to meet the behavioral criterion for passing the suggestion, those who experienced the suggestion as successful were more hypnotizable than those who did not (mean difference = 1.50 points), as were those who experienced their response (however meager) as involuntary (mean difference = 0.86 points). Thus, experiential ratings of subjective success and involuntariness make independent contributions to the assessment of hypnotizability, over and above the standardized behavioral criterion. Subjects who met all three criteria were uniformly the most hypnotizable of all.

Behavioral Response and Experienced Involuntariness Predicts Subjective Success

The fact that subjects rate as successful items that they have failed to pass according to the standard behavioral criterion, and rate as unsuccessful items that they have passed according to the same criterion, indicates that their subjective evaluation of their response to hypnosis takes account of factors beyond their overt behavioral response. One such factor may be the experience of involuntariness in response to suggestions. As a test of this hypothesis, separate 2x2 factorial ANOVAs were performed for each item of the scale, with subjects classified in terms of their behavioral response and experienced involuntariness, according to the criteria described above. The dependent variable was their ratings of the subjective success of the item in question.

Table 5 shows the results (in each analysis, the minimum cell frequency was N = 44). A series of 2x2 factorial ANOVAs with dichotomous classifications of behavioral response and experienced involuntariness as independent variables, and continuous

ratings of subjective success as the dependent variable, was performed on each of the 12 HGSHS:A items. The main effects of behavioral response and experienced involuntariness were significant ($p < .05$) in all cases; the two-way interaction reached significance in only four instances (Items #01, Head Falling; #02, Eye Closure; #03, Hand Lowering; and #12, Posthypnotic Amnesia). Thus, the contributions of these variables were largely independent of each other. Among subjects who passed the behavioral criterion for passing the item, those who experienced their response as involuntary rated the suggestion as more successful than those who did not (mean difference = 0.67 on a 4-point scale); the difference held among those who failed the behavioral criterion (mean difference = 0.83). Subjects who both passed the behavior criterion and experienced their response as involuntary gave the suggestions the highest success ratings.

Table 5

Mean Subjective Success Ratings:
Subjects Classified by Behavioral Response and Experienced Involuntariness
(Experiment 1)

Item Rating **Behavior** **Involuntariness**	**Fail** **Fail**	**Fail** **Pass**	**Pass** **Fail**	**Pass** **Pass**
01. Head Falling	0.83	1.94	1.87	2.56
02. Eye Closure	1.23	2.24	2.11	2.67
03. Hand Heavy	1.00	2.36	2.30	2.83
04. Arm Immobilization	1.30	2.14	1.76	2.55
05. Finger Lock	0.83	1.50	1.68	2.46
06. Arm Rigidity	0.89	1.66	1.73	2.50
07. Hands Together	0.88	2.00	1.78	2.69
08. Communication Inhibition	0.77	1.49	1.64	2.47
09. Fly Hallucination	0.29	0.91	1.14	1.83
10. Eye Catalepsy	0.81	1.53	1.88	2.40
11. Posthypnotic Suggestion	0.22	0.68	1.34	2.00
12. Posthypnotic Amnesia	0.99	1.60	1.51	1.86

Occurrence of "Mismatches" Between Behavioral Response and Experienced Involuntariness

The foregoing analyses make it clear that behavioral response to hypnotic suggestions is not inevitably accompanied by either subjective conviction or experienced involuntariness. So, for example, of the 8,622 positive responses to hypnotic suggestions obtained in this study, evaluated according to the standard behavioral criterion, 1,811 (21.0%) were accompanied by the experience of involuntariness. This figure corresponds closely to the figure of approximately 20% for reported for "mismatches" between behavioral response and experienced involuntariness reported for variants on the Stanford/Harvard scales (K. Bowers, 1981; P. Bowers, 1982; P. Bowers et al. (1988); Farthing et al., 1983).

Of greater interest, perhaps, is the relationship between such "mismatches" and hypnotizability. Table 6 shows the proportion of subjects passing each HGSHS:A item, according to the standard behavioral criterion, who rated their experiences as voluntary as opposed to involuntary. The proportion varies from item to item, but for each item the incidence of mismatches declines as hypnotizability (measured on 11-point scales corrected by eliminating the item in question) increases. Thus, subjects of low hypnotizability showed a total of 369 mismatches out of 1,407 passes (26.2%), while those of medium hypnotizability showed 1,177 mismatches for 5,362 passes (22.0%), and the corresponding proportion for subjects of high hypnotizability was 265/1,853 (14.3%).

Table 6

"Mismatches" Between Positive Behavioral Response
and Experienced Involuntariness:
Subjects Classified by Hypnotizability

Item	Hypnotizability			
	Low	Medium	High	Total
01. Head Falling	.186	.140	.041	.134
02. Eye Closure	.162	.123	.081	.125
03. Hand Heavy	.110	.072	.041	.076
04. Arm Immobilization	.456	.248	.139	.247
05. Finger Lock	.304	.274	.121	.245
06. Arm Rigidity	.412	.235	.104	.221
07. Hands Together	.173	.157	.063	.144
08. Communication Inhibition	.500	.247	.111	.235
09. Fly Hallucination	.636	.548	.394	.502
10. Eye Catalepsy	.339	.201	.084	.184
11. Posthypnotic Suggestion	.663	.620	.479	.588
12. Posthypnotic Amnesia	.579	.370	.272	.457

Similar findings were obtained for mismatches between behavioral response and subjective success (the relevant table has been deleted in the interests of space). Thus, 15.8% of the 8,622 passes were rated as subjectively unsuccessful: the corresponding figures were 24.8%, 15.6%, and 9.4% for subjects of low, medium, and high hypnotizability.

Success and Involuntariness Serve as Correctives to Behavioral Scores

The total involuntariness score showed correlations of r = .57 and .60 with the objective behavioral and subjective success ratings, respectively; the behavioral and success ratings were also highly correlated, r = .77.

Figure 1 shows the distribution of HGSHS:A scores, according to the standard behavioral criterion of response. The distribution is quasinormal, with perhaps a slight

skew to the right (*M* = 6.79, *SD* = 2.48); the reliability of this scale (Carmine's theta) was 0.68. If subjective conviction and experienced involuntariness are central to the experience of hypnosis, however, then subjects' behavioral response to hypnotic suggestions should be corrected to take them into account. Accordingly, subjects' responses on HGSHS:A were rescored by considering either subjective success, experienced involuntariness, or both, as well.

<<<<Figure 1 Has Been Lost>>>>>

In the first analysis, subjects were considered to have passed an item if they *both* (a) met the standard behavioral criterion *and* (b) gave the item a rating of at least 2 (i.e., above the midpoint) on the 0-3 scale of subjective success. Figure 1 also shows the distribution of these scores. The distribution clearly has shifted downward (*M* = 5.72, *SD* = 2.65, theta = 0.74). A 13x13 contingency table was constructed, showing the fate of behavioral scores (range: 0-12) when corrected by subjective success ratings. Of the 176 subjects who scored 10-12 in terms of the raw behavioral criterion, only 100 (56.8%) continued to score in this range when subjective success was considered as well.

In the second analysis, subjects were considered to have passed an item if they *both* (a) met the standard behavioral criterion *and* (b) gave an item rating of at least 3 (i.e., above the midpoint of the original, untransformed scale) of experienced involuntariness. This is comparable to the scoring procedure for the CURSS:O/I scores. Figure 1 also shows the distribution of these scores, which closely parallels that of behavioral scores corrected by ratings of subjective success (*M* = 5.37, *SD* = 2.71, theta = 0.73). Of the 176 subjects who scored 10-12 according to the behavioral criterion alone, only 85 (48.3%) remained when experienced involuntariness was added.

In the third analysis, both the subjective success and experienced involuntariness criteria were added to the objective behavioral criteria. Figure 1 shows the distribution (M = 4.90, SD = 2.73, theta = 0.76). Of the 176 subjects who scored 10-12 according to the behavioral criterion alone, only 60 (34.1%) remained when both subjective success and experienced involuntariness were added.

Experiment 2

Experiment 1 confirmed earlier findings that experienced involuntariness is commonly associated with response to hypnotic suggestions, particularly among individuals who are relatively high in hypnotizability. However, as Bowers et al. (1988) noted, ratings in the midrange of a continuous dimension of involuntariness remain somewhat ambiguous. While the meanings of high and low ratings on such a scale are fairly clear, intermediate ratings might mean that the subject's response was perceived as partially voluntary and partially involuntary; or a response that began voluntarily might have continued involuntarily. In the present study, we employed the categorical scaling procedure introduced by Bowers et al. (1988), which allowed these alternatives as well as the more extreme alternatives of deliberate vs. involuntary responding to suggestion.

Method

Subjects

A total of 1924 University of Arizona students volunteered for a study concerned with individual differences in hypnotizability. The subjects were tested in group sessions (average group size ≈ 105) lasting approximately 1-1/2 hours. In return for

their participation, they received points toward the extra credit option in their introductory psychology course. The data for this study was collected over seven academic semesters, with subjects tested near the beginning of each term.

Procedure

The procedure for this study was identical to that of Experiment 1, with two exceptions. In this case, the ratings of subjective success were collected on dichotomous scales paralleling those employed for the behavioral responses, yielding a 0-12 scale. More important, the assessment of experienced voluntariness was modified. Following the procedure of Bowers et al. (1988), the subjects were asked to select the most appropriate description of their response to each suggestion from the alternatives provided below:

A. I did not respond at all during this time.
B. My response was mostly voluntary.
C. My response was mostly involuntary.
D. The feeling that my response was voluntary was completely intermixed with the feeling that it was involuntary.
E. At first my response was voluntary, but then later on it continued to occur involuntarily.
F. None of the above.

Subjects who selected Option F, "None of the Above", for at least one HGSHS:A item had been excluded *a priori* from further consideration, because their responses were uninterpretable. For the remaining 1,924 subjects, their ratings were reordered according to the scheme proposed by Bowers et al. (1988): Options A, B, D, E, and C were recoded 0, 1, 2, 3, and 4, respectively. Total scores on this transformed involuntariness scale thus varied from 0-48.

Results

The mean HGSHS:A behavioral score was 6.88 (SD = 2.48), which is comparable to that obtained in Experiment 1. The mean success score was 7.24 (SD = 2.73), while the mean involuntariness score was 24.20 (SD = 10.00). The reliabilities of these scores (Carmine's theta) were .67, .75, and .82, respectively. On the basis of their behavioral scores, subjects were classified as low (0-4, *N* = 343), medium (5-8, *N* = 1033), and high (9-12, *N* = 548) in hypnotizability.

Behavioral Response, Subjective Success, Experienced Involuntariness, and Hypnotizability

Table 7 shows for each item the percentage of subjects passing the standard behavioral criterion, the percentage rating the suggestion as successful, and the average involuntariness rating, as well as the corresponding item-to-total correlations. Again, all three indices of item response were positively correlated with hypnotizability, and in almost all cases the item-to-total correlations for subjective success and experienced involuntariness were at least as high as for behavioral response. Note, however, that the average involuntariness ratings for each item were lower in this experiment than Experiment 1, even though both sets of ratings were collected on five-point scales. Presumably, this reflects the difference in scale formats: in Experiment 1 the scales were continuous, with only the endpoints labelled; in Experiment 2 they were categorical, with a qualitatively distinct label for each scale point.

Table 7

Behavioral Response, Subjective Success,
And Experienced Involuntariness for Items of HGSHS:A
(Experiment 2)

Item	Behavioral		Subjective		Involuntariness	
	%	*r*	%	*r*	*M*	*r*
01. Head Falling	79.7	.27	82.2	.31	2.58	.27
02. Eye Closure	82.1	.26	92.5	.24	2.82	.24
03. Hand Heavy	69.8	.14	78.5	.16	2.64	.17
04. Arm Immobilization	58.2	.28	55.5	.36	1.85	.39
05. Finger Lock	64.7	.45	62.4	.37	2.18	.36
06. Arm Rigidity	60.1	.39	55.6	.38	2.04	.39
07. Hands Together	80.1	.23	77.8	.24	2.81	.25
08. Communication Inhibition	53.4	.36	54.5	.45	1.83	.40
09. Fly Hallucination	24.2	.21	19.6	.23	0.73	.25
10. Eye Catalepsy	58.4	.46	63.9	.45	2.30	.44
11. Posthypnotic Suggestion	28.5	.20	20.9	.17	0.67	.23
12. Posthypnotic Amnesia	28.4	.25	60.5	.34	1.78	.36

Success and Involuntariness in Subjects Passing and Failing the Behavioral Criterion

As in Experiment 1, subjects were classified on the basis of their behavioral response (pass or fail) to each item and overall level of hypnotizability (high, medium, and low). Then separate 2x3 factorial ANOVAS were performed on the subjective success ratings of each of the 12 items (the minimum cell size was $N = 16$). Table 8 shows the results. As before, there were significant main effects of both behavioral response and hypnotizability in each case, $p < .05$; the response x hypnotizability interaction was also significant in several cases (Head Falling, Eye Closure, Arm Immobilization, and Fly Hallucination), but these interactions did not contradict the general trend of a positive relationship between subjective success and hypnotizability even for subjects who failed the objective behavioral criterion for response to the suggestion.

Table 8

Success Ratings for Items of HGSHS:A:
Subjects Classified by Hypnotizability
(Experiment 2)

Item	Behavioral Criterion	Hypnotizability		
		Low	Medium	High
01. Head Falling Forward	Pass	.86	.94	.98
	Fail	.23	.40	.54
02. Eye Closure	Pass	.91	.99	.98
	Fail	.61	.74	.86
03. Hand Heavy	Pass	.93	.96	.98
	Fail	.30	.40	.37
04. Arm Immobilization	Pass	.25	.60	.83
	Fail	.23	.48	.51
05. Finger Lock	Pass	.71	.77	.89
	Fail	.20	.31	.43
06. Arm Rigidity	Pass	.58	.68	.88
	Fail	.16	.29	.34
07. Hands Together	Pass	.85	.86	.95
	Fail	.26	.33	.53
08. Communication Inhibition	Pass	.35	.64	.89
	Fail	.16	.37	.54
09. Fly Hallucination	Pass	.31	.48	.69
	Fail	.05	.06	.12
10. Eye Catalepsy	Pass	.73	.80	.94
	Fail	.19	.41	.50
11. Posthypnotic Suggestion	Pass	.58	.63	.67
	Fail	.02	.03	.05
12. Posthypnotic Amnesia	Pass	.48	.75	.89
	Fail	.32	.53	.73

Table 9 shows the corresponding analysis for experienced involuntariness. Again, the main effects of behavioral response and hypnotizability were significant ($p < .05$) in each case. The interaction was significant in several cases (Arm Immobilization, Arm Rigidity, Fly Hallucination, Eye Catalepsy, and Posthypnotic Suggestion); but this did not alter the basic finding of a positive relationship between experienced

involuntariness and hypnotizability, regardless of whether subjects passed or failed the item in question.

Table 9

Involuntariness Ratings for Items of HGSHS:A:
Subjects Classified by Hypnotizability
(Experiment 2)

Item	Behavioral Criterion	Hypnotizability		
		Low	Med	High
01. Head Falling	Pass	2.55	2.87	3.02
	Fail	1.11	1.58	2.04
02. Eye Closure	Pass	2.75	2.94	3.23
	Fail	1.72	2.03	2.77
03. Hand Heavy	Pass	3.15	3.26	3.49
	Fail	0.89	1.14	1.10
04. Arm Immobilization	Pass	0.97	1.85	2.79
	Fail	0.85	1.61	1.89
05. Finger Lock	Pass	2.29	2.49	2.98
	Fail	1.01	1.42	1.75
06. Arm Rigidity	Pass	1.64	2.27	3.00
	Fail	0.94	1.43	1.70
07. Hands Together	Pass	3.01	3.09	3.45
	Fail	0.93	1.22	1.93
08. Communication Inhibition	Pass	1.30	1.95	2.80
	Fail	0.88	1.44	1.84
09. Fly Hallucination	Pass	1.50	1.92	2.67
	Fail	0.14	0.20	0.35
10. Eye Catalepsy	Pass	2.70	2.74	3.27
	Fail	0.89	1.57	2.17
11. Posthypnotic Suggestion	Pass	1.06	1.68	2.21
	Fail	0.11	0.12	0.17
12. Posthypnotic Amnesia	Pass	1.24	2.34	2.83
	Fail	0.82	1.46	2.33

Success and Involuntariness Predict Hypnotizability

A series of 2x2x2 factorial ANOVAs with three between-groups factors (behavioral response, subjective success, and experienced involuntariness were performed with corrected HGSHS:A total behavioral scores serving as the dependent variables. For the purpose of this analysis, subjects giving involuntariness ratings of at

least 2 (meaning that they experienced a mixture of voluntary and involuntary responding) were classified as having had an experience of involuntariness. The results are displayed in Table 10 (for each analysis, the minimum cell size is eight subjects). The minimum cell size was eight subjects. The main effect of the involuntariness variable was significant for every item; the main effects of the behavioral and success variables were significant in almost every instance. The two- and three-way interactions were occasionally significant; however, nothing contradicted the basic finding that regardless of whether they passed or failed the behavioral criterion, subjects who experienced their response to a particular suggestion as at least partially involuntary scored higher on the remainder of the scale than those who did not. Subjects who passed all three criteria -- behavioral, success, and involuntariness -- scored higher than those who did not.

Table 10

Mean Hypnotizability Scores (Corrected):
Subjects Classified by Behavioral Response, Subjective Success, and Experienced Involuntariness
(Experiment 2)

Item Rating								
Behavior	**Fail**	**Fail**	**Fail**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**
Involuntariness	**Fail**	**Fail**	**Pass**	**Pass**	**Fail**	**Fail**	**Pass**	**Pass**
Success	**Fail**	**Pass**	**Fail**	**Pass**	**Fail**	**Pass**	**Fail**	**Pass**
01. Head Falling	4.23	5.00	5.09	5.83	4.46	6.01	5.29	6.54
02. Eye Closure	3.65	4.69	4.50	5.37	3.59	5.80	6.05	6.47
03. Hand Heavy	5.47	5.45	5.74	6.26	5.08	6.24	6.30	6.46
04. Arm Immobilization	4.84	5.45	6.25	6.72	5.53	6.59	6.70	7.54
05. Finger Lock	4.51	5.02	5.79	5.76	6.12	6.53	6.73	7.18
06. Arm Rigidity	4.79	5.42	6.30	6.02	5.86	6.38	6.55	7.40
07. Hands Together	4.50	4.93	6.13	5.82	5.61	5.96	5.40	6.47
08. Communication Inhibition	4.91	5.79	5.81	6.91	5.72	7.01	6.16	7.68
09. Fly Hallucination	6.27	6.99	7.55	7.34	6.30	7.21	7.64	8.09
10. Eye Catalepsy	4.39	5.44	6.01	6.41	6.07	6.51	6.16	7.45
11. Posthypnotic Suggestion	6.27	6.71	6.74	7.88	6.66	6.45	7.89	8.13
12. Posthypnotic Amnesia	5.27	6.39	6.72	7.18	6.25	7.02	6.68	7.92

Behavioral Response and Experienced Involuntariness Predict Subjective Success

A series of 2x2 factorial ANOVAs tested the hypothesis that the experience of involuntariness distinguishes between items that are rated as successful and those that are not. Subjects were classified in terms of their behavioral response (pass or fail) and involuntariness ratings (as before, ratings of 2 served as the cutpoint), and the dichotomous success ratings served as the dependent variables. The results are shown in Table 11. The main effects of behavioral response and involuntariness were significant for all 12 items; the two-way interaction was significant in seven instances (Items 1, 2, 3, 6, 7, 9, 10), but the main effect of involuntariness was apparent in every case. Among those who passed the behavioral criterion, subjects who experienced

involuntariness rated the item more successful than those who did not (mean difference = 0.39 on a 0-1 scale); the same was true among those who failed the behavioral criterion (mean difference = 0.50).

Table 11

Mean Subjective Success Ratings:
Subjects Classified by Behavioral Response and Experienced Involuntariness
(Experiment 2)

Item Rating				
Behavior **Involuntariness**	**Fail** **Fail**	**Fail** **Pass**	**Pass** **Fail**	**Pass** **Pass**
01. Head Falling	0.10	0.66	0.78	0.97
02. Eye Closure	0.48	0.86	0.92	0.99
03. Hand Heavy	0.15	0.87	0.73	0.99
04. Arm Immobilization	0.21	0.74	0.31	0.88
05. Finger Lock	0.12	0.66	0.43	0.92
06. Arm Rigidity	0.10	0.60	0.31	0.92
07. Hands Together	0.11	0.79	0.39	0.96
08. Communication Inhibition	0.17	0.70	0.41	0.92
09. Fly Hallucination	0.05	0.44	0.25	0.76
10. Eye Catalepsy	0.20	0.64	0.61	0.92
11. Posthypnotic Suggestion	0.03	0.21	0.56	0.73
12. Posthypnotic Amnesia	0.31	0.82	0.48	0.93

Occurrence of "Mismatches" Between Behavioral Response and Experienced Involuntariness

Of the 13,242 positive behavioral responses to hypnotic suggestions, only 2,753 (20.8%) were not accompanied by the experience of involuntariness (categorized as before). Table 12 shows the relationship between "mismatches" and hypnotizability. For each item, the proportion of mismatches is greatest for insusceptible subjects and least for hypnotizable ones, with subjects of medium hypnotizability falling in the middle in 11/12 cases (the exception is Item #7, Hands Together). Thus, subjects of low

hypnotizability showed a total of 582 mismatches out of 2,037 passes (28.6%), mediums showed 1,857 out of 8,366 (22.2%), and highs 314 out of 2,839 (11.1%).

Table 12

"Mismatches" Between Positive Behavioral Response and Experienced Involuntariness: Subjects Classified by Hypnotizability

Item	Hypnotizability			
	Low	**Medium**	**High**	**Total**
01. Head Falling	.169	.106	.065	.112
02. Eye Closure	.197	.133	.064	135
03. Hand Heavy	.109	.105	.068	.099
04. Arm Immobilization	.669	.390	.181	.381
05. Finger Lock	.287	.226	.099	.206
06. Arm Rigidity	.477	.283	.098	.264
07. Hands Together	.141	.144	.046	.127
08. Communication Inhibition	.622	.359	.173	.338
09. Fly Hallucination	.681	.356	.188	.329
10. Eye Catalepsy	.341	.213	.080	.191
11. Posthypnotic Suggestion	.794	.534	.267	.478
12. Posthypnotic Amnesia	.277	.151	.066	.134

Similar findings were obtained for mismatches between behavioral response and subjective success (again, the table has been eliminated in the interests of space). Thus 16.0% of the 13,242 passes were rated as subjectively unsuccessful; the corresponding figures were 21.8%, 17.2%, and 8.2% for subjects of low, medium, and high hypnotizability.

Success and Involuntariness Serve as Correctives to Behavioral Scores

The total involuntariness score showed correlations of *r* = .65 and .81 with the objective behavioral and subjective success ratings, respectively; the behavioral and success ratings correlated *r* = .74.

Figure 2 shows the distribution of behavioral scores. (*M* = 6.88, *SD* = 2.48, theta = 0.67).

<<<<<Figure 2 Has Been Lost >>>>>

In the first analysis, subjects were considered to have passed an item if they *both* (a) met the standard behavioral criterion *and* (b) gave the item a rating of 1 on the dichotomous scale of subjective success. (*M* = 5.78, *SD* = 2.75, theta = 0.74). Of the 270 subjects who scored 10-12 in terms of the raw behavioral criterion, only 166 (61.5%) continued to score in this range when subjective success was considered as well. This is essentially the same retention rate as obtained in Experiment 1.

In the second analysis, subjects were considered to have passed an item if they *both* (a) met the standard behavioral criterion *and* (b) gave the item a rating of at least 2 on the categorical scale of involuntariness. (*M* = 5.42, *SD* = 2.91, theta = .77). Of the 270 subjects who scored 10-12 in terms of the raw behavioral criterion, only 163 (60.5%) continued to score in this range when subjective success was considered as well. This is a higher retention rate than observed in the comparable analysis of Experiment 1.

In the third analysis, both the subjective success and experienced involuntariness criteria were added to the objective behavioral criterion. (M = 5.07, SD = 2.89, theta = .78). Of the 270 subjects who scored 10-12 in terms of the raw behavioral criterion, only 128 (47.4%) continued to score in this range when subjective success was considered as well. This is also a higher retention rate than observed in the comparable analysis of Experiment 1.

General Discussion

The studies presented here show that subjective ratings of success and of experienced involuntariness provide information about subjects' response to hypnosis, over and above that which is available from the usual objective behavioral scores. Experiment 1 employed continuous ratings of subjective success and experienced involuntariness, and found that both ratings were correlated with overall hypnotizability, as measured by the standard objective behavioral criteria. The positive relationship between hypnotizability and both subjective success and experienced involuntariness held even for subjects who failed to meet the objective behavioral criterion for positive response. Those who experienced a particular item as successful, regardless of their behavioral response were more hypnotizable than those did not, as were those who experienced their response as relatively involuntary. Among those who passed the behavioral criterion, those who experienced the item as successful were more hypnotizable than those who did not, as were those who experienced the item as involuntary. Of equal interest, this same pattern held among the subjects who failed to meet the behavioral criterion for passing the suggestion. Experiential ratings of

subjective success and involuntariness made independent contributions to the assessment of hypnotizability, over and above the standardized behavioral criterion. Subjects who met all three criteria – behavioral response, subjective success, and experienced involuntariness were the most hypnotizable of all. Among subjects who met the behavioral criterion for passing the item, those who experienced their response as involuntary rated the suggestion as more successful than those who did not; this difference also held among those who failed the behavioral criterion. Similarly, subjects who both passed the behavior criterion and gave the suggestions the highest success ratings experienced their response as involuntary. For both subjective success and experienced involuntariness, the incidence of “mismatches” with objective behavioral response declined as hypnotizability increased. Adding dichotomous measures of subjective success and experienced involuntariness to the standard behavioral score reduced the mean score on HGSHS:A, but had no effect on its reliability.

Experiment 2, which employed dichotomous ratings of subjective success, and categorical ratings of experienced involuntariness, obtained similar results. The option of "None of the Above" afforded to subjects in Experiment 2, while satisfying in rhetorical terms, is unscored and thus completely uninformative about what the subject's experience actually was. Accordingly, we eliminated it in the final version of our revision. We also rearranged the options so as to form a continuous scale of involuntariness. As of 2003, this categorical scale was the one we used in our own screening procedures:

A. I did not respond at all during this time. (Score = 0)
B. My response was mostly voluntary. (Score = 1)
C. At first my response was involuntary, but then later on I had to continue it voluntarily. (Score = 2)
D. The feeling that my response was voluntary was completely intermixed with the feeling that it was involuntary. (Score = 3)
E. At first my response was voluntary, but then later on it continued to occur involuntarily. (Score = 4)
F. My response was mostly involuntary. (Score = 5)

Reasonable people can disagree about the proper ordering of options C and E, but an unpublished psychometric analysis revealed that this one showed slightly better correlations with total HGSHS:A score than the reverse.

This research shows that the experience of involuntariness is part and parcel of hypnosis. On the other hand, it carries no implication that genuine hypnotic responses are involuntary in the technical sense of being, automatic, reflex-like reactions that are inevitably evoked by the presentation of some critical stimulus and incorrigibly executed once activated, consume little or no attentional capacity, and create little or no interference with other ongoing cognitive processes (Kahneman, 1973; Kahneman & Treisman, 1984; Kihlstrom, 2008a; Moors, 2013, 2016; Moors & DeHouwer, 2006, 2007). The focus here is on the *experience* of involuntariness, as reported by hypnotic subjects, and its implication in assessments of individual differences in hypnotizability. Research of a rather different sort is required to explicate the nature of the experience itself, and reports thereof. How to account for the experience of involuntariness – whether in terms of some form of neodissociation theory, attribution theory, impression-management theory, or some other idea – is beyond the scope of this paper.

Even at the phenomenological level of analysis, the experience of involuntariness can be somewhat ambiguous. Consider, for example, a study of posthypnotic suggestion by Bowers (1975). Bowers's subjects completed a variant of the Taffel task, in which they were presented with pairs of pictures, each consisting of a portrait and a landscape, and asked to indicate which picture they preferred by reading its identification number to the experimenter (in a small deception, the subjects were misinformed that painting preferences were an expression of their personality traits). Previously, the subjects had received a PHS to select paintings with the numeral *7* in their identification number. After 20 baseline trials (where the numeral *7* did not appear in the identification number) to establish individual preferences for portraits or landscapes, there were 90 training trials in which the nonpreferred type of painting was paired with the numeral *7*. In addition to the PHS, half the subjects received verbal reinforcement for their choices, as in the traditional Taffel procedure. The subjects in both reinforced and nonreinforced groups showed marked changes in their choice behavior compared to baseline, but the important test comprised a final set of 40 test trials, in which the PHS was canceled and (if appropriate) the verbal reinforcement discontinued. On these test trials, the reinforced subjects reverted to their baseline preferences, while the nonreinforced subjects continued to show a preference for paintings of the type that they had *not* preferred on the original baseline testing. The reinforced subjects, apparently, attributed their behavior to the experimenter's verbal reinforcement, in some sense under external control, not representative of their true preferences, and thus involuntary. By contrast, the nonreinforced subjects attributed their behavior to their own internal desires and preferences, an expression of free choice and thus voluntary – even though it was controlled by the posthypnotic

suggestion. Such ambiguities need to be addressed in any study that seeks to understand the mechanisms underlying the experience of involuntariness.

At a practical level, however, these two studies demonstrate that it is possible to efficiently collect information about the subjective success of suggestions, and the experience of involuntariness, which can serve as supplements to the standard objective behavioral scoring of HGSHS:A. But which to choose, between dichotomous or continuous evaluations of subjective success, and continuous or categorical ratings of experienced voluntariness?

With respect to ratings of subjective success, or recommendation is to employ the original dichotomous "Successful-Unsuccessful" scale, as originally devised by E.C. Orne and used in the present Experiment 2. In this way, the scaling of subjective success parallels that of the standard objective behavioral scoring system – 0 to 12 points.

The same logic would seem to recommend dichotomous ratings of experienced involuntariness. In view of the ambiguity surrounding the experience of involuntariness, however, it seems better to allow subjects some leeway. One possibility is the categorical ratings devised by Bowers et al. (1988). On the other hand, the four-point scale employed by Bowers (1982), and employed in the present Experiment 1, has the virtue of simplicity – and, lacking any kind of midpoint, does not allow subjects any opportunity to sit on the fence. In this way, the scale, lacking a midpoint for subjects to hug, can be easily transformed into a dichotomous rating of involuntariness comparable to the objective behavioral and subjective success scorings.

Taking account of subjective success improves the prediction of hypnotic virtuosity (Register & Kihlstrom, 1986), and presumably adding experienced

involuntariness to the mix will do the same. At the same time, however, such revisionist approaches to scoring threaten the greatest contribution of the standardized scales to hypnosis research – that (almost) everyone employs the same procedures for assessing hypnotizability. Therefore, researchers are advised to report sample parameters based only on the standard behavioral scores, and to continue to use the standard cutpoints (e.g., low, 0-4;medium, 5-7; high, 8-10; very high, 11-12), again based solely on the behavioral scores, for initial subject selection.

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A sample HGSHS:A response booklet, employing dichotomous ratings of objective behavioral response and subjective success, and the recommended four-point scale of experienced involuntariness, as well as the global depth and hypnotic experience scales discussed in the Method section of Experiment 1, is available here.

A sample HGSHS:A response booklet, employing dichotomous ratings of objective behavioral response and subjective success, and an alternative categorical scale of experienced involuntariness, as well as the global depth and hypnotic experience scales discussed in the Method section of Experiment 1, is available here.

Figure Captions

Figure 1. Distribution of raw behavioral scores on HGHS:A, and these same scores corrected by the addition of dichotomous criteria for subjective success and for involuntariness (Experiment 1).

Figure 2. Distribution of raw behavioral scores on HGHS:A, and these same scores corrected by the addition of dichotomous criteria for subjective success and for involuntariness (Experiment 2).

Note: Unfortunately, the figures themselves are available in Harvard Graphics *.cht format. HG is now outmoded, and the software is no longer available. Interested readers who have access to HG c. 1992, presumably for DOS, should contact me and I will gladly supply the graphics files.

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